Lot 1 Driver Rd, Darch

Local Water Management Strategy

Prepared for Noble Hodge

By Urbaqua

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1 INTRODUCTION

Urbaqua has been commissioned by Noble Hodge to prepare this Local Water Management Strategy (LWMS) in support of the Local Structure Plan for Lot 1 Driver Rd, Darch (herein referred to as Study Area). The Study Area is located approximately 16.3 km north of the Perth CBD. The site is 11.91 hectares in size and is bound by:

- Furniss Road to the north
- Driver Road to the west
- Lot 2 Drive Rd Darch to the east and south

The Study Area is currently classified by the Department of Water and Environmental Regulation (DWER) as 'Contaminated – restricted use' under the Contaminated Sites Act 2003. The site has since undergone groundwater and gas testing to assess the suitability of the site for development. The vision is to redevelop the Study Area into an urban precinct with residential lots, commercial lots and public open space. The LWMS is prepared to support the planning process and guide sustainable water management during redevelopment.

1.1 Principles and design objectives

Consistent with *State Planning Policy 2.9: Water Resources* (WAPC, 2006) and *Better urban water management* (WAPC, 2008) a local water management strategy (LWMS) is required to be submitted to support any rezoning of land in a Local Planning Scheme or adoption of a Local Structure Plan to ensure that appropriate water management strategies are identified. The position of this strategy within the state government planning framework is defined in *Better urban water management* (WAPC, 2008) and is outlined in Figure 1.

The LWMS should be prepared in accordance with the Department of Water's *Interim: Developing a local water management strategy* (2008a) and should demonstrate to the satisfaction of the WAPC in accordance with any approved DWMS:

- How the key principles and strategies of this plan have been addressed.
- How the urban structure will address water use and management.
- Existing and required water management infrastructure.
- Detailed land requirements for water management.

The principles and strategies contained within Section 5 of this LWMS will be implemented as part of detailed land use planning and development requirements and are consistent with the framework and requirements in *Better urban water management* (WAPC, 2008) as demonstrated in Appendix 1.

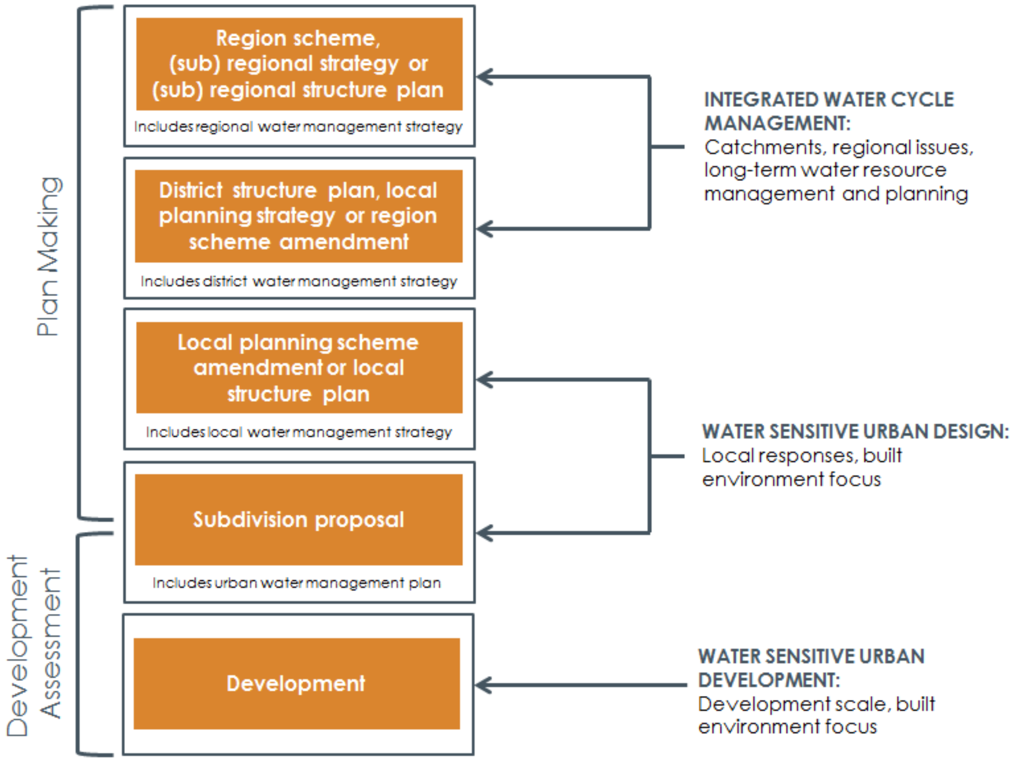

Figure 1: Integrating water planning with land planning processes (WAPC, 2008a)

1.2 Planning background

The site is currently zoned as 'Urban' under the Metropolitan Regional Scheme and as 'Urban Development' under the City's District Planning Scheme No. 2.

The current East Wanneroo Structure Plan – Cell 6 has the Site zoned as 'Landfill Precinct' with the section along the northern boundary zoned as 'Business Precinct'. This LWMS is being submitted as part of the amendment to rezone the Site as 'Residential and Business Precinct'.

The Site was vacant until 1968, at which point sand mining commenced until the late 1980's, when filling with construction and demolition waste commenced and continued until 2009. Since 2009, the Site has accepted construction and demolition waste for the purpose of sorting, crushing, screening, sampling and stockpiling. The Site has not received any waste nor has there been waste processing conducted on-site since November 2017 (Enpoint, 2020).

1.3 Guiding documents

A number of guiding documents have been considered that are relevant to this strategy area. In addition to State Planning Policy 2.9, these documents inform the strategies and management principles contained within this Local Water Management Strategy:

- Developing a Local Water Management Strategy (DoW, 2008a);
- Stormwater Management Manual for Western Australia (DoW, 2004-09);
- Better Urban Water Management (WAPC, 2008a);
- Development Design Specification: Stormwater Drainage Design (City of Wanneroo, 2019); and,
- Decision Process for Stormwater Management in Western Australia (DWER, 2017).

2 PROPOSED DEVELOPMENT

Development of the Study Area to create a vibrant urban precinct provides opportunities to incorporate water sensitive urban design. This section outlines the key elements of the current land use and proposed re-development that influence water management.

2.1 Previous land use

The site was originally mined for sand supplies for the building industry in the late 1960's. The sand was progressively removed and the area was operated as a disposal area and recycling facility for non-organic waste (mainly building material). The site has now been entirely filled apart from an area in the south-eastern part which is outside of Lot 1 (Lot 2) (Enpoint, 2020).

2.2 Development

The local structure plan amendment will guide the future urban regeneration of the study area. Proposed development will feature:

- Approximately 7.6 ha of Residential lots
- Approximately 1.6 ha of Light industrial lots along Furniss Road to the north
- Approximately 0.3 ha of landscaped drainage areas
- Approximately 2.4 ha of road reserve

The concept design is presented in Figure 3 and included in Appendix 2.

Development will increase impervious areas and increase stormwater runoff. There is however, an opportunity to integrate water sensitive urban design into the development and provide improved water quality and sustainability outcomes.

Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 2 - Study area

Data source: Landgate, MRWA, CoW, Noble Hodge, Created by: YY Projection: MGA2020: zone 50.

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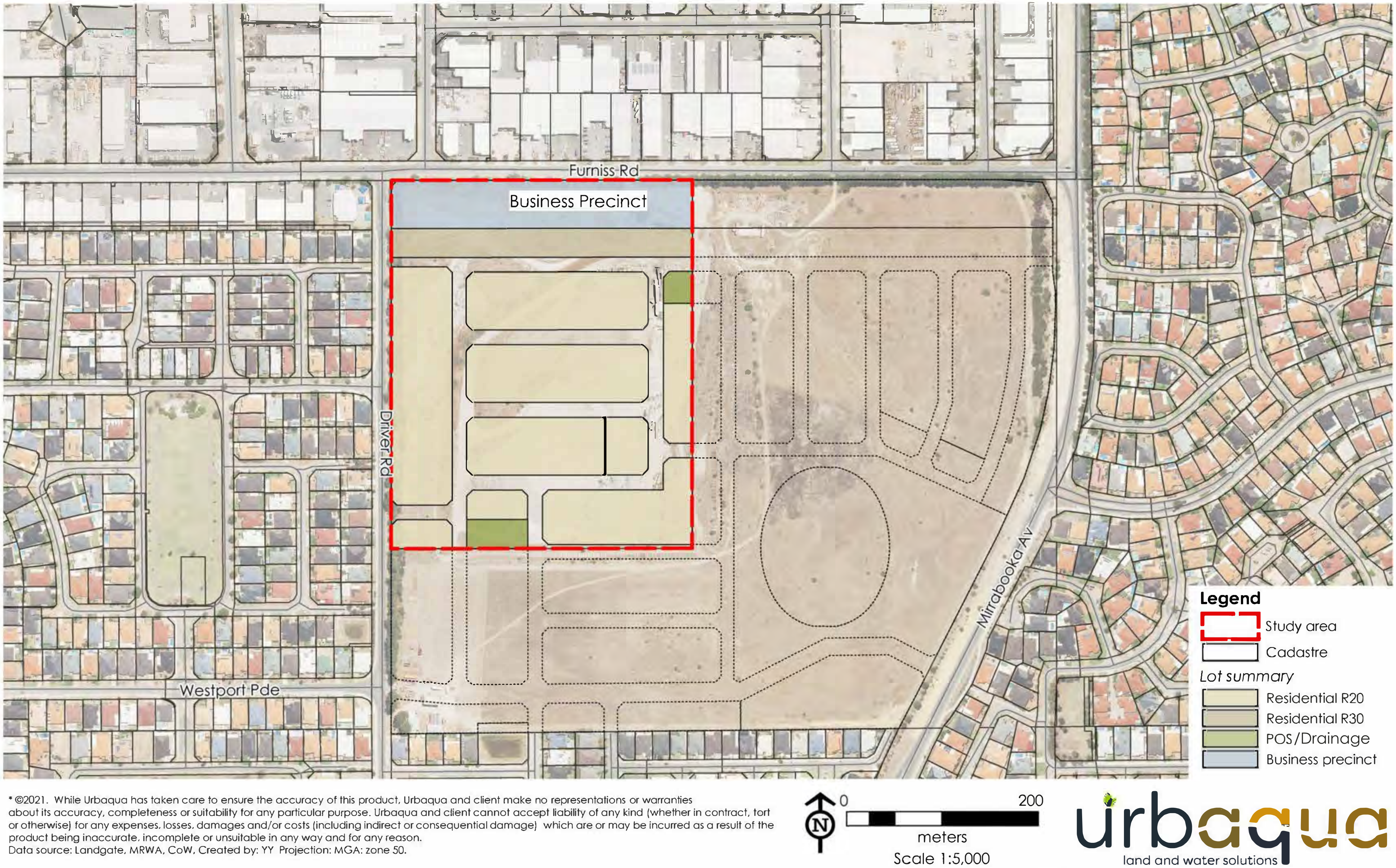
Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 3 - Concept plan



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3 DESIGN CRITERIA

Table 1 outlines the key design objectives to be achieved within the Study Area.

Table 1: Design Criteria

Design Element	Criteria
Water sustainability	• Maximise local infiltration to replenish surface groundwater aquifers; • Reach a target for domestic scheme water use of 100kL/year per person; and, • Provide alternative water sources for domestic irrigation and in-house domestic non-drinking water demands.
Surface water management	• The first 15mm of rainfall is to be retained within all lots through a combination of raingardens, water tanks or soakwell systems (DWER, 2017); • Minor event runoff from events larger than 15 mm total depth are to be managed to provide serviceability requirements; • Roads and public open spaces are to be designed to cater for the surface overflow for more severe storm events with habitable floors at least 0.3 m above the 1% AEP flood or storage level at any location; and, • Water quality treatment systems and stormwater management structures should be designed in accordance with the Stormwater Management Manual for Western Australia (Department of Water, 2004-07) and Australian Runoff Quality: A guide to water sensitive urban design (Engineers Australia, 2006).
Groundwater management	• Provide an appropriate separation distance between finished lot levels and groundwater to maintain the expected level of amenity with all soakwell devices designed with a minimum of 0.3 m separation from the maximum groundwater level.
Management of disease vectors and nuisance insects	• Limit the creation of new sites for breeding of nuisance insects; • Prevent standing water in drainage infrastructure (infiltration within 96hrs); and, • Improve water quality throughout the development.
Implementation	• Provide a framework to implement water management strategies outlined in the LWMS; and, • Water management measures during construction to prevent damage to existing infrastructure and receiving environments.

4 EXISTING SITE CHARACTERISTICS

A summary of the existing environmental conditions in the Study Area are provided in this section, including determination of the opportunities and constraints for water management.

4.1 Climate

The climate is typical of the south western region of Western Australia and is characterised by the Koppen Climate Classification as Dry Subtropical featuring mild winters and hot to very hot summers. The dominate rainfall mechanisms are frontal systems caused by cold fronts associated with low pressure systems that extend across southern Australian between May and October. During the summer months, thunderstorms and ex-tropical cyclones can bring intense rainfall.

Average annual rainfall recorded at the nearest long term Bureau of Meteorology (BoM) weather station (Perth Metro WA (no. 9225) approximately 12.3 km south of the Study Area) since 1993 is 730.9 mm (Figure 5Figure 4). Since 2000, the average annual rainfall is 705.7 mm, an approximately 3.4% decrease.

The significant decrease in annual rainfall is associated with a decrease in winter rainfall. Rainfall in the June and July has decreased by approximately 7%. There has been an increase in summer rainfall associated with thunderstorms and ex-tropical cyclones, but this rainfall is often intense occurs over a short duration and does not affect the loss of winter rainfall.

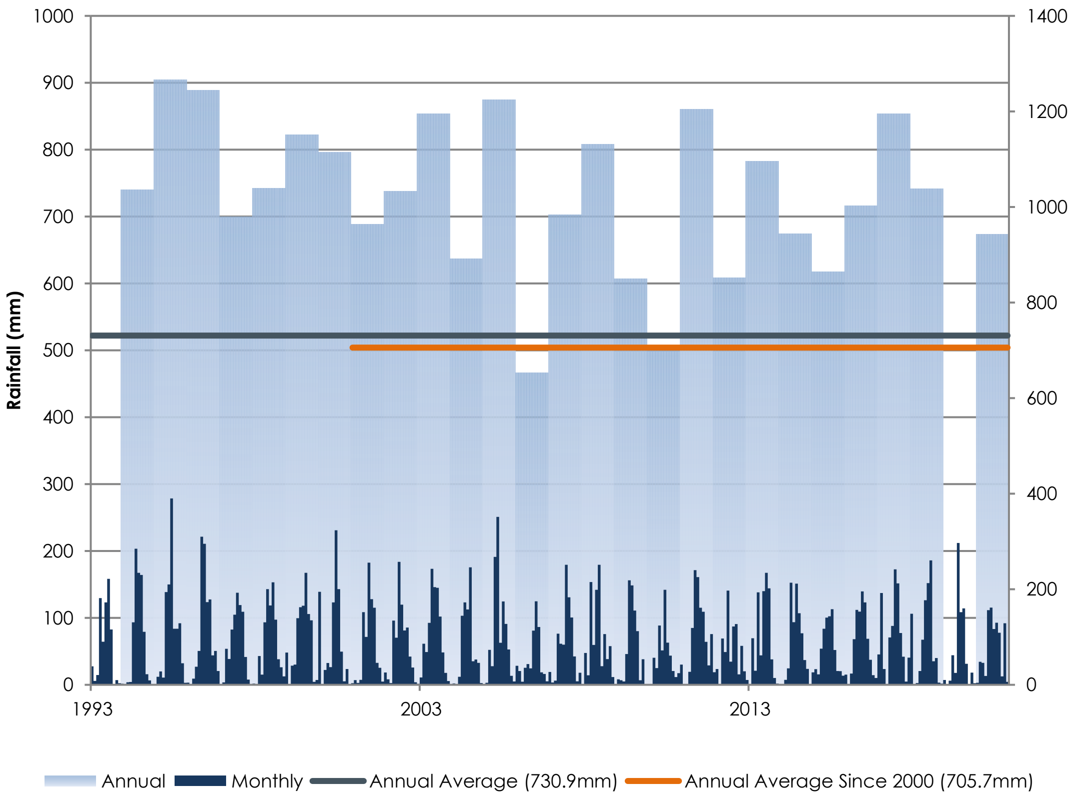

Figure 4: Rainfall summary data (Perth Metro WA, BoM, 2021)

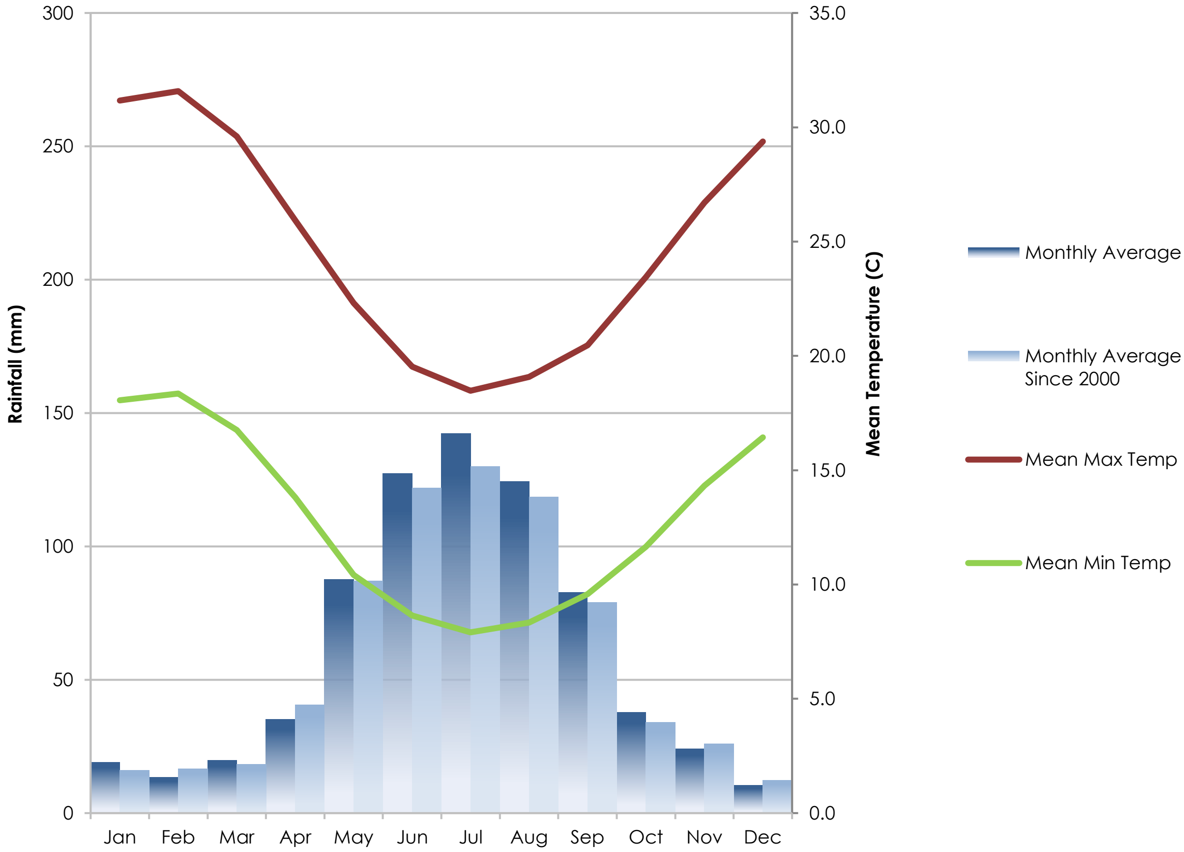

Figure 5: Climate summary data (Perth Metro WA, BoM, 2021)

Temperatures recorded at the Perth Metro WA (BoM station 9225) show that the average monthly maximum temperatures range between 18.5°C in July and 31.6°C in February, while average monthly minimum temperatures range between 7.9°C in July and 18.4°C in February.

4.2 Topography

Topography at the Site, presented in Figure 6, varies significantly and includes previously filled and unfilled areas as well as stockpiled material within these areas as shown in Figure 7.

Ground levels within the previously filled areas of the Site include:

- Approx. 47 to 48 mAHD in the southwest corner
- Approx. 51 to 52 mAHD in the northern portion
- Approx. 50 to 51 mAHD in the south-eastern corner

Ground levels in the unfilled area of the Site range from approximately 42 to 44 mAHD.

Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 6 - Soils and topography

Data source: Landgate, MRWA, CoW, Noble Hodge, Created by: YY Projection: MGA: zone 50.

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Figure 7: Previously filled and unfilled areas (Enpoint, 2020)

4.3 Geology and soils

Stormwater management is influenced by the soils of the Study Area and their ability to retain and infiltrate runoff.

4.3.1 Surface geology and soils

Regional surface geological mapping indicates the site is Sand S7, as represented in Figure 7:

- **S7: Sand** - pale and olive yellow, medium to coarse grained, sub-angular to sub-rounded quartz with a trace of feldspar, moderately sorted, of residual origin. Sand derived from Tamala Limestone (Qts). S7 sands have moderate permeability, high ease of extraction, low to medium bearing capacity, processes include groundwater recharge.

The soil landscape in the vicinity of the Site is of the 'Karrakatta Sand Yellow Phase' within the Perth Coastal Zone (Table 2) (Land Insight and Resources, 2020).

Table 2: Soil Landscape

Soil Landscape	Zone	Description
Karrakatta Sand Yellow Phase	Perth Coastal Zone	• Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. Banksia spp. Woodland with scattered emergent E. gomphocephala and E. marginata and a dense shrub layer. • Coastal sand dunes and calcarenite. Late Pleistocene to Recent age. Calcareous and siliceous sands and calcarenite. (Quindalup and Spearwood Systems). • Sand dunes and plains. Yellow deep sands, pale deep sands and yellow/brown shallow sands.

4.3.2 Bore logs

Bore logs illustrating the stratigraphy encountered during installation of existing and new groundwater monitoring wells and landfill gas monitoring wells are included in the Preliminary site investigation provided in Appendix 3. groundwater monitoring, including water quality, is discussed in more detail in Section 4.4.

Following is the typical profile described in bore logs for wells installed within filled areas of the Site (DDW13, G30, G37, G38, NODGW01, NODGW02, NODGW03, NODGW06, GA1 to GA8, GA10, GW1, GW2 and GW3):

- Sand cap: poorly sorted sands, brown, fine to medium grained
- Fill material: including wood, plastic, brick, metal, concrete, limestone, plant material, rubber, glass, Styrofoam
- Native Sand: poorly sorted sands, grey and brown, fine to medium grained

4.3.3 Acid sulfate soils

A review of the Department of Water and Environment Regulation Acid Sulfate Soils (ASS) risk mapping (DWER, 2021a) identifies the Study Area as having no known risk of ASS occurring within 3 m of the surface.

4.3.4 Geotechnical and preliminary site investigations – site preparation

A preliminary site investigation was undertaken by Enpoint for the site in December 2020 and is provided in Appendix 3. Additionally, a geotechnical summary report was prepared for the site by CMW Geosciences in March 2018 and is provided in Appendix 4.

The following text is extracted from the Preliminary site investigation report and summarises how it is intended to finalise processing of remaining stockpiles and prepare the site for development.

Further waste processing

Although waste has not been accepted onto the Site since ceasing operations in November 2017, Cell 6 Pty Ltd have recently renewed their EP Act Licence (Category 13 and 62) to allow processing of the remaining stockpiles on-Site as outlined in Table 3 prior to commencement of bulk earthworks to prepare the Site for development.

Table 3: Waste Processing – Current

<table>
<tr><th>Stockpile</th><th>Material</th><th>Process description</th></tr>
<tr><td>F</td><td>Wood</td><td>The wood in Stockpile F is currently undergoing mulching on-site with a low-speed grinder. Following this first stage of mulching, it is understood the mulched wood will then be transported off-Site for further mulching using a high-speed grinder to prepare it for use on road reserves of the finished Site.</td></tr>
<tr><td>G</td><td>Plastics</td><td>The plastics in Stockpile G have no use on Site and require loading and transport off-Site for disposal.</td></tr>
<tr><td>E</td><td>Unprocessed Waste</td><td rowspan="2">Stockpiles E and C require processing in order to remove the residual lightweight materials (wood and plastics) and to crush the concrete for addition to Stockpiles B and D and screening and sampling of the fines for addition to Stockpile A. This processed material will then be used on-site to make up the proposed finished site levels as outlined below.</td></tr>
<tr><td>C</td><td>Concrete</td></tr>
</table>

Bulk earthworks in preparation for site development

Appendix 5 provides a summary of the proposed earthworks methodology for the site which will be followed to prepare the site for the proposed development following further processing as outlined in Table 3, the key elements of the earthworks process are:

- Areas above -2m FSL (Area A – Figure 8) to be cut to provide a working base. Any suitable structural fill won from the excavation can be stockpiled and reused as fill in the lower portions of the site (Area B – Figure 8).
- Base of stripped or excavated surfaces to be compacted in situ using an appropriate impact compaction methodology (i.e. HEIDYC or similar).
- Areas below -2m FSL (Area B – Figure 8) to be filled in layers (no more than 400mm) and compacted, in accordance with AS3798, to -2m below (FSL) with non-reactive granular fill including materials cut from site and blended to meet structural requirements.
- A stiffened raft is to be constructed on the compacted base (i.e. at approximately 2.0m below finished level), comprising a layer of non-woven geotextile underlying 0.15m compacted crushed stone layer, a layer of geo-grid and a second 0.15m layer of compacted crushed stone.
- Settlement monitoring plates be installed on top of the completed stiffened raft.

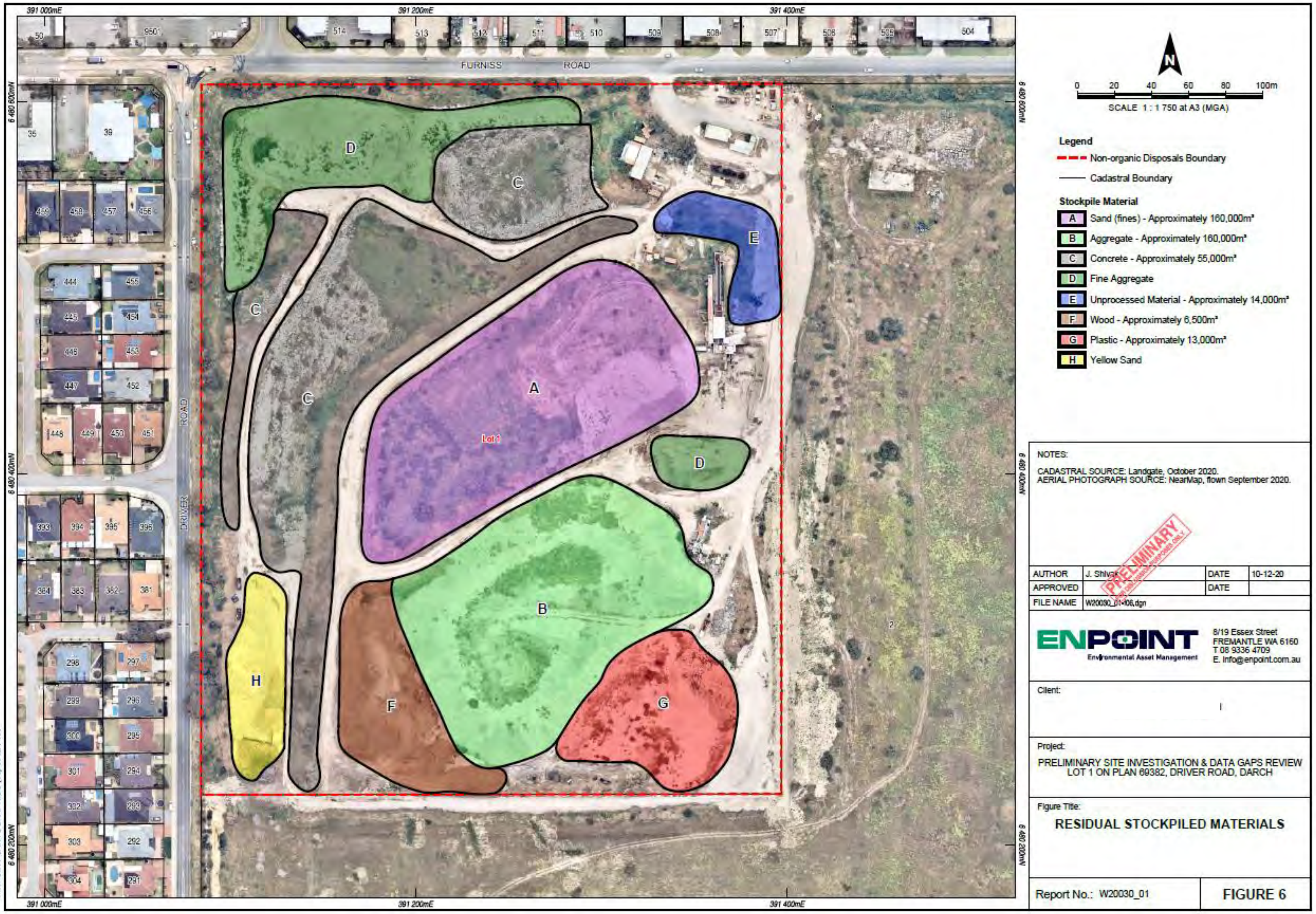


Figure 8: Residual stockpiled materials (Enpoint, 2020)

4.4 Groundwater resources

Determining the groundwater depth, quality and availability are crucial for forming total cycle water management strategies. These components are outlined below.

4.4.1 Public Drinking Water Source Area

There are no Public Drinking Water Source Areas within the Study Area.

4.4.2 Groundwater allocation

The Study Area is located within the Whitfords Subarea and Perth North Confined Subarea. The Department of Water and Environmental Regulation's Water Register (DWER, 2021b) shows that there is no groundwater available for allocation from the Superficial Aquifer within the Study Area. There are currently no existing groundwater Licences within the Study Area. An Aquifer Allocation Report was requested from DWER in March 2021 and the details are shown in Table 4.

The Study Area is adjacent to a larger area of development which includes a substantial area of district Public Open Space which will be irrigated with groundwater. In recognition of this, and to maximise the sustainability of landscaping throughout this development. Streetscapes and vegetated drainage areas will be planted with waterwise native vegetation with no requirement for ongoing irrigation.

Table 4: Groundwater resource allocation availability (as of March 2021)

Management area	Sub area	Resource	Allocation limit	Allocated volume	Remaining volume
Perth	Whitfords	Perth, Whitfords, Perth - Superficial Swan	7,240,000 kL	8,979,313 kL	0 kL
Perth	Perth North Confined	Perth, Perth North Confined, Perth - Yarragadee North.	70,000 kL	80,000 kL	0 kL
Perth	Perth North Confined	Perth, Perth North Confined, Perth - Leederville.	1,364,220 kL	1,482,720 kL	0 kL

4.4.3 Groundwater levels

The Perth Groundwater Atlas (DWER, 2021c) indicates that groundwater flows in a south-west direction through the site, with maximum groundwater levels varying between 38 mAHD and 41 mAHD. Minimum groundwater levels across the catchment vary between 38 mAHD and 39 mAHD. Gnangara/Jandakot - Modelled Maximum groundwater levels indicate that depth to groundwater varies between 0.02 m and 16.73 m across the site (PRAMS. 2019).

There is a DWER monitoring bore MM14 (Ref 61610714), approximately 2 km west of the Study Area where the long-term trend in groundwater levels can be observed (see Figure 9). There is a clear step up in groundwater levels from approximately 2008 onwards. This is associated with a change in land use, particularly in the Madeley and Darch areas, from irrigated market gardens to residential development.

A review of aerial photography in 2003 and 2012 indicates that residential areas (inclusive of Public Open Space) in these two suburbs (outside of the Study Area) increased from 28% to 97%. From 2012 to 2021 there has been minimal increase in residential areas in these suburbs and therefore further significant increases in groundwater are considered unlikely. Development of the Study Area will have limited impact on regional groundwater levels as all rainfall on the site is currently infiltrated, with minimal irrigation, unlike previous surrounding market garden uses.

Following the previously noted step change in groundwater levels, higher groundwater levels were observed in 2008, 2013, 2017 and 2018 and correlate with years of higher annual rainfall. The long-term Maximum Groundwater Level (MGL) (37.21 mAHD) was observed in October 2018.

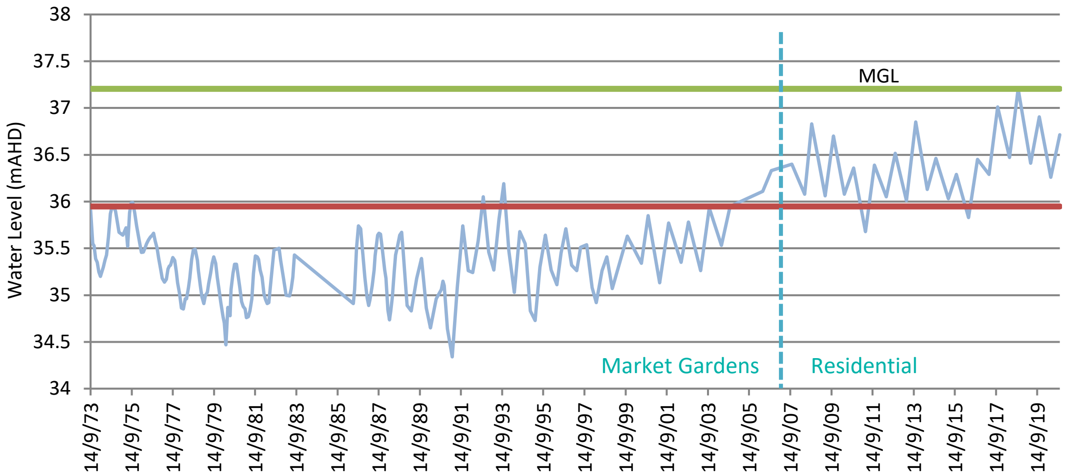


Figure 9: Groundwater levels in DWER Bore MM14

Groundwater level monitoring has been undertaken by Enpoint at the Site on a biannual basis for compliance purposes under the Cell 6 Pty Ltd EP Act License from 2011 to 2017. An additional three (3) groundwater monitoring wells (GW1 to GW3) were also installed at the Site in June 2020 and a groundwater monitoring event was conducted in July 2020. The locations of monitoring bores are presented in Figure 10 and observed water levels are shown in Table 5.

An analysis of the site groundwater monitoring records in comparison to data from the long-term DWER bore indicates that a correction factor of 560mm should be applied to levels recorded in August 2017 to estimate the probable MGL across the site. This correction factor is applied to provide the estimated long-term MGL's shown in Table 5 and presented in Figure 10.

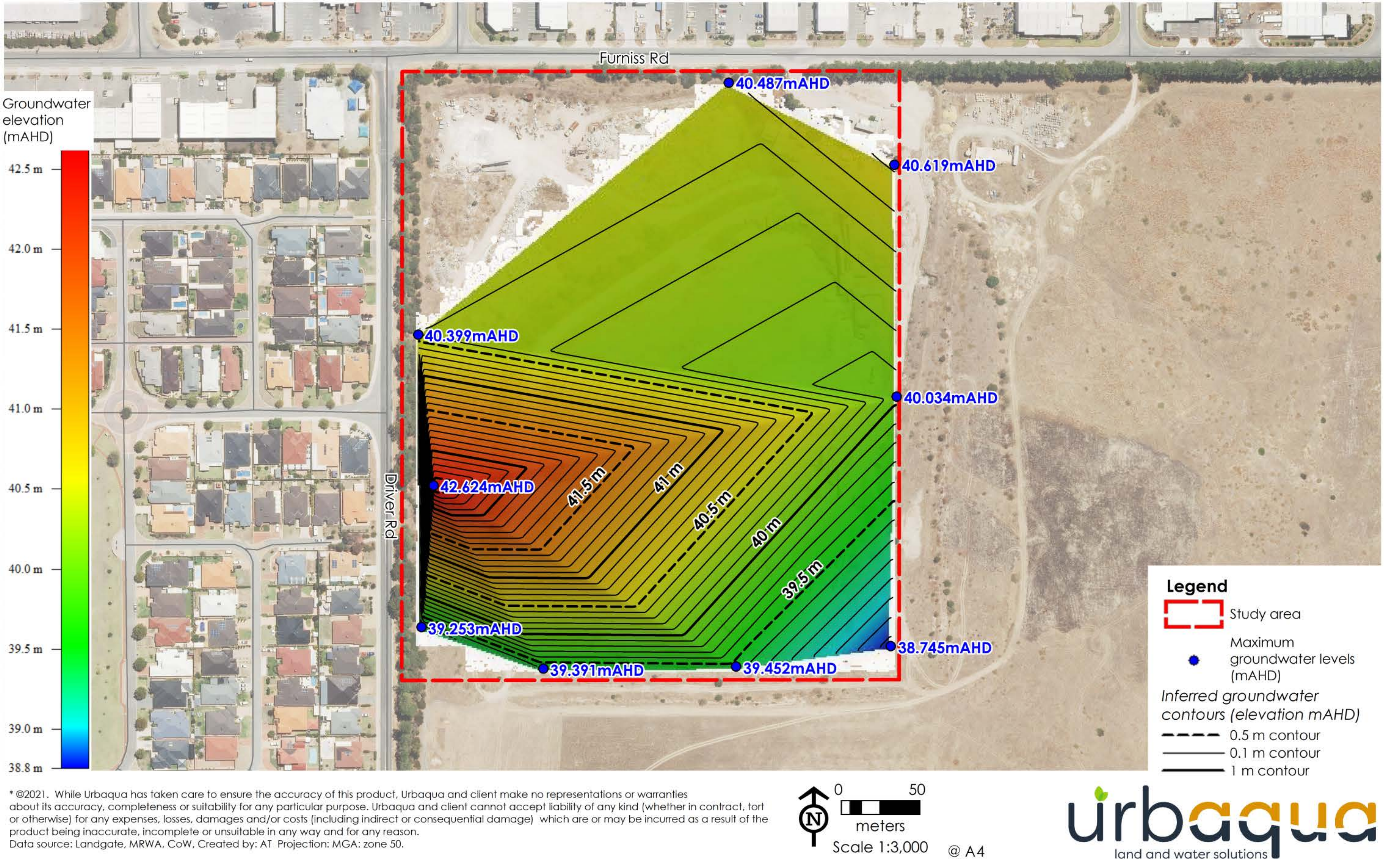
4.4.4 Groundwater Quality

As part of the environmental investigations, groundwater quality monitoring was also undertaken by Enpoint. Observed groundwater analytical results are presented in Table 6 and summarised below:

- pH conditions in most sites are neutral and within the ADWG (aesthetic) range.
- Exceedances of Ammonia, Total Dissolved Solids, and TDS were detected in most wells.
- Elevated concentrations of arsenic are present along the eastern (up-gradient) boundary of the Site.

- The elevated benzo(a)pyrene concentrations detected at the western Site boundary are likely a result of past activities on-Site and/or off-Site (burning of wood) and/or leaching through bituminous material backfilled at the Site/off-Site.
- The significantly elevated concentration of manganese in up-gradient wells NODGW01 and NODGW06 suggests that it is likely that there is an off-Site source of manganese up-gradient of the Site.
- For Hardness as $CaCO_3$, exceedances detected in all wells except for the up-gradient northern boundary well.

Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 10 - Groundwater monitoring locations and long-term MGL



Data source: Landgate, MRWA, CoW, Created by: AT Projection: MGA: zone 50.

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Table 5: Recorded groundwater levels (Enpoint, 2020)

Monitoring bore	Feb 2012 (mAHD)	Aug 2012 (mAHD)	Aug 2013 (mAHD)	Apr 2014 (mAHD)	Aug 2014 (mAHD)	Feb 2015 (mAHD)	Aug 2015 (mAHD)	Feb 2016 (mAHD)	Aug 2016 (mAHD)	Feb 2017 (mAHD)	Aug 2017 (mAHD)	Estimated long-term MGL (mAHD)
NODGW01	38.733	39.018	38.725	-	-	-	-	38.358	38.763	38.948	39.474	40.034
NODGW02	37.961	37.961	37.211	-	-	-	-	37.832	38.162	37.604	38.185	38.745
NODGW03	37.683	-	-	-	-	-	-	37.739	38.104	38.304	38.892	39.452
NODGW04	37.829	-	-	-	-	-	-	37.665	38.047	38.250	38.831	39.391
NODGW05	38.923	39.108	39.142	39.349	39.349	39.064	39.243	38.818	39.138	39.415	39.927	40.487
NODGW06	39.060	39.259	39.312	39.505	39.505	39.230	39.391	38.987	39.352	39.576	40.059	40.619
DDW13	37.998	38.216	38.351	38.394	37.750	38.053	37.954	40.685	-	41.481	42.064	42.624
DDW28	-	37.723	37.801	37.915	37.271	37.559	-	-	-	38.110	38.693	39.253
DDW29	38.339	38.527	38.584	38.747	38.105	38.438	38.569	38.695	39.054	39.280	39.839	40.399

Table 6: Summary of Groundwater Analytical Results (Enpoint, 2020)

CoPC	Monitoring Well ID											
	BG	Up-gradient			Down-gradient					On-Site		
	NODGW05	NODGW01	NODGW02	NODGW06	NODGW03	NODGW04	DDW13	DDW28	DDW29	GW1	GW2	GW3
pH										NA	NA	NA
Ammonia as N												
Arsenic		✓			✓					✓	✓	
Benzo(a)pyrene		✓	✓					✓				
Total Hardness										NA	NA	NA
Iron												
Manganese												
Sodium										NA	NA	NA
Sulphate		✓	✓		✓			✓		NA	NA	NA
TDS										NA	NA	NA
PFOS	NA	NA	NA	NA	NA	NA	NA	NA	NA		✓	

**Notes:*
1. NA – Not analysed.
2. Green shading indicates concentration is above the Australian Drinking Water (health and aesthetic) Guidelines (ADWG) (aesthetic) assessment level.
3. ✓indicates concentration is above the ADWG (health) assessment level.
4. indicates concentration is above the Non-Potable Use Guidelines.

Overall, the preliminary site investigation found that, given that concentrations in the up-gradient wells have generally been detected at concentrations greater than those detected in the down-gradient wells, groundwater impacts detected on-Site are likely a result of impacted groundwater migrating onto the Site originating from the former landfill on Lot 2 (Enpoint, 2020).

Groundwater monitoring at the Site indicates that methane has partitioned into groundwater, but at concentrations much lower than 1.6 mg/L. Dissolved methane was observed in the up-gradient well NODGW05 during the August 2017 monitoring event at low concentrations which may be indicative of up-gradient background concentrations. The highest concentration of methane was observed in the perimeter well NODGW02 during the August 2017 monitoring event and may indicate an adjacent off-Site source of methane (Enpoint, 2020).

Further details are available in the *Preliminary Site Investigation and Data Gaps Review* (Enpoint, 2020).

4.5 Surface water resources

Existing surface water features within and adjacent to the Study Area may require protection from redevelopment or provide opportunities for modification to deliver the community an asset with social and ecological benefits. The surface water features are outlined below.

4.5.1 Natural water resources

Within the Study Area there are no natural water bodies owing to the relatively steep slopes, sandy soils and clearance to groundwater. There is no existing drainage infrastructure within the Study Area.

4.5.2 Surrounding Drainage

The surrounding residential developments feature formal pit and pipe drainage systems discharging to sumps and basins throughout the suburb. One existing sump is near the Study Area across Driver Road (Carlow Way), as shown in Figure 11. The Carlow Way sump is approximately 6 m deep.

An investigation undertaken as part of the ***Lot 2 Driver Road LWMS*** (Urbaqua, 2021) identified that there may be available capacity in the Carlow Way sump that could be utilised by future development in Lot 1 Driver Rd.

4.5.3 Wetlands

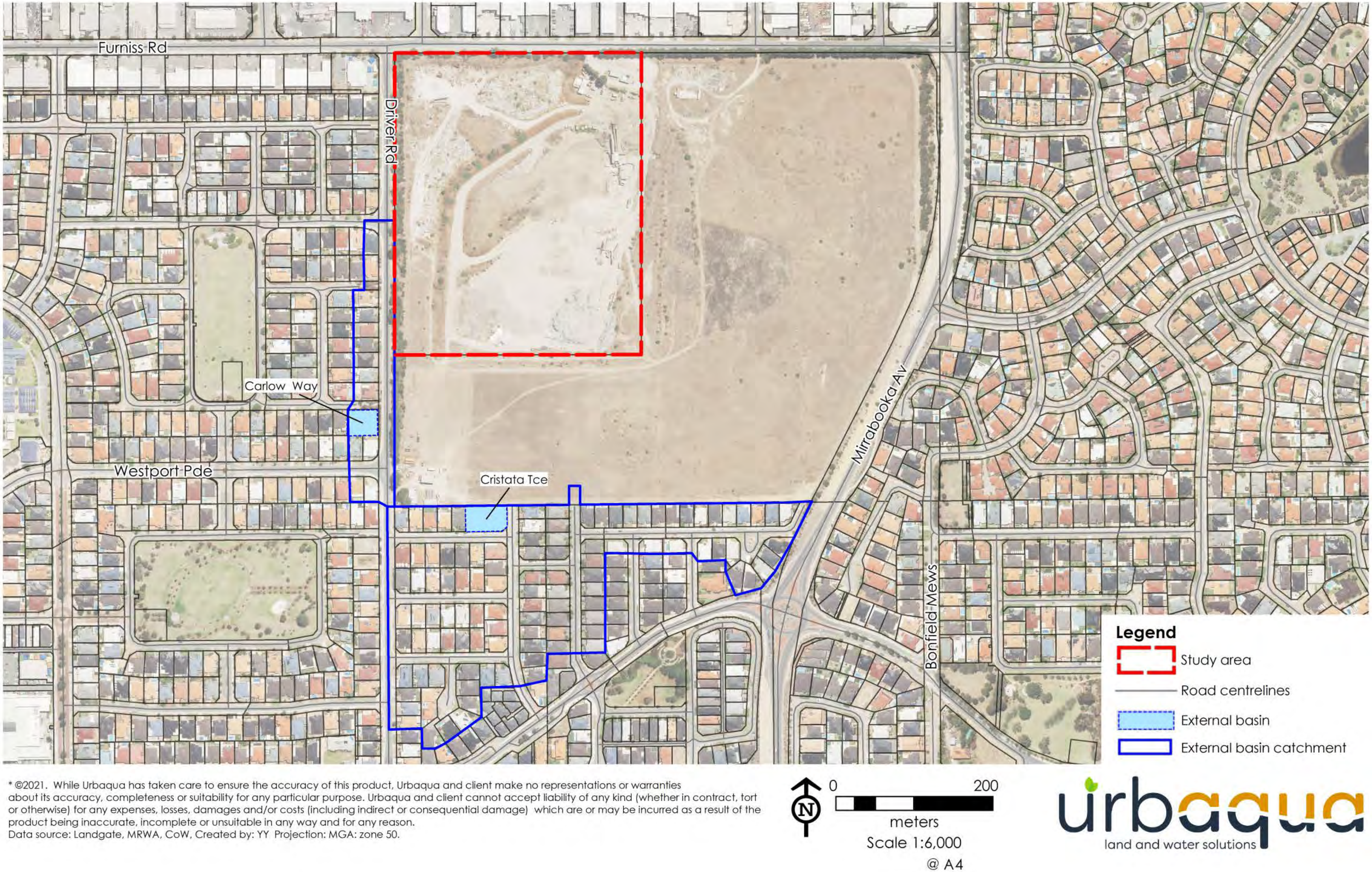
There are no existing wetland areas mapped within the Study Area reflecting the existing surrounding development, sandy soils, slopes and clearance to groundwater. The nearest mapped wetland (UID: 8136) is mapped as a Resource Enhancement (RE) (DBCA, 2021), however this is up-gradient of the Study Area (Figure 12).

4.6 Environmental and social

As the Study Area was previously operated as a Class I landfill, there are minimal environmental values. Vegetation is generally limited to verges and there are no Bushforever sites located within the Study Area (Figure 12).

Landfill gas monitoring has been undertaken at the Site on a quarterly basis for compliance purposes under the Cell 6 Pty Ltd EP Act License from 2011 to 2017. An additional fourteen (14) landfill gas monitoring wells were also installed at the Site in June 2020 and four (4) landfill gas monitoring events were conducted between July and October 2020. The monitoring data conducted in 2017 and 2020 show that the calculated Gas Screening Value (GSV) indicate that the Site represents a 'very low risk'. During each of the monitoring events, with the exception of the 9/10/2020 monitoring event, there were methane and/or carbon dioxide concentrations above 1% and m5%, respectively (Endpoint, 2020).

Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 11 - Surface water features



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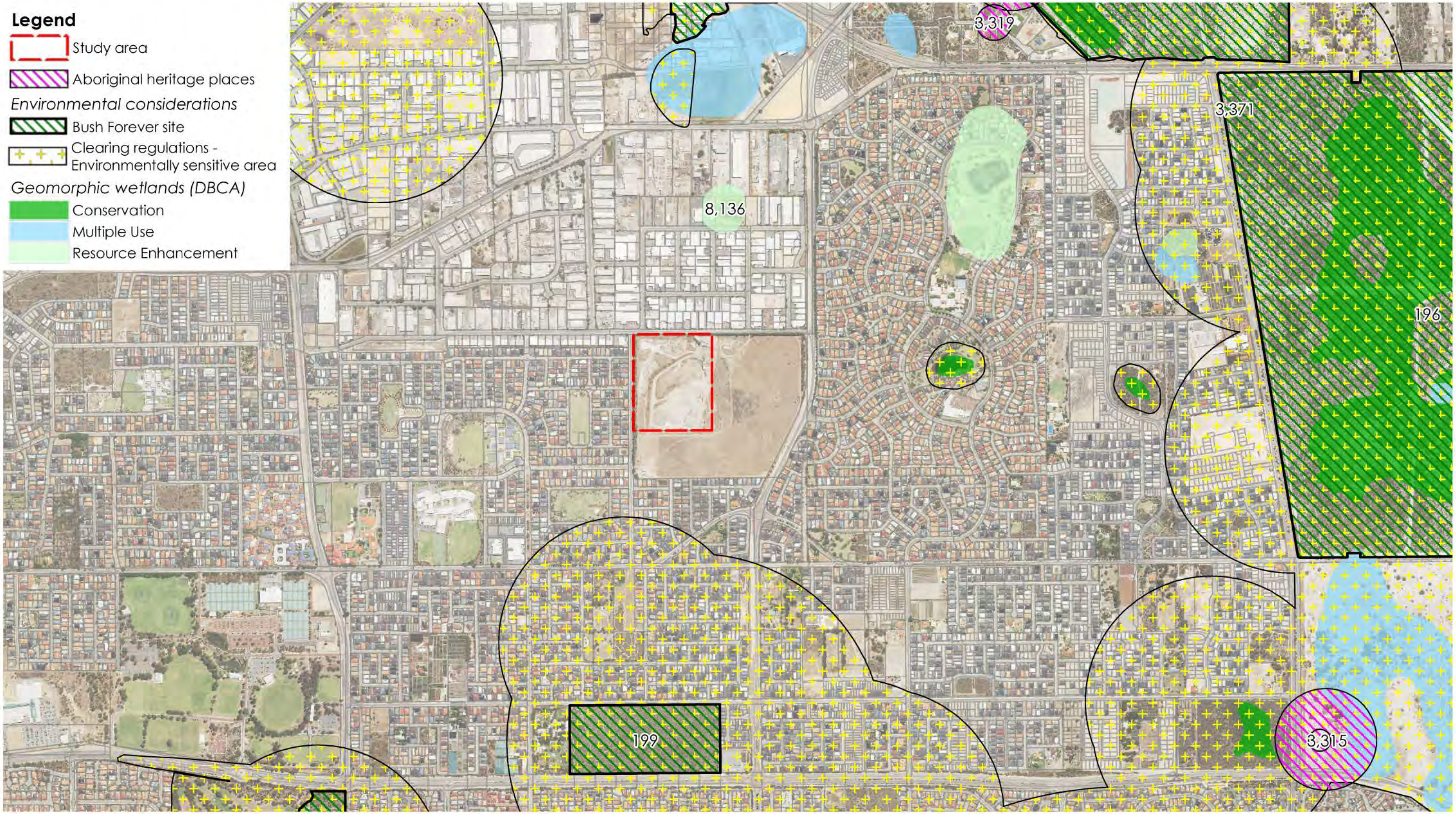
Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 12 - Environmental and heritage features



Data source: Landgate, MRWA, CoW, DPLH, DBCA, Noble Hodge, Created by: YY Projection: MGA: zone 50.

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4.7 Summary

Based on the review of geological, hydrological and environmental information for the Study Area, the key considerations for water management are as follows:

- There is no allocation available within the superficial aquifer.
- Existence of deep groundwater, sandy soils and high infiltration rates within the Study Area favour disposing of stormwater via infiltration.
- There are no existing surface water features or drainage infrastructure within the Study Area.
- Site works are required to finalise processing of remaining stockpiles and prepare the site for development.
- Groundwater and landfill gas monitoring onsite did not indicate any significant issues to prevent development.

5 WATER MANAGEMENT STRATEGY

Water management strategies for the Study Area have been prepared in accordance with the guiding documents, policies and strategies (Section1), the intended development concept (Section 2) and the site considerations (Section 4). Strategies for water sustainability, stormwater, groundwater, and water quality improvement are outlined in this Section.

5.1 Water sustainability initiatives

The key objectives for water sustainability are:

- Ensure the efficient use of all water resources in the redeveloped urban form and aim to achieve highest value use of fit-for-purpose water; and,
- Maintain opportunities for future generations by using water more efficiently.

5.1.1 Water supply

The Study Area is located in an area served by the Water Corporation's integrated water supply scheme. All dwellings will be connected reticulated drinking water distribution network.

Landscaping throughout the development including streetscapes and vegetated drainage areas is proposed to be waterwise with no requirement for ongoing irrigation.

5.1.2 Wastewater treatment and disposal

The Study Area is located in an area served by the Water Corporation's integrated sewerage scheme and will be connected to a reticulated sewerage network.

5.1.3 Water conservation and efficiency measures

To reduce the consumption of scheme water newly constructed houses will be recommended to meet the Water Corporation's Waterwise homes and gardens criteria. That is:

- All showerheads installed will be better than the minimum WELS 3 Star rating;
- All taps installed will be better than the minimum WELS 4 Star rating;
- All toilets will be duel flush and exceed the minimum WELS 4 Star rating; and
- All water using appliances installed are rated WELS 4 Star or above.

Landscaping of drainage areas will contribute to water efficiency by using waterwise native plantings with no ongoing need for irrigation.

5.2 Groundwater management

The key objectives for groundwater management are:

- Protecting infrastructure and assets from flooding and inundation by high seasonal groundwater levels, perching and/or soil moisture;
- Protecting groundwater dependent ecosystems from the impacts of urban runoff; and,
- Managing and minimising changes in groundwater levels and groundwater quality following redevelopment.

The following planning measures are adopted to achieve the above objectives:

- Ensure infiltration of stormwater runoff, consistent with existing conditions; and,
- Use of bio-retention areas within raingardens, tree pits and swales to improve groundwater quality compared with the existing conditions.

Groundwater levels throughout the Study Area demonstrate that there is sufficient clearance to groundwater across the site, with a minimum clearance of 4 m, and the majority of the site with > 10 m of clearance. As discussed in Section 4.4.3, there has been a step up in groundwater levels in the region associated with residential development. No further increase is anticipated; however, a minor increase will have no impact on the clearance to groundwater for majority of the site.

5.3 Stormwater management

The key objectives for surface water management are:

- Protection of the receiving environments from the impacts of urban runoff; and,
- Protection of infrastructure and assets from flooding and inundation.

The following planning measures are adopted to achieve the above objectives:

- Residential, industrial or commercial premises in existing or proposed areas must have their floor levels elevated 300 mm above the 1% AEP flood level in the local drainage system and 500 mm above the 1% AEP flood level in basins/sumps (where there is no overflow relief) (DWER, 2017);
- Runoff from up to the 20% AEP (approx. 5 yr ARI) event in residential lots are to be managed in accordance with the serviceability requirements of the *Decision Process for Stormwater Management in WA* (DWER, 2017) minor/major system;
- The design of the redeveloped urban areas should incorporate current best practice in water-sensitive urban design to mitigate the potential impacts on regional water quantity and quality from redevelopment and the legacy conditions within the catchment;
- Manage the first 15mm of rainfall through retention/detention and treatment within the Study Area boundaries;
- Modification of the existing local drainage systems to suit the urban form; and,
- Internal management of drainage up to the 1% AEP event within the Business precinct (Figure 3).

Post development catchments are shown in Figure 14, with a breakdown in Table 7 below.

Table 7: Catchment Area Breakdown

Land use	Catchment 3a	Catchment 4	Business precinct
R20/R30 Lots	1.66 ha	5.98 ha	
R60 Lots	-	-	
Road reserve	0.59 ha	1.78 ha	
Drainage	0.098 ha	0.20 ha	
Light industry			1.6 ha
Total Area	**2.35 ha**	**7.96 ha**	**1.6 ha**

5.3.1 Small event management

The development will retain the first 15 mm of rainfall on-site within lots and streets. Residential lots will be required to install soakwells with grated lids within the front setback, which will be graded to allow for runoff into the street when the capacity of soakwells is exceeded.

As discussed in Section 4.3, engineering and geotechnical works are required to ensure the site is suitable for development by preventing irregular creep settlement. It is recognised that the use of geotextile fabric in site preparation works presents a potential limitation for infiltration across the site, as the geo-fabric can potentially become clogged. However, the proposed strategy places the geotextile fabric approximately 2m below FSL and is therefore not expected to affect infiltration rates from soakwells placed within residential lots.

Road reserves will be required to provide for on-site retention within roadside tree-pits (see Figure 13) and/or bio-retention areas within the POS. These systems are expected to provide for treatment and infiltration of the first 15 mm of rainfall. Planting of these raingardens will meet the deep sandy soil profiles, noting that ongoing irrigation is unlikely. Preferably trees will be installed to prevent urban heating impacts.

Figure 13: Typical roadside tree pit or raingarden

The retention and infiltration of runoff close to source through the various systems is supported by the existence of sandy soil and clearance to groundwater within the Study Area. Locations for small event management outside of the POS will be determined in the UWMP, depending on final road designs.

5.3.2 Minor event management

Runoff from up to the 20% AEP (~5yr ARI) event which is in excess of the capacity of on-site retention systems will be conveyed through a combination of piped drainage and swales into POS and drainage areas. Surface conveyance will be used wherever possible, with piped drains used only where swales cannot be reasonably accommodated in order to ensure there is no flooding on the road surface. This will include the utilisation of flush kerbing or broken kerbing where practical.

The use of soakage pits through any piped drainage system is recommended to further improve infiltration through the site.

5.3.3 *Major event management*

Major flood runoff (1% AEP) will be conveyed via overland flow within the Study Area prior to discharge to drainage areas throughout the development. Catchments for these events are provided in Figure 14, with a description of each catchment provided below. In order to size the various components of the system, XP-Storm modelling was completed.

The XP-Storm model was developed to assess catchments flows and storages for the 20% and 1% AEPs (approximately 5- and 100-years ARI) storm events based on temporal patterns and rainfall depths provided for the different storm events (BoM, 2019). The storm durations assessed for 20% and 1% AEPs was 10, 15 and 30 minutes and 1, 2, 3, 6, 12, 24 and 48 hours, including 10 temporal patterns for each storm event. The Critical duration for the sites was identified as 3 hours.

Infiltration through the system was assumed to be 5 m/day consistent with infiltration rates applied for the adjacent site (Lot 2 Driver Road). This rate reflects the uncontrolled fill which will be compacted. For raingardens, a higher rate of 8 m/day is assumed as these will feature more fill material beneath them.

Minimum habitable floor levels for lots in all catchments should be at least 300 mm above the top water level (typically top of kerb height) at any locations where stormwater is stored within the site (raingardens and swales) and at least 500 mm above the 1% AEP top water level in respective sumps and basins.

Modelling results and the size of the respective stormwater systems are provided in Table 8 below and presented in Figure 14.

Catchment 3a

Stormwater in Catchment 3 will be managed through a shared drainage basin in POS to the North-East of the site. The basin is shared as development of Lot 2 Driver Rd will utilise this low point for drainage and an integrated design is considered a better long-term outcome than two separate (and adjacent) basins (Urbaqua 2021). The proposed basin features 1:8 side slopes and a maximum depth of 1.0 m.

Catchment 4

Catchment 4 is the remainder of Lot 1. Stormwater in this catchment will be managed through drainage basin in POS to the south of the site. The proposed basin features 1:8 side slopes and a maximum depth of 1.0 m. Any overflows from this basin in major flood events will be directed to the sump on Carlow Way where there is sufficient capacity.

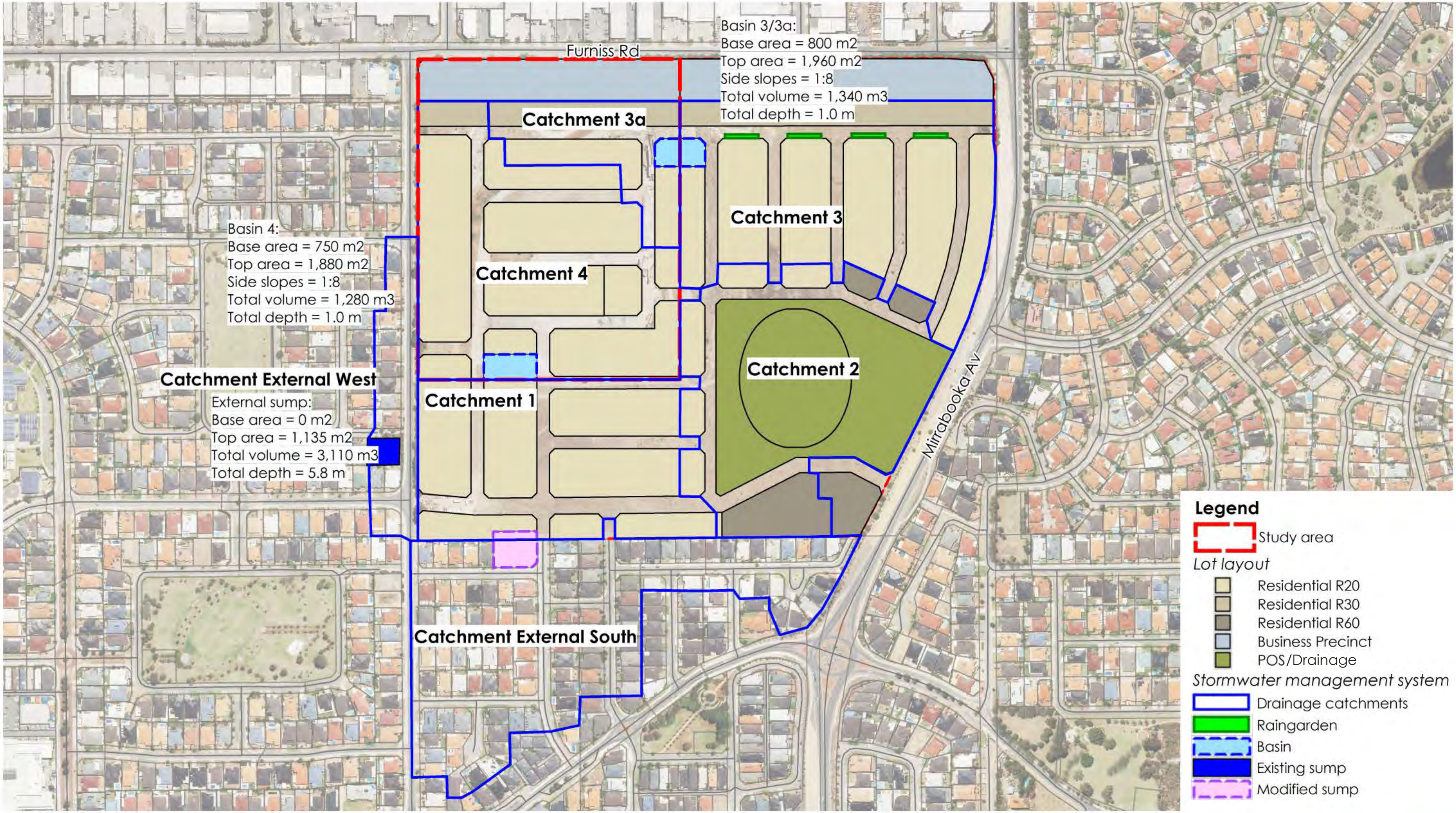
Business Precinct

Stormwater from the Business Precinct will be managed internally within respective lots. This includes retention of up to the 1% AEP event through either underground storage, above-ground storage (basin or swales) or a combination of both.

Table 8: 20% and 1% AEP Modelling Results

	3a	4
Side Slopes	1:8	1:8
Base Elevation	50.1 mAHD	45.5 mAHD
Depth to groundwater	>5m	~4.5m
Base Area	50 m^2	750 m^2
Top Area	1,567 m^2	1,880 m^2
Total Volume	1,260 m^3	1,270 m^3
Total Depth	1.2 m	1 m
20% AEP Event Depth	0.40 m	0.37 m
20% AEP Event Area	557 m^2	1,100 m^2
20% AEP Event Volume	200 m^3	340 m^3
1% AEP Event Depth	1.2 m	1.51 m
1% AEP Event Area	1,567 m^2	2,650 m^2
1% AEP Event Volume	1260 m^3	2,425 m^3
Critical Duration	3 hr	6 hr
Infiltration Rate	5 m/day	
Notes	Tree-pits or small raingardens throughout the catchment (in the Study Area)	

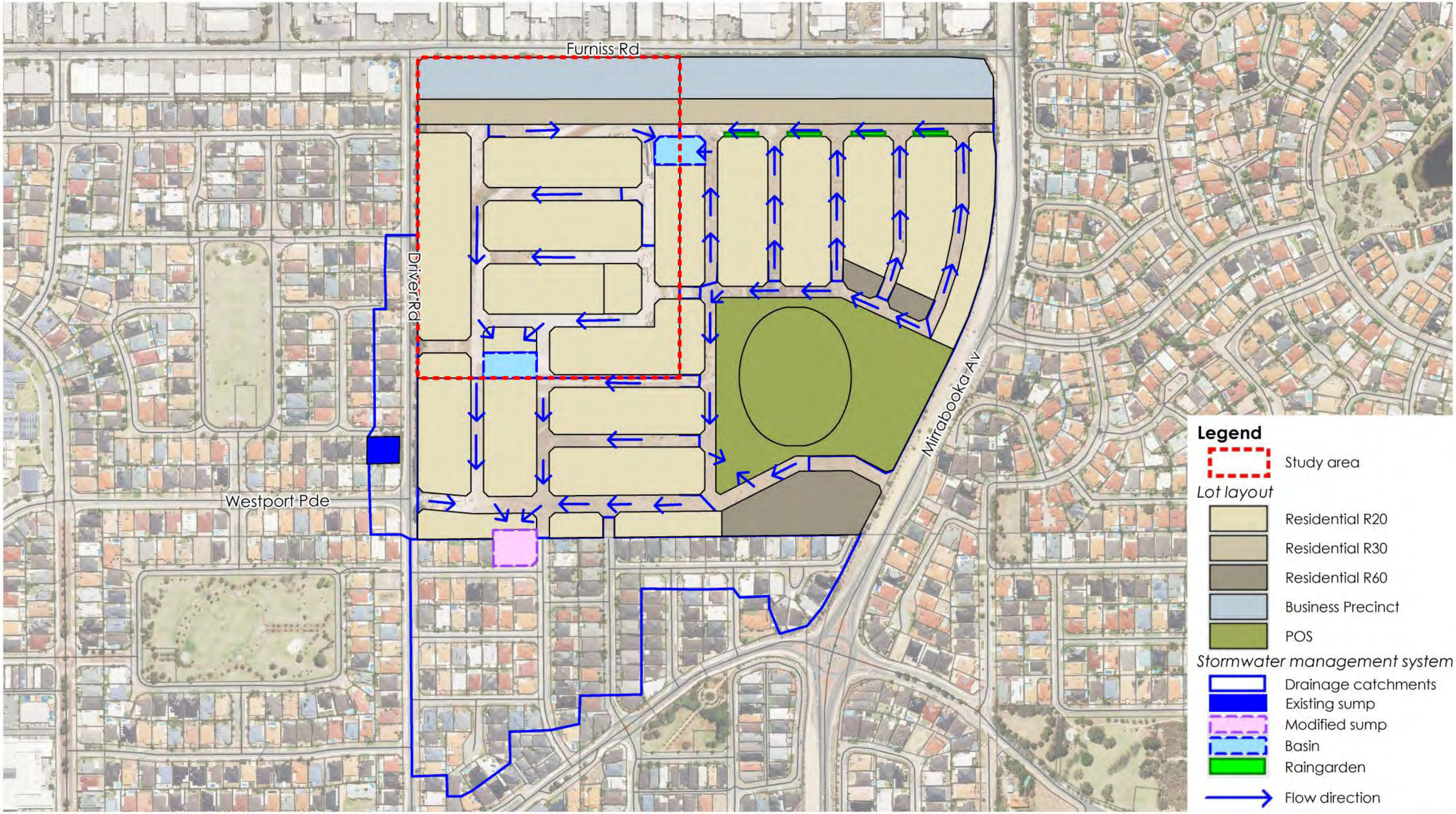
Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 14 - Stormwater management system



Data source: Landgate, MRWA, CoW, Noble Hodge, Created by: YY Projection: MGA: zone 50.

urbaqua
land and water solutions

Noble Hodge - Lot 1 Driver Road, Darch Local Water Management Strategy
Figure 15 - Stormwater event plan



Data source: Landgate, MRWA, CoW, Noble Hodge, Created by: YY Projection: MGA: zone 50.

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5.4 Water quality management

Site specific targets have been proposed for estuarine catchments of the Swan Coastal Plain as a part of background work undertaken by the Department of Water and Environmental Regulation during the development of the UNDO water quality modelling tool. The targets were developed based on consideration of the sensitivity of the receiving water body and the proximity of the development site. Applying this approach, the Study Area would lie outside the 'proximity zones' of estuarine waters (>1000 m) so that the following targets could be applied:

- 3.6 kg/ hectare / year of Nitrogen
- 0.2 kg/ hectare / year of Phosphorous

UNDO (Urban Nutrient Decision Outcomes) is a simple empirical decision support model with a flexible framework that evaluates nutrient reduction decisions for new urban developments on the Swan Coastal Plain. It has been developed by the Department of Water and Environment Regulation to provide urban development proponents with an easy to use tool for assessment by local and state government authorities.

An UNDO model has been developed for the Study Area and was run for the proposed redevelopment scenarios. The Study Area is assumed to be located within the Spearwood dune with over 4 m clearance to groundwater.

Results of UNDO modelling, in the form of a report which is generated by the software containing details of all assumptions and inputs, are provided in Appendix 6.

The outcomes of UNDO modelling indicate that on-site retention of frequent rainfall events in soakwells on lots and vegetated infiltration basins will provide discharge loads of:

- 3.57 kg/ hectare / year of total nitrogen
- 0.13 kg/ hectare / year of total phosphorous

These loads are well within the recommended targets for developments within the Swan Coastal Plain as discussed above.

5.5 Management of disease vectors and nuisance insects

The construction of above ground water quality treatment systems (raingardens and roadside swales) is proposed within the Study Area. These systems will drain by infiltration through sandy soil with relatively high infiltration rate which minimise standing water times.

Physical, chemical and biological control methods can be used to manage mosquito populations. Methods which may to be employed (and their order of priority) include:

- Improving water quality, minimising nutrient loads and thereby reducing potential for algal blooms and fish kills; and,
- Should Mosquitos and Chironomid Midges become a nuisance, pesticides (larvicides and/or adulticides) will be used as required to kill mosquito larvae in breeding sites.

6 IMPLEMENTATION

The success of the water management strategies outlined in this document depends on their implementation through further planning, detailed design, construction and maintenance.

6.1 Urban Water Management Plans

Urban Water Management Plans (UWMPs) are the final water management documents within the state government planning framework outlined in Section 1.1. These documents are prepared as a condition of the subdivision (in support of local development plans) to demonstrate that designs achieve the objectives, strategies and design criteria outlined in this LWMS.

The UWMP will be prepared in consultation with the City of Wanneroo and be based on local site investigations appropriate to the proposal and level of risk to water resources. The UWMP should be consistent with the requirements of the DWER's *Urban water management plans: Guidelines for preparing plans and for complying with subdivision conditions* (DoW, 2008b).

Specifically, the UWMP should include detailed engineering and landscaping designs and design of bio-retention systems and non-structural controls measures to manage impacts from construction.

6.2 Monitoring

Pre and post-development monitoring is discussed below.

6.2.1 Pre-development monitoring

It is considered that there is no value in additional groundwater level monitoring prior to construction. Monitoring data is collected as part of the contamination investigation is considered sufficient to characterise the groundwater characteristics.

6.2.2 Post-development monitoring

Similarly owing to the depth to groundwater pre- and post-development, groundwater monitoring following development is not considered necessary. As demonstrated above, water quality treatment will occur throughout the development in the form or raingardens and swales.

Previous land uses pose a more significant risk to groundwater quality and this will be monitored as per the contamination requirements outside of the BUWM process.

6.3 Construction

Construction activities have the potential to directly and indirectly impact local water resources and water management measures are required.

6.3.1 Licencing

Water will be required for construction activities such as dust suppression. Water for construction purposes could be sourced from groundwater allocation sought in Section 5.1.1

6.3.2 Construction Management

To ensure downstream waterways are protected, developers, builders and landscapers must implement best management practices to control erosion and sedimentation. Contractors and staff should be notified of specific construction management requirements including appropriate disposal of waste material, erosion control and dust suppression.

6.4 Roles and responsibilities

Key tasks, roles and responsibilities relating to delivery of urban water management objectives are outlined in Table 9.

Table 9: Summary of roles and responsibilities

Task	Responsibility	Planning stage
Preparation of the UWMP	Landowner/ developer	Subdivision (UWMP)
Assessment / Approval of the UWMP	City of Wanneroo / DWER	Subdivision (UWMP)
Potable water supply planning and connection to main distribution network	Water Corporation	Subdivision (UWMP)
Design of water distribution networks	Landowner/ developer	Subdivision (UWMP)
Water and wastewater planning and connection to main distribution networks	Water Corporation	Subdivision (UWMP)
Design of wastewater reticulation networks	Landowner/ developer	Subdivision (UWMP)
Design of drainage networks including design of water quality treatment areas	Landowner/ developer	Subdivision (UWMP)
Development of landscaping plan incorporating stormwater management strategies	Landowner/ developer	Subdivision (UWMP)
Confirmation of ongoing management and maintenance requirements and agreement with the City for handover of responsibilities	Landowner/ developer/ City of Wanneroo	Subdivision (UWMP)

7 REFERENCES

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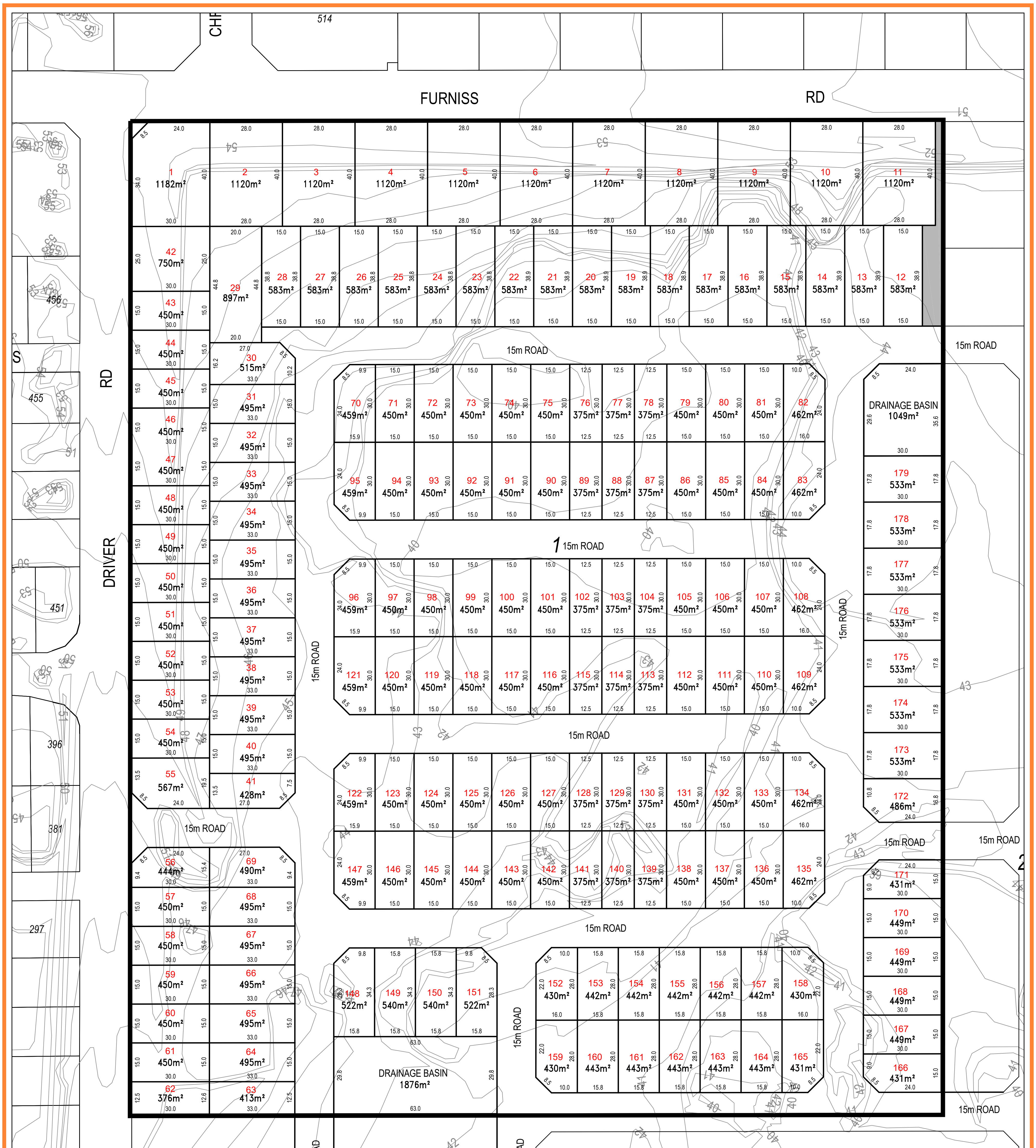
APPENDIX 1 – LWMS CHECKLIST

Local water management strategy Item	Deliverable	☑	Comments
Executive summary			
Summary of the development design strategy, outlining how the design objectives are proposed to be met	Table 1: Design elements & requirements for BMPs and critical control points	☑	
Introduction			
Total water cycle management – principles & objectives Planning background Previous studies		☑	
Proposed development			
Structure plan, zoning and land use. Key landscape features Previous land use	Site context plan Structure plan	☑ ☑	
Landscape – proposed POS areas, POS credits, water source, bore(s), lake details (if applicable)	Landscape Plan	☑	
Design criteria			
Agreed design objectives		☑	
Pre-development environment			
Existing information and more detailed assessments (monitoring). How do the site characteristics affect the design?		☑	
Site Conditions – existing topography/ contours, aerial photo underlay, major physical features	Site condition plan	☑	
Geotechnical – topography, soils including acid sulphate soils and infiltration capacity, test pit locations	Geotechnical plan	☑	
Environmental – areas of significant vegetation, wetlands and buffers, waterways and buffers, contaminated sites	Environmental Plan plus supporting data where appropriate	☑	
Surface Water – topography, 100 year floodways and flood fringe areas, water quality of flows entering and leaving (if applicable)	Surface Water Plan	☑	
Groundwater – topography, pre development groundwater levels and water quality, test bore locations	Groundwater Plan plus details of groundwater monitoring and testing	☑	
Water sustainability initiatives			
Water supply & efficiency measures – private and public open spaces		☑	
Fit-for-purpose strategy and agreed actions. If non-potable supply, support with water balance		☑	
Wastewater management		☑	
Stormwater management strategy			
Flood protection – peak flow rates, volumes and top water levels at control points,100 year flow paths and100 year detentions storage areas	major event Plan Long section of critical points	☑	
Manage serviceability – storage and retention required for the critical 5 year ARI storm events Minor roads should be passable in the 5 year ARI event	minor event Plan	☑	

Local water management strategy Item	Deliverable	☑	Comments
Protect ecology – detention areas for the 1 yr 1 hr ARI event, areas for water quality treatment and types of (including indicative locations for) agreed structural and non-structural best management practices and treatment trains. Protection of waterways, wetlands (and their buffers), remnant vegetation and ecological linkages	small event Plan Typical cross sections	☑	
Groundwater management strategy			
Post development groundwater levels and fill requirements (including existing and likely final surface levels), outlet controls, and any subsoils	Groundwater/subsoil Plan	☑	
Actions to address acid sulfate soils or contamination		☑	
The next stage – subdivision and urban water management plans			
Content and coverage of future urban water management plans to be completed at subdivision. Include areas where further investigations are required prior to detailed design.		☑	
Monitoring			
Recommended future monitoring plan including timing, frequency, locations and parameters, together with arrangements for ongoing actions		☑	
Implementation			
Developer commitments		☑	
Roles, responsibilities, funding for implementation		☑	
Review		☑	

APPENDIX 2 – CONCEPT PLAN



SUMMARY:

Business Lots

Total No. of Lots:	11
Minimum Lot Area:	1120m²
Maximum Lot Area:	1182m²
Average Lot Area:	1126m²

Residential Lots

Total No. of Lots:	168
Minimum Lot Area:	375m²
Maximum Lot Area:	897m²
Average Lot Area:	470m²

SUBDIVISION CONCEPT
LOT 1 (No. 115) FURNISS ROAD
DARCH

Urban Development Institute of Australia WESTERN AUSTRALIA

Planning Institute Australia

CPP CERTIFIED PRACTISING PLANNER

SCALE: 1:1500 @ A3
DATE: 30th APRIL 2021
FILE: 1201_30.04.2021.dwg
DRAW: - SB
CHECKED: -

e: admin@dynamicplanning.net.au
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DYNAMIC PLANNING AND DEVELOPMENTS

N W E S

APPENDIX 3 – PRELIMINARY SITE INVESTIGATION (ENPOINT 2020)

DECEMBER 2020

PRELIMINARY SITE INVESTIGATION AND DATA GAPS REVIEW

115 Furniss Road, Darch (Lot 1 on Plan 69382)

Prepared for Newsquare Nominees

18 December 2020
Our Ref. W20030_01 I Revision 0

ENPOINT
Environmental Asset Management

REVISION HISTORY AND DISTRIBUTION LIST

Revision No.	Issue Date	Status	Delivered	No. of Copies
A	28 November 2020	Draft for Client Comment	Alex Noble Newsquare Nominees	1 (Electronic)
0	10 December 2020	Final	Alex Noble Newsquare Nominees	1 (Electronic)
			Vanessa Bryant Accredited Contaminated Sites Auditor - Senversa	1 (Electronic)

APPROVALS

	Name	Signature	Title	Date
Author	Kapi Sikazwe		Environmental Scientist	18/12/2020
Checked	Jeff Shivak		Principal Environmental Scientist	18/12/2020
Approved	Jeff Shivak		Principal Environmental Scientist	18/12/2020

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APPENDICES

1 INTRODUCTION

1.1 Commissioning

Enpoint have been commisssioned by Newsquare Nominees (the Client) to conduct a Preliminary Site Investigation (PSI) and data gaps review for the site located at 115 Furniss road, Darch (Lot 1 on Plan 69382) (the Site, Figure 1). The Client is conducting the PSI on behalf of the owners of the Site (Cell 6 Pty Ltd), who are seeking to develop the Site for commercial and residential land use.

1.2 Background

The Site once formed part of a larger site formerly known as Lot 8005, an approximate 36.6 hectare (ha) parcel of land, which was subject to sand mining commencing in the 1960's until the late 1980's when filling with construction and demolition waste commenced and continued until 2009. Lot 8005 was subdivided in 2012 into Lot 1 (11.913ha), forming the ongoing active portion of the licensed waste processing facility (the Site as documented in this report) and Lot 2 (24.715ha), the previously filled portion of Lot 8005 (Figure 2).

The Site currently resides within the 'Landfill Precinct' as detailed on the Cell 6 Zoning Plan within the City of Wanneroo's *East Wanneroo Cell 6 Agreed Local Area Structure Plan (As Amended 2018) – Structure Plan No. 8* (Cell 6 Structure Plan) (CoW, 2018).

The Site is currently proposed to be rehablitated to facilitate future residential development with a strip of commercial development along the entire northern boundary of the Site fronting onto Furniss Road. The proposed land use is consistent with the Cell 6 Structure Plan (CoW, 2018), which shows proposed subdivisions and residential development as the end land use for the Site. Following rehabilitation, an application will be made to:

- remove the Landfill Precinct zoning; and
- develop the Site.

The above processes will trigger a Mandatory Audit (MA) under the *Contaminated Sites Act 2003* (the CS Act). A Mandatory Auditor's Report (MAR) will then need to be prepared following rehabilitation of the Site and considering all associated rehabilitation and validation documentation, make recommendation for re-classification of the Site under the CS Act, likely to be *Remediated for restricted use.*

To support the MA process, the rehabilitation will be conducted and validated under the CS Act and documented in accordance with the staged process outlined in the Department of Water and Environmental Regulation (DWER) guideline *Assessment and management of contaminated sites – Contaminated sites guidelines* (DER, 2014). This Preliminary Site Investigation (PSI) report is the first step in the DWER's *Assessment and management of contaminated sites – Contaminated sites guidelines* (DER, 2014).

A PSI was previously prepared for Lot 8005 (WSP, 2008). This PSI is intended to consider the information provided in WSP (2008) in the context of the current Lot 1 (the Site) and be updated to include the history of Site use between 2008 and present day.

1.3 Objectives

The objectives of the PSI are to:

- Provide an update on the Site history since it was last documented in 2008;
- Identify potential linkages between contaminant sources and receptors in the context of the proposed land use; and
- Identify data gaps with respect to the above in the context of the proposed land use.

The PSI forms the first stage of investigation as required under the MA process and will form the basis for the additional investigations and/or management to be completed in subsequent stages.

1.4 Scope of Work

Scopes of work will be carried out in accordance with DWER (2014), the PSI components are summarized in Table A:

Table A Scope of Work

PSI Components	Summary Contents
Desktop study	• Site identification and details • The environmental setting (surrounding land uses, geology and hydrogeology, surface waters, seasonal or climatic conditions or any other feature of the environment that may be relevant to the assessment) • Site history • Review of previous investigations (e.g. groundwater, landfill gas, stockpile sampling, etc.)
Site inspection	• Identify and document the current waste streams / products present at the Site • Confirm the layout of the Site • Describe the current condition of the Site • Validate plans or other information obtained during the desktop study • Allow photographs to be taken for future reference
Prelimininary conceptual site model (CSM)	• Summarises the sources, pathways and receptors relevant to the Site • Provides an exposure assessment based on the potentially complete pathways between the identified sources and receptors
Tier 1 Risk Assessment	• Outline the tier 1 assessment levels applicable to the Site under the proposed land use • Comparison of the existing investigation data against the nominated tier 1 assessment levels • Provide risk statements based on the current understanding of contamination at the Site based on the relevant exposure scenarios as outlined in the preliminary CSM
Data Gaps Review	• Identifies gaps, uncertainties or limitations of the current understanding of potential contamination at the Site that may pose a risk under the proposed land use

1.5 Site Classification

The Site classification details are provided as Table B.

Table B Site Classification

Aspect	Details
Reasons for Classification	The Site was classified based on information submitted to DWER by 14 September 2009. This was when the Site formed part of the larger Lot 8005 prior to being subdivided into Lot 1 (the Site, subject to investigation as part of this PSI) and Lot 2 (the adjacent and adjoining 24.715ha previously filled as Class 1 inert landfill facility) (Figure 2). The classification is based on soil, groundwater and landfill gas investigations conducted on Lot 2. Investigations prior to Lot 8005 being classified under the CS Act were focussed on Lot 2 only given that Lot 1 was an operational facility operating under an EP Act Licence at the time. The DWER Basic Summary of Records is included as Appendix A.
Date Site Classified under the Act	24 November 2009
Initial Classification of the Site	*Contaminated – restricted use*
Remediation Status	Remediation activities have not yet commenced at the Site.
Recommended Re-classification of Site	*Remediated for restricted use* (pending MAR and DWER approvals)
Contaminated Sites Auditor Details	Ms. Vanessa Bryant of Senversa, 17/140 St Georges Terrace, Perth WA 6000

2 SITE IDENTIFICATION

Table C provides relevant site identification and general information recommended by DER (2014).

Table C Site Identification Details

Parameter	Details
Common Name of Site	Non-Organic Disposals, 115 Furniss Road Darch WA 6065
Certificates of Title	Lot 1 on deposited Plan 69382 (Volume 2807 Folio 995) (Appendix B)
Location Map	Refer Figure 1
Site Coordinates	Refer Figure 3 for coordinates of the corners of the Site
Land Area	11.913ha (119,130 m^2)
Current Ownership	Cell 6 Pty Ltd
Current Operator	The Site operates under the name of 'Non-Organic Disposals' (NOD).
Current Site Plan	Refer Figure 4 for a Site plan showing all current site features and the current site layout
Current Use and Status	The Site is currently operating under an Environmental Protection Act (EP Act) Licence (Appendix C) in accordance with the following categories: • Category 13: Crushing of Building Material • Category 62: Solid Waste Depot The Site has not accepted any waste since November 2017 (refer notification to DWER from NOD dated 12/11/2017 provided as Appendix D). The Client recently renewed their EP Act Licence to facilitate the processing of remaining unprocessed material, wood and concrete as well as the off-site disposal of residual waste material (plastics). A Site plan showing the residual stockpiled materials at the Site is provided as Figure 6.
Local Government Authority	City of Wanneroo
Town Planning Scheme	District Planning Scheme No. 2
Current Zoning	Landfill Precinct As stated within the East Wanneroo Cell 6 Agreed Local Structure Plan, Structure Plan No. 8 as amended, 2018), prepared under the Provisions of the City of Wanneroo District Planning Scheme No. 2.: *Whilst it is generally intended that land uses within the Landfill Precinct will be guided by the Agreed Structure Plan, prior to the Council issuing a use or development approval, or subdivision support to an application within the Landfill Precinct, the Agreed Structure Plan will need to be modified to remove the Landfill Precinct zoning and replace it with an appropriate zoning eg, Residential Precinct. Such a modification will only be supported by Council if it can be clearly demonstrated that any geotechnical or other environmental clearances have been obtained to the satisfaction of Council, the WAPC or DEP as the case requires.* This PSI forms the first phase of the environmental investigation and rehabilitation of the Site to facilitate the removal of the Landfill Precinct zoning to replace it with the proposed zoning of Residential and Business Precinct. This document does not address any geotechnical aspects at the Site.
Proposed Zoning	Residential and Business Precinct
Proposed Future Use	The Client proposes to redevelop the Site as residential with a strip of commercial blocks (Business Precinct) along Furniss Road. A plan showing the proposed Site layout is presented as Figure 5.

3 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Table D provides a summary of the purpose, scopes of work and outcomes of previous environmental investigations undertaken at the Site or as they relate to the Site if conducted as part of a broader investigation of former Lot 8005.

Table D Summary of Previous Environmental Investigations

<table>
<tr><th>Report</th><th>Purpose</th><th>Scope of Work</th><th>Investigation Outcomes Relevant to the Site (Lot 1)</th><th>References</th></tr>
<tr><td>Preliminary Site Investigation[1]</td><td>To assess the contamination status of the broader Lot 8005 (Figure 2) as part of a due diligence investigation for a proposed purchase of the Site and proposed residential development by Cell 6 Pty Ltd.</td><td>The PSI was prepared for the Site and the adjacent Lot 2 prior to subdivision (former Lot 8005) and included an historical desktop review as well as asbestos, soil, groundwater and landfill gas investigations. Only one groundwater monitoring well (DDW13) was installed along the western boundary of the Site (refer Figure 7). A groundwater sample was also collected from the existing production bore (PB2) located along the southern boundary of the Site.</td><td>The outcomes relevant to Lot 1 (the Site) include the following:
Minor fill material consisting of ‘bricks and rock’ were encountered during drilling of DDW13 at depth ranging from 1.5m to 3m below ground level (mbgl).
DDW13 was installed to double as a landfill gas and groundwater monitoring well (i.e. screened interval from 2mbgl to 13mbgl (approximately 3m below the encountered groundwater level during drilling).
Three (3) landfill gas monitoring events conducted in July 2008 identified the following at DDW13:
Methane was not detected
Carbon dioxide concentrations ranging from 4.9%v/v to 7.9%v/v
Max flow rate of 0.1L/hr
Concentrations of contaminants of potential concern (CoPCs) were not identified at concentrations above the nominated assessment levels at the time with the exception of the following:
pH slightly below the drinking water (aesthetic) range in DDW13
Iron above the drinking water (aesthetic) assessment level in PB2
Chloride above the long-term irrigation water assessment level in DDW13
Hydrocarbons (TPH C_{15}-C_{28}) were detected in DDW13</td><td>WSP (2008)</td></tr>
<tr><td>Landfill Gas Monitoring Report 1[1]</td><td rowspan="4">Following the PSI (WSP, 2008), the owner of former Lot 8005 (Figure 2) commissioned additional landfill gas and groundwater monitoring around the perimeter of Lot 8005 to address DWER requirements to assess the potential for landfill gas to be migrating off-site, the quality of groundwater flowing onto the site and flowing off-site.</td><td rowspan="4">Installation and monitoring of landfill gas and groundwater monitoring wells at a 50m spacing around the perimeter of Lot 8005 in accordance with the requirements of CIRIA C665. Three landfill gas wells (G31 to G33) and four groundwater monitoring wells doubling as landfill gas wells (DDW19, DDW28 to DDW30) were installed along the northern and western perimeters and G30 installed within fill material at the Site. Production bore PB2 was also sampled as part of the groundwater monitoring program.</td><td rowspan="4">The outcomes relevant to Lot 1 (the Site) include the following:
Methane concentrations were generally not detected in perimeter monitoring wells with the exception of G31, DDW29 and DDW30 located on the western boundary at concentrations up to 0.1%v/v to 0.2%v/v
Carbon dioxide concentrations were less than 5%v/v
No flow was detected in the perimeter monitoring wells
G30 (within fill material) recorded the following:
Maximum methane concentration of 39.5%v/v
Maximum carbon dioxide concentration of 1.9%v/v
Maximum flow rate of 0.4L/hr
Gas screening value (GSV) of 0.158L/hr (‘low risk’ or characterisation situation (CS) 2)
Concentrations of the following CoPCs were detected at the Site above the nominated assessment levels at the time:
Chloride and iron above long-term irrigation assessment levels (all wells for iron and chloride in PB2, DDW13 and DDW28)
CaCO3 (hardness) and iron above drinking water (aesthetic) assessment levels (all wells along the western boundary and PB2)
pH was below the drinking water (aesthetic) assessment range (DDW19, DDW29 and DDW30)
Arsenic and lead above the drinking water (health) assessment levels (DDW28 only)</td><td>WSP (2009a)</td></tr>
<tr><td>Landfill Gas Monitoring Report 2[1]</td><td>WSP (2009b)</td></tr>
<tr><td>Landfill Gas Monitoring Report 3[1]</td><td>WSP (2009c)</td></tr>
<tr><td>Groundwater Monitoring Report[1]</td><td>WSP (2009d)</td></tr>
<tr><td>2011 Annual Environmental Monitoring Report</td><td rowspan="6">To comply with monitoring conditions as stipulated under Cell 6 Pty Ltd’s Environmental Protection Act Licence (L6832/1997/13)[2].</td><td rowspan="6">Quarterly landfill gas monitoring and biannual groundwater monitoring conducted during each reporting period (calendar year) in accordance with the relevant EP Act Licence Conditions.</td><td rowspan="6">Landfill gas monitoring undertaken at the Site between 2011 and 2017 indicated the following:
Perimeter wells:
Methane concentrations in the northern and western perimeter wells is negligible.
Carbon dioxide concentrations were generally less than 5%v/v.
Flow rates were negligible.
Internal wells installed within fill material:
Maximum methane concentration of 31.7%v/v (G30).
Maximum carbon dioxide concentration of 13.5%v/v (G37).
Maximum flow rate of 0.7L/hr (G30 Replacement Well).</td><td>WSP (2012)</td></tr>
<tr><td>2012 Annual Environmental Monitoring Report</td><td>ESWA (2013)</td></tr>
<tr><td>2013 Annual Environmental Monitoring Report</td><td>ESWA (2014a)</td></tr>
<tr><td>2014 Annual Environmental Report</td><td>ESWA (2015)</td></tr>
<tr><td>2015 Annual Environmental Report</td><td>Enpoint (2016a)</td></tr>
<tr><td>2016 Annual Environmental Report</td><td>Enpoint (2017)</td></tr>
</table>

[1] These reports were prepared for Lot 8005 on Deposited Plan 36178, which consisted of Lot 1 and Lot 2 (Figure 2). The majority of the investigations were undertaken on the Lot 2 portion of former Lot 8005. The outcomes summarised in Table D relate to those collected on Lot 1 only (the Site).
[2] The EP Act Licence was amended by DWER in August 2010 to include landfill gas and groundwater monitoring requirements commencing from the 2011 reporting period. Prior to this amendment, there were no landfill gas or groundwater monitoring requirements for the Site under the EP Act.

Report	Purpose	Scope of Work	Investigation Outcomes Relevant to the Site (Lot 1)	References
2017 Annual Compliance Report			Groundwater monitoring results from the most recent groundwater monitoring events (February and August 2017) indicated the following: • pH entering the Site (NODGW05) is slightly acidic. • Ammonia, hardness, iron, manganese, sulphate and TDS were above the drinking water (aesthetic) assessment levels in up-gradient and down-gradient monitoring wells. • Arsenic, benzo(a)pyrene and sulphate were above the drinking water (health) assessment levels in up-gradient and down-gradient monitoring wells. • Arsenic and iron were above the non-potable use guideline in up-gradient and down-gradient monitoring wells.	Enpoint (2018)
Suitability of Use of Waste Derived Material	To determine DWER's position on the use of the waste derived material as fill on-site.	Submission to the DWER providing a description of the methodology of how the material was derived and rationale for the suitability of use of these materials as fill on-site in preparation for development of the Site for residential land use.	The submission provided a case to DWER on the suitability of use of the waste derived material (Stockpiles B and D) as fill on-site based on the proposed land use and a tier 1 assessment of samples results obtained from samples of the fines (Stockpile A) in the context of the *Contaminated Sites Act 2003* and available National guidance on the suitability of use waste derived materials. The document posed several questions to DWER (Licensing and Approvals Branch) for clarification, for which a response was not received.	ESWA (2014b)
Groundwater Quality Assessment	The groundwater quality assessment was prepared to gain a better understanding of the following: • Background groundwater quality in the area of the Site • Groundwater impacts that may be resulting from Site activities and/or waste previously buried at the Site • Groundwater impacts migrating onto the Site from up-gradient source(s) (i.e. Lot 2)	A review of groundwater quality data obtained at the Site since 2011 was conducted to assess the relationship between background groundwater quality, and groundwater quality on the up-gradient and down-gradient boundaries of the Site.	Various CoPCs including ammonia, arsenic, benzo(a)pyrene, harness, iron, manganese, nitrogen, phosphorus, sodium, sulphate and TDS were detected above the relevant assessment levels in both up-gradient and down-gradient monitoring wells. It was concluded that, given that concentrations of CoPCs in the up-gradient wells have generally been detected at concentrations greater than those detected in the down-gradient wells, groundwater impacts detected on-Site are likely a result of impacted groundwater migrating onto the Site originating from Lot 2 to the east.	Enpoint (2016b)
Additional Landfill Gas and Groundwater Monitoring[3]	To obtain additional landfill gas and groundwater monitoring data from within previously filled areas to assess the risk associated with this material in the context of the proposed residential land use.	Installation of an additional eleven (11) landfill gas monitoring wells (GA1 to GA11) and three groundwater monitoring wells (GW1 to GW3) (that double as landfill gas wells). Four (4) landfill gas monitoring events and one groundwater monitoring event were conducted at the newly installed wells between July and September 2020.	Landfill gas monitoring undertaken at the newly installed wells between July and October 2020 indicated the following: • Maximum methane concentration of 19.0%v/v (GW2). • Maximum carbon dioxide concentration of 8.0%v/v (GW1). • Maximum flow rate of 0.7L/hr (G30 Replacement Well).	Ace Environmental (2020) (Appendix E)

[3] A report was not provided for these monitoring events, only a description of the methodologies, well logs for newly installed wells, calibration certificates for equipment used and laboratory analytical reports.

4 SITE HISTORY

4.1 Land Ownership

Table E summarises the current and historical ownership of the Site. Copies of the current and historical Certificates of Title are provided as Appendix B.

Table E Summary of Land Ownership

Historical			Current
	Ownership and Title Details	**Date Range**	
Vol. 1014 Fol. 385	Swan Locations 1803, 1913 and portions of 1914 and 1441 Transferred to Denis Keane (farmer)	22/10/1929 – 23/11/1934	
	Transferred to Maurice Patrick Keane (farmer)	23/11/1934 – 30/9/1941	
	Transferred to Dudley Meredith Pilbeam (meat worker)	30/9/1941 – 1/4/1964	
Vol. 1282 Fol. 149	Swan Locations 1803, and 1914 Transferred to William Gray Robertson (estate agent)	1/4/1964 – 17/4/1968	
	Swan Locations 1913 and portion of Location 1441 transferred to Rippon Lea Holdings Pty Ltd	1/4/1964 – 5/7/1966	
Vol. 1313 Fol. 358	Portion of Swan location 1441 Transferred to P & M Holdings Pty Ltd	5/7/1966 – 12/4/1972	
	Transferred in equal shares to Antonio Alfredo Salamone, Vincento Beniceminto Giovanni Salamone, Umberto Giovanni Salamone and Salvatore Salamone (earthmoving contractors)	12/4/1972 – 24/1/1984	
	Transferred to Antonio Alfredo Salamone (2/6 share), Vincento Benicemінто Giovanni Salamone (1/6 share), Umberto Giovanni Salamone (1/6 share) and Salvatore Salamone (2/6 share)	24/1/1984 – 17/12/2002	
	Vengenzo Beniamono Giovanni Salvatore 1/6 share transferred to Maria Salamone	23/11/1990	Vol. 2807 Fol. 995 12/2/2013 – present Lot 1 on DP69382 Cell 6 Pty Ltd
	Land parcel identifier changed to Lot 1441 on DP 256246	15/5/2002	
Vol. 2529 Fol. 579	Lot 8000 on DP 32889 Antonio Alfredo Salamone (2/6 share), Umberto Giovanni Salamone (1/6 share), Salvatore Salamone (2/6 share) and Maria Salamone (1/6 share)	11/12/2002 – 13/8/2003	
Vol. 2544 Fol. 70	Lot 8005 on DP 36178 Antonio Alfredo Salamone (2/6 share), Umberto Giovanni Salamone (1/6 share), Salvatore Salamone (2/6 share) and Maria Salamone (1/6 share)	13/8/2003 – 27/10/2010	
	Lease to Milind Pty Ltd transferred to Cell 6 Pty Ltd on 19/8/2009		
Vol. 2756 Fol. 288	2/6 undivided shares of Lot 8005 on DP 36178 to Antonio Alfredo Salamone	27/10/2010 – 9/2/2012	
	Lease to Milind Pty Ltd transferred to Cell 6 Pty Ltd on 19/8/2009		
	Memorial under the *Contaminated Sites Act 2003* lodged on 6/9/2011 (Contaminated – restricted use)		
Vol. 2756 Fol. 289	4/6 undivided shares of Lot 8005 on DP 36178 to Umberto Giovanni Salamone (1/4 share), Salvatore Salamone (2/4 share) and Maria Salamone (1/4 share)	27/10/2010 – 9/2/2012	
	Lease to Milind Pty Ltd transferred to Cell 6 Pty Ltd on 19/8/2009		
	Memorial under the *Contaminated Sites Act 2003* lodged on 6/9/2011 (Contaminated – restricted use)		

Historical Ownership and Title Details		Date Range	Current
Vol. 2785 Fol. 196	Lot 1 on DP 69382 (115 Furniss Road, Darch – the Site Subject to this PSI) to Umberto Giovanni Salamone (1/4 share), Salvatore Salamone (2/4 share) and Maria Salamone (1/4 share)	9/2/2012 – 31/12/2012	
Vol. 2786 Fol. 701	2/6 undivided shares of Lot 1 on DP 69382 (115 Furniss Road, Darch – the Site Subject to this PSI) to Cell 6 Pty Ltd	31/12/2012 – 12/2/2013	
Vol. 2786 Fol. 702	4/6 of undivided shares Lot 1 on DP 69382 (115 Furniss Road, Darch – the Site Subject to this PSI) to Cell 6 Pty Ltd	31/12/2012 – 12/2/2013	

4.2 Site Land Uses

Table F provides a summary of the historical, current and proposed future land uses at the Site.

Table F Site Land Uses

Land Use		Source
Historical	Historical aerial photographs indicate the Site was vacant until circa 1968, at which point it appears sand mining commenced. Sand mined from the Site was reportedly used in the construction industry. Filling of former Lot 8005 reportedly started in 1989 from the north east corner. The exact date that filling commenced on the Site itself is not known. Filling on the Site ceased in 2009 when Cell 6 Pty Ltd took over the lease and operation of the Site. Since 2009, the Site has accepted construction and demolition waste for the purpose of sorting, crushing, screening, sampling and stockpiling.	WSP (2008) Review of historical aerial photographs (Appendix F)
Current	The Site has not received any waste nor has there been waste processing conducted on-site since November 2017. Currently at the time of preparation of this report, the only activities being conducted on-Site are as follows: • Mulching of wood (Stockpile F, Figure 6) with a low-speed grinder on-site prior to transport off-site for further mulching with a high-speed grinder. The mulched product will then be used on road verges on-Site following Site preparation works (as outlined in Figure 5). • Loading of plastics (Stockpile G, Figure 6) for transport and disposal off-Site (pending). Following further processing and/or off-site disposal of residual lightweight materials, it is understood that the Client plans to further process the remaining unprocessed waste and concrete present at the Site (Stockpiles C and E, Figure 6). Following further processing or disposal of the materials outlined above, additional earthworks are planned, using a combination of the available materials on-site and imported clean fill, to make up finished levels for the proposed development as outlined in Figure 5. Further details on the processing and required earthworks are outlined in Section 4.6.3.	Notification of Cease of Waste Acceptance (Appendix D)
Future	Under the Cell 6 Agreed Structure Plan, the Site contains residential and business Precincts. In accordance with the Cell 6 Agreed Structure Plan, the Client proposes to subdivide the Site as shown on Figure 5, with commercial land use along the northern boundary of the Site, fronting Furniss Road and residential land use on the remainder of the Site.	CoW (2018 Figure 5

4.3 Historical Aerial Photographs

Table G provides a description for a selection of the available historical aerial photographs covering the Site and surrounding area. Copies of the aerial photographs listed below are included in Appendix F.

Table G Historical Aerial Photographs

Year	Observations: Site	Observations: Surrounding Land
1953	• The Site is vacant of development and is covered with bush/scrub.	• Surrounding areas are generally vacant, however the land to the immediate north appears to have been partially cleared and possibly fenced.
1965	• The Site is vacant of development and remains covered with bush/scrub. • Cleared tracks running north to south through the Site connecting surrounding cleared areas to the north and south of the Site.	• Cleared tracks or fence lines occur to the north and south of the Site. • The site to the immediate north appears to be cleared and may be operating as a market garden. • The sites to the south of the Site (beyond Lot 2) have been cleared and subdivided and may be operating as market gardens.
1974	• Clearing has occurred in the central and eastern part of the Site and sand mining appears to have commenced. • What appears to be water is visible in the quarry pit in the northern portion of the Site. • An access road from the southwest corner of the Site leads to the quarrying area. • A building is visible adjacent to the access road in the southwestern portion of the Site.	• Sand mining activities appear to extend to surrounding areas to the east and south-eastern portion of the Site. • The surrounding areas west of the Site are remain covered with bush/scrub as per the 1965 photograph. • Access road (current Driver Road) on the western boundary of the site has been cleared of bush/scrub. • The area to the south of the Site has been totally cleared of bush/scrub, access road running to the Site is visible. • Further clearing has occurred to the north of the Site.
1985	• Further clearing of the Site has occurred as sand mining appears to have expanded across the whole site, with patches of bushland /scrubs on the western portion of the Site. • Possible stockpiled material is visible in the western portion of the Site. • Possible filling activities are occurring in the south eastern portion of the Site. • Various access roads have been developed connecting the site to surrounding areas. • Structures appear around thew access road in the southwest corner of the Site.	• Clearing and sand mining activities in the surrounding areas appear to have extended to the northwest, north, east and south east of the site since the 1974 photograph. • An oval track (horse racing/trotting track) is present in the south of the Site. • Structures exist along the main access road from the southwest into the Site. • Most of the surrounding area to the west, far north and northwest of the site remains vacant and uncleared. • Sites to the south show signs of more intense market gardening activity.

Year	Observations: Site	Observations: Surrounding Land
1995	• Most of the Site has been cleared as sand mining appears to have expanded across the whole Site. • Possible filling activities commencing in the southeastern portion of the Site.	• Sand mining activities have extended to the north, east and south-western area surrounding the Site. • Filling activities are extending eastward of the Site. • Most of the areas surrounding the site are cleared except for patches in the northeast, northwest, southwest and southeast that remain undeveloped and covered in bush/scrub. • Residential dwellings are now visible to the south of the Site and possible commercial developments are visible to the northwest of the Site. • The oval horse track is still visible and filling operations and structures are visible south of the Site. • Sites to the south show signs of more intense market gardening activity.
2007	• Filling to most of the Site appears to have completed. • Sand Mining appears to have been ceased. • Filling activities appear to have commenced as stockpiles of material are visible towards the southwest corner of the Site.	• Filling of the eastern and south eastern portion of the Site is largely complete and a filling face is visible. • Sand mining appears to have ceased in areas surrounding the Site. • FIlling activities are visible in the immediate surrounding area at southern and south eastern boundary of the Site where stockpiles of material are visible. • Sites to the south that used to be used for market gardening have been developed into residential areas. • The eastern and south eastern surrounding areas of the Site are covered with grass and scrub, while active filling operations are occurring in the southwestern surrounding area of the Site • Residential land use is visible to the west and south of the Site, while land to the north is still undeveloped. • Commercial land use is visible to the north east of the Site.
2010	• Grass and scrub have covered most of the western portion of the Site. • Filling activities appear to be concentrated on the north eastern portion of the Site. • Waste processing infrastructure has appeared in the north eastern corner of the Site. • Stockpiles of processed material is visible in the central south eastern portion of the Site.	• Most of the surrounding areas to the east and south of the Site are covered in grass and scrub, except for the immediate area at the southern boundary and at the north east corner of the Site which appear to be used as a laydown or storage areas. • The area north of the site has been cleared and commercial development has commenced. • Residential development to the west and south of the Site are continued.
2012	• The current workshop in the north eastern portion of the Site is now present. • Operational tracks and Site buildings and infrastructure largely appear as they do currently. • Stockpiles of processed and unprocessed materials are visible in various areas around the Site.	• Surrounding areas to the east and south of the site appear to have been covered with fill material. • Commercial development north of the site appears to have intensified. • Residential and major road development to the far south east of the site has continued.
2014	• The Site layout remains largely unchanged from the 2012 photo. • Stockpiles of processed and unprocessed material have grown in size since the 2012 photo.	• Surrounding areas to the east and south of the Site appear to have been covered with fill material but no development is visible. • Commercial development north of the Site continues to intensify.

Year	Observations	
	Site	Surrounding Land
2016	• The Site layout remains largely unchanged from the 2014 photo. • Stockpiles of processed and unprocessed material have grown in size since the 2014 photo.	• Surrounding areas to the east and south of the Site remain cleared and filled but no development is visible. • Signs of burnt grass and scrubland on the surrounding south eastern area of the Site. • Commercial development north of the site continues to intensify.
2018	• The Site layout remains largely unchanged from the 2016 photo. • Stockpiles of processed and unprocessed material have grown in size since the 2016 photo.	• Grass and scrub have covered surrounding areas to the east and south of the Site and no development is visible. • Commercial development north of the site continues to intensify.
2020	• The Site layout and stockpiles remain largely unchanged from the 2018 photo. • The fine aggregate stockpile (Stockpile D – Figure 6) has been relocated to the northwest corner of the Site. • The stockpile of yellow sand (Stockpile H – Figure 6) is now visible in the southwest corner of the Site.	• Surrounding areas to the east and south of the Site remain largely unchanged. • Stockpiles of mulch on Lot 2 to the south of the Site are now visible. • Commercial development north of the site appears to be complete.

4.4 Buildings and Infrastructure

4.4.1 Historical

A building is first evident along the southern boundary in the southwestern portion of the Site appearing in the 1985 historical area photograph. This building is likely to be associated with the sand mining operation at the time. The building is still evident in the 1995, while sand mining still appears to be occurring in the south eastern portion of the Site. The building is no longer visible in the 2007 historical aerial photograph and the office buildings are evident in their current location. The waste processing infrastructure operated by Milind Pty Ltd is present near the southern boundary in the centre of the Site. Following Cell 6 Pty Ltd taking over lease and operation of the Site in 2009, the waste processing infrastructure in the 2010 historical aerial photograph has been moved to its current location.

4.4.2 Current

The majority of buildings and infrastructure are located in the northeast corner of the Site (Figure 4), which comprise the Site offices (Plate 20, Appendix G), workshop (Plate 14, Appendix G) and crushing and screening plant for processing waste (Plate 23, Appendix G). Additional infrastructure, for unknown purposes (consisting of sea containers, pipework and what appear to be blowers and/or exhausts) are present in the south eastern portion of the Site (Plate 25, Appendix G).

4.5 Earthmoving Activities – Sand Mining

Based on the interview with the operator of the sand quarry at the time (Sam Salamone), undertaken as part of the WSP PSI (WSP, 2008), sand mining commenced on the broader Lot 8005 at some stage in the early 1960's and ceased at some point in the late 1980's, when filling activities commenced. Based on historical aerial photographs provided in WSP (2008) and obtained as part of this PSI (Appendix F), it appears that sand mining commenced at the Site itself in 1968. It is difficult to determine from the aerial photographs themselves, but it appears that quarrying of sand at the Site ceased at some stage between 1989 and 1995.

4.6 Description of Waste Acceptance, Processing and Filling

4.6.1 Prior to 2009

Following cessation of sand mining activities on Lot 8005, acceptance, processing and filling of inert waste material commenced at the Site. These activities were conducted by the previous owners of the Site from approximately the late 1980's until 2009 when operations of the Site were taken over by Cell 6 Pty Ltd (current owners). During the period of operation by the previous owners, what is now Lot 2 was almost entirely filled and portions of Lot 1 (the Site) as outlined in Figure 3 were also filled. At this time, operations at Lot 8005 also operated under the name of Non-Organic Disposals (current trading name of the Site). The description of the process at this time as documented in the WSP PSI (WSP, 2008) was as follows:

- Incoming waste was graded depending on the contents.
- Waste grades at the time were as follows:
  - Grade 1: clean sand
  - Grade 2: Sand, gravel, limestone, bitumen road materials up to 50mm

  - Grade 3: Bricks, tiles, sand and concrete
  - Grade 4: Loads with reinforced concrete, steel and tin (no wood)
  - Grade 5: Mixed load (loads found to contain wood)
  - Grade 6: Lawn/grass
- Wastes not acceptable at the site included: Asbestos, tyres, chemicals (all types), plastic, tin, household rubbish, liquid, trees and stumps, carpet, office waste, fibreglass (any form), car bodies, motor oils etc., food waste, wire fencing and demolition material from timber frame houses.
- Waste acceptance at the Site occurred as follows:
  - Trucks carrying waste entered the Site off Furniss Road and informed the office and payed for the appropriate grade of waste.
  - The person in the office informed the drivers of where to tip the waste, which depended on the grade of waste.
  - Loads not requiring sorting (Grade 2 and Grade 3) got tipped at the active tip face (which was located at the time on Lot 1 – the Site, when active filling was occuring under prescribed premise Category 63 of the EP Act).
  - Grade 3 and Grade 4 got tipped near the shredder for sorting as follows:
    - Steel / tin and wood got sorted out and sent off-Site to Tamala Park waste disposal facility.
    - Remaining material went through the shredder for tipping on the active face.
- Trucks that tipped loads which were found to contain material not suitable for acceptance per the site operating licence were called back to the site by two-way radio and required to retrieve the waste for transport to Tamala Park waste disposal facility (these parties' details were recorded and reportedly received a three month ban from tipping at the site).
- Excavated lawn (Grade 6) got spread over the previously filled portion of former Lot 8005 (now Lot 2) to allow it to dry out prior to recollection (lawn was historically stored in an area prepared along the north central boundary of former Lot 8005).
- The dried lawn then got passed through a screen to separate the topsoil from the lawn and the screened topsoil was the stockpiled and sold for use off-site.
- Material deemed as 'clean fill' from backyard pool excavations at residential sites was also accepted at the time and this soil was being tipped in the south west portion of Lot 8005 (Lot 2)

4.6.2 2009 to 2017

Since taking over the lease and operation of the Site in 2009, Cell 6 Pty Ltd ceased filling operations under Category 63, although this Category remained on the Cell 6 Pty Ltd EP Act Licence until it was relinquished in 2016. The previously filled and unfilled areas at the Site up to this point are outlined in Figure 3 (Area A and Area B, respectively). Construction and demolition waste continued to be accepted at the Site for sorting, crushing, screening, sampling and stockpiling. The process was structured and well documented and is detailed in the *Non-Organic Disposals Environmental Improvement Plan Incorporating the Site Asbestos Management Plan* (NOD EIP and AMP – Appendix H). The following sections provide a summary of the processes that were undertaken at the Site from 2009 to November 2017, after which acceptance of waste onto the Site ceased.

4.6.2.1 *Waste Description*

The waste received at the Site was categorised into grades outlined in Table H, which also outlines materials that were not accepted at the Site:

Table H Grades of Waste

Grade	Description
Clean fill (G1)	Clean fill – no construction waste, very low levels of organic materials, no lightweight residual waste.
Concrete (G2)	Concrete – no organic material and no residual waste (i.e. wood and plastic).
Construction waste (G3)	Mixed residential construction waste, with less than 10% residual waste.
Construction waste (G4)	Mixed residential construction waste with up to 25% residual waste and wet concrete. Residual waste must be lightweight and relatively easy to remove and dispose of.
Other waste (G5)	Construction or civil waste with up to 25% residual waste.
Materials not accepted at the Site	• Asbestos or any Super Six type fencing • Granite/moss rock • Oversized concrete (greater than 200mm thick) • Grass/lawn • Household rubbish • Trees and stumps • Food waste • Office waste • Electronic waste • Fibreglass • Chemicals • Motor oils • Wire fencing • Tyres • Gas bottles • Green waste • White goods • Plastic • Liquid • Carpet • Carpet underlay • Car bodies

4.6.2.2 *Waste Processing*

The waste was crushed and screened to remove organics and other light weight waste from the fines and crushed aggregate. All unsuitable waste resulting from this process was stockpiled on-Site pending further processing (wood) or off-Site disposal (plastics) (representing less than 3% weight for weight (w/w) of the processed waste). Figure 6 outlines stockpiles of the various material derived from waste acceptance and processing undertaken at the Site. Table I provides an outline of the process by which these materials were derived.

Table I Waste Processing – 2009 to 2017

Step	Process Description
Waste acceptance	Waste was received on-Site and graded before being off-loaded into the tipping and pre-sorting area (Figure 4).
Pre-Sorting	Once off-loaded into the tipping area, a large portion of the bulky light weight material is removed by an excavator (wood and plastic).
Primary Screening	The material is then fed onto the primary 6m x 2.4m scalping screen (Figure 4) where the fines are removed, stockpiled and tested.
	From the screen, the material passes along a picking belt where plastics, timber and metals are removed by hand.
Crushing	Following the primary screening process, the remaining material is passed through a primary and secondary impact crusher (Figure 4).
Secondary Screening	Following the crushing process, the material is screened a final time via a 3-deck screen, with oversized light weight material coming off the top deck, material less than 80mm coming off the middle deck and fines coming off the bottom deck, which are added to the stockpile of fines removed from the primary screening process for further testing (refer to Figure 6 for location and volume of stockpiles).

4.6.3 Current Activities

4.6.3.1 Further Waste Processing

Although waste has not been accepted onto the Site since ceasing operations in November 2017, Cell 6 Pty Ltd have recently renewed their EP Act Licence (Category 13 and 62) to allow processing of the remaining stockpiles on-Site as outlined in Table J prior to commencement of bulk earthworks to prepare the Site for development.

Table J Waste Processing – Current

Stockpile	Material	Process Description
F	Wood	The wood in Stockpile F is currently undergoing mulching on-site with a low-speed grinder. Following this first stage of mulching, it is understood the mulched wood will then be transported off-Site for further mulching using a high-speed grinder to prepare it for use on road reserves of the finished Site.
G	Plastics	The plastics in Stockpile G have no use on Site and require loading and transport off-Site for disposal.
E	Unprocessed Waste	Stockpiles E and C require processing as outlined in Table I in order to remove the residual lightweight materials (wood and plastics) and to crush the concrete for addition to Stockpiles B and D and screening and sampling of the fines for addition to Stockpile A. This processed material will then be used on-site to make up the proposed finished site levels as outlined below.
C	Concrete	

4.6.3.2 Bulk Earthworks in Preparation for Site Development

Following further processing as outlined in Table J, the following earthworks process is proposed to prepare the Site for the proposed development:

- The aggregate materials (Stockpiles B and D) are to be spread out at the base of the unfilled area (Area B – Figure 3).
- These aggregate materials will be spread out in 300mm layers and compacted in accordance with a geotechnical plan to be prepared by geotechnical engineers (Structerre).
- A geotechnical raft is to be constructed over the top of the aggregate deposited in Area B and the previously filled areas of Area A (Figure 3), which will consist of the following:
    - A 150mm layer of a mixture of fine aggregate from Stockpile D and imported crushed limestone
    - Placement of a 'geogrid'[4]
    - Another 150mm layer of a mixture of fine aggregate from Stockpile D and imported crushed limestone will be placed over the geogrid
    - A geofabric layer will then be placed over the crushed limestone/concrete layer
- The tested sand from Stockpile A (refer Section 8.1) will then be placed over the geotechnical raft within Area B.
- A 600mm layer of imported clean fill will then be placed over the sand from Stockpile A within Area B.

[4] A geogrid is geosynthetic material used to reinforce soils and similar materials. Geogrids are commonly used to reinforce retaining walls, as well as subbases or subsoils below roads or structures.

It is understood that the current levels in the previously filled areas of the Site (Area A) are already approximately at the proposed finished site levels as shown in Figure 5. Therefore, in order to install the geotechnical raft within Area A, an approximate 1m layer of soil will need to be stripped back in sections to allow installation of the raft. The soil removed from these areas will then be placed back over the top of the raft once installed and also covered with a 600mm layer of imported clean fill. Given that the soil in Area A has not yet been characterised, the layer of soil placed back over the raft will need to be investigated to determine the suitability of this material for the proposed use.

A detailed earthworks schedule / plan has not been provided by the Client at this stage, but it is understood that the above waste processing and earthworks to bring the Site up to proposed development levels as outlined in Figure 5 will take approximately 18 months to complete.

4.7 Location of Underground and Aboveground Storage Tanks

An aboveground self-bunded diesel storage tank (15,000L) is located adjacent to the workshop (Plate 13, Appendix G and Figure 4). The diesel storage tank was used to fuel earthmoving equipment used at the Site. An additional aboveground waste oil storage tank (2,000L) is located to the south of the offices (Plate 17, Appendix G and Figure 4). The waste oil storage tank would have been used for storing waste oil from servicing the earthmoving equipment.

4.8 Relevant Licences

4.8.1 Environmental Protection Act Licence

The Site is currently listed as a "prescribed premise" under Category numbers 13 and 62 within Schedule 1 of the *Environmental Protection Regulations 1987.* Table K provides a summary of the Categories applicable to the Site:

Table K Prescribed Premises Categories

Category	Description	Category production or design capacity	Approved premises production or design capacity
Current			
13	**Crushing of building material:** Premises on which waste building or demolition material (for example, bricks, stones or concrete) is crushed or cleaned.	1,000 tonnes or more per year	325,000 tonnes per annual period
62	**Solid Waste Depot:** Premises on which waste is stored, or sorted, pending final disposal or re-use.	500 tonnes or more per year	500,000 tonnes per annual period
Historical			
63	**Class I inert landfill site:** Premises on which waste (as determined by reference to the waste types set out in the document entitled "*Landfill Waste Classification and Waste Definitions 1996*" published by the CEO and as amended from time to time) is accepted for burial.	1,000 tonnes or more per year	325,000 tonnes per annual period

As stated in Section 4.6.3, the Site currently operates under Category 13 and 62 of the EP Act. However, the Site has not accepted any waste since November 2017 (refer notification to DWER from NOD dated 12/11/2017 provided as Appendix D). The Client recently renewed their EP Act Licence to facilitate the processing of the remaining unprocessed material (Stockpile E), concrete (Stockpiles C) and wood

(Stockpile F) as well as the off-site disposal of plastics (Stockpile G). A Site plan showing the residual stockpiled materials at the Site is provided as Figure 6.

The Category 63 activities related to filling completed at former Lot 8005 by the previous owner commencing in the late 1980's until 2009 when Cell 6 Pty Ltd took over operation of the Site and former Lot 8005 was subdivided into the current Lots 1 and 2. Although the Category 63 remained on Cell 6 Pty Ltd's EP Act Licence until being relinquished in 2016, no waste has been deposited / filled at the Site during operations by Cell 6 Pty Ltd. Following relinquishment of the Category 63 from their licence, DWER terminated Cell 6's Bank Guarantee providing financial assurance in respect of the quarterly landfill levy that they might be required to pay. A copy of the letter from DWER regarding termination of the Bank Guarantee is provided in Appendix I.

4.8.2 Groundwater Abstraction Licence

Section 2.1, Map 5a of the Land Insight and Resources (LIR) Due Diligence *Insight* Report (Appendix J) identified that there are two bores with the same groundwater licence associated with the Site. Details of the groundwater licence are as follows:

- WRI Number: 64710
- Allocation: 2,250KL
- Groundwater bore IDs: 61603515 and 61610811
- Registered to Sam Salamone (previous owner)
- Address: Lot 2 on Plan 69382; Lot 1 on Plan 69382

4.8.3 Product Spills, Losses, and Incidents

Table L provides a summary of product spills, losses and/or incidents reported as part of the requirements of conditions as stipulated under the Cell 6 Pty Ltd EP Act License. Records for

Table L Summary of Reported Spills, Losses, and Incidents

Reporting Year	Date	Details	Outcome
2011	--	None logged for the reporting period.	Not applicable
2012	--	None logged for the reporting period.	Not applicable
2013	--	None logged for the reporting period.	Not applicable
2014	8/12/2014	A dust management issue was logged by NOD management, due to the water truck not being available for dust suppression.	Activities at the 'bottom of the Site' were ceased until further notice.
2015	20/4/2015	A dust management issue was logged by NOD management.	All works were stopped immediately, and immediate dust control measures were taken via hose, truck and sprinklers.
	22/6/2015	'Contamination' of the 'main stockpile' was noted by NOD management (no other details provided).	The contamination was noted to be 'picked up, moved and contained'. No other details were provided (suspected to be related to asbestos).
2016	--	None logged for the reporting period.	Not applicable
2017	24/01/2017	There was a solenoid and water pump failure which inhibited the use of the water cart from 7:00am to 2:30pm.	The solenoid and water pump were repaired immediately and there were no complaints made during the outage.

The reported incidents relate to dust management only (and one incidence of asbestos, which was picked up and contained). These incidents do not relate to contamination that may pose a risk to the proposed commercial / residential land use.

4.8.4 Complaints

Table M provides a summary of complaints reported as part of the requirements of conditions as stipulated under the Cell 6 Pty Ltd EP Act License.

Table M Summary of Reported Complaints

Reporting Year	Date	Complaint	Outcome
2011	8/03/2011	A complaint of unknown origin was received through the City of Wanneroo (Chris Hill – Environmental Health Officer) in relation to dust and an unspecified odour.	All unnecessary vehicle movements were ceased and water loading for dust suppression was increased.
	12/05/2011	A neighbouring resident attended site and complained about dust on their car at their nearby residence (location unknown). The complaint was general in nature and not specific to the time/date of the complaint.	No actions were required at the time of the complaint given that all material was wet and the water truck with the cannon was in operation at the time. NOD were committed to continuing with the installation of two additional water cannons to assist with dust management.
2012	31/01/2012	General comments from Kylie Goodall of 55 Driver Road relating to dust during easterly winds. Winds were approximately 20km/hr east to north-easterly at the time of the complaint.	Applied further dust suppression and stopped activity on the western portion of the Site. DWER were also notified of the complaint.
	5/03/2012	Complaint from a neighbouring resident relating to dust to the eastern side of the Site.	NOD management advised the water cart operator to the eastern area of the Site wet at all times. A meeting was held with Tim Moore and John Fricke (DWER) to discuss and resolve the complaint. NOD management followed up with an email to DWER on 8/03/2012 outlined their discussions.
	14/03/2012	A follow-up phone call was received from Ms Goodall of 55 Driver Road thanking NOD for the improvement in dust conditions following a period of easterly winds. This was subsequent to a site visit (on behalf of Ms Goodall) by the City of Wanneroo and DWER.	In adverse wind conditions, NOD management travels to 55 Driver Road to inspect dust conditions at this location to determine if additional dust management is required on Site.
2013	3/05/2013	A neighbouring resident came to site to complain about vibrations in his house.	Compaction activities were stopped immediately.
2014	--	None logged for the reporting period.	Not applicable
2015	26/11/2015	A complaint was made by Megan Ellery of DWER relating to fencing, dust and residual waste.	This was during an inspection by DWER, no actions were undertaken.
2016	14/03/2016	There were two incident / complaint reports completed for the reporting period, that were reported by Daniel Hunter of DWER. The non-compliances related to the following: • Dust complaints • Inadequate fencing (unclear as to where) • Inadequate disposal of residual waste generated from the process	The actions taken to mitigate the complaints included: • Increased application of water via the water truck and hoses to suppress the dust • Erection of additional fencing

Reporting Year	Date	Complaint	Outcome
2017	--	During the 2017 reporting period there no complaints made directly to NOD. NOD was made aware of two dust emission complaints made to the DWER which did not reference a specific time or date.	The dates that the DWER received the complaints were checked, one of those days 11mm of rain had fallen, the second of the dates the wind was not blowing towards any sensitive receptors at any period throughout that day.

The reported complaints relate to dust management only (and one incidence of an unspecified odour). These incidents do not relate to contamination that may pose a risk to the proposed commercial / residential land use.

4.9 Heritage Matters

A search of the following Heritage databases within a 200m radius of the Site was undertaken by Land Insight & Resources (LIR) and included Section 5.1 (Map 9) in the 'Due Diligence Insight Report':

- Aboriginal Heritage Place Register (AHIS)
- Heritage Conservation Orders (HCO)
- Municipal Inventory
- National Heritage List (NHL)
- Register of the National Estate (RNE)
- Non-Aboriginal Heritage Item (Local)
- Non-Aboriginal Heritage Item (SHR)
- Commonwealth Heritage List (CHL)
- World Heritage Area (WHA)

No heritage sites were identified within a 200m radius of the Site.

5 SITE INSPECTION

A Site inspection was undertaken by Enpoint (Jeff Shivak – Director and Principal Environmental Scientist and Kapi Sikazwe – Environmental Scientist) on 22 September 2020 along with a Client representative (Alex Noble). Photographs taken during the Site inspection are presented in Appendix G. Table N outlines the Site condition and surrounding environment along with observations made during the Site inspection and information provided in the Land Insight and Resources (LIR) Due Diligence Insight Report included in Appendix J.

Table N Site Condition and Surrounding Environment

Aspect	Observation	Source/Reference
Topography	Topography at the Site varies according to previously filled areas and unfilled areas (Figure 3) as well as the presence of stockpiled material within these areas. There are two tracks, both starting from the entrance of the Site off Furniss Road, which runs north of the office building then heads south to the east of the office building, down to the base of the non-filled area (Figure 3 - Area B). One track runs south along the east of Stockpile E and the other track runs west to the north of Stockpiles E and A, then tracking south on the west side of Stockpiles A and F (Figure 6). The following approximate topographic heights in metres above Australian Height Datum (mAHD) were obtained from a survey of the existing ground levels at the Site by Tabec in July 2019[5]: • Ground level within previously filled areas at the Site (Area A – Figure 3) not including stockpile heights: o Approx. 47 to 48 mAHD in the southwest corner o Approx. 51 to 52 mAHD in the northern portion o Approx. 50 to 51 mAHD in the southeastern corner • Ground level within the non-filled area at the Site (Area B – Figure 3) not including stockpile heights ranges from approximately 42 to 44 mAHD • The approximate levels of the highest point of each stockpile outlined in Figure 6 are as follows: o Stockpile A: 69mAHD o Stockpile B: 61mAHD o Stockpile C: 61mAHD o Stockpile D: 57mAHD o Stockpile E: 60mAHD o Stockpile F: 48mAHD o Stockpile G: 48mAHD o Stockpile H: 49mAHD	Existing Site Levels (Appendix K) Figure 3 Figure 6
Condition of Site Boundary	The entire Site boundary is secured with by a permanent steel cyclone fence. The western and northern boundaries have an earthen bund built up behind the fence, which acted as a dust and noise barrier when the Site was in operation.	Plates 1, 3 and 4, Appendix G
Visible Signs of Contamination	Visible signs of contamination were not noted during the Site inspection.	Not Applicable
Visible Signs of Vegetation Stress	Vegetation stress was not noted at the Site. Vegetation is growing on top of several of the stockpiles present at the Site. The Client has advised that they have commenced spraying the vegetation to commence die-off of this vegetation. Prior to commencement of bulk earthworks, the dead vegetative layer will be removed from the stockpiles and	Pers. comm. Alex Noble, Client Representative

[5] Given that the Site has not received any waste since 2017 and there have been no operations conducted at the Site since that time (with the exception of the removal of residual lightweight materials (wood and plastic in Areas F and G – Figure 5), the ground levels included in the Tabec survey drawing from July 2019 would not have changed since that time.

Aspect	Observation	Source/Reference
	processed, prior to final use on-site (potentially used as topsoil for road reserves).	
Presence of Drums, Wastes and Fill Material	Drums of hydraulic and lubricating fluids were present at the workshop (Figure 4). A drum for containing asbestos containing materials (ACM) was located adjacent to the bunded waste oil storage shed. This drum was for containing ACM when discovered in unprocessed waste during pre-sorting in the tipping area.	Plates 14, 15 and 16, Appendix G
Type and Conditions of Buildings	The only buildings located on Site include the office and the workshop. The offices are comprised of transportable buildings and are in good condition. The workshop is comprised of a series of sea containers with a metal roof over with no sides.	Plates 14 and 20, Appendix G
Aesthetic Issues / Odours	There were no aesthetic or odour issues encountered during the Site inspection.	Not applicable
Nature of Site Surface	The majority of the Site surface is unsealed, including the tracks leading around the Site. The only hardstand areas include the road leading into the Site from Furniss Road and around the Site offices, which is bitumen and a concrete pad in the workshop area, which was observed to be in fair condition.	Plate 14, Appendix G
Location and Types of Stockpiled Materials	The location, type and volume of stockpiled materials at the Site are outlined in Figure 6. Representative photos of these stockpiles were also taken during the Site inspection as follows: • Stockpile A: Plate 8 • Stockpile B: Plate 9 • Stockpile C: Plates 6, 7, 11 and 12 • Stockpile D: Plates 10 and 24 • Stockpile E: Plate 21 • Stockpile F: Plate 5 • Stockpile H: Plate 2	Figure 6 Site Photographs, Appendix G
Presence of Asbestos	Asbestos was not identified on the Site surface during the Site inspection. However, there are several stockpiles of both processed and unprocessed materials present on-site. These stockpiles were noted inspected for the presence of asbestos during the Site inspection. However, during receipt of waste at the Site, asbestos and/or any asbestos containing materials were not accepted in accordance with the NOD Asbestos Management Plan (Appendix H). NOD's waste receival process did identify occurrences of asbestos and such loads were therefore not accepted. However, incidental occurrences of asbestos were identified throughout the process following receipt of the waste. As such, NOD staff were trained to identify and manage any asbestos occurrences throughout sorting and processing of the waste and this process is detailed in the NOD Asbestos Management Plan (Appendix H). All asbestos identified at the Site was appropriately managed and contained pending off-Site disposal.	NOD EIP and AMP, Appendix H
Local Use of Groundwater / Surface Water	Prior to 2009, it is understood that groundwater was abstracted for dust suppression purposes from a production bore located at the southern boundary of the Site in the southwestern portion, adjacent to the waste processing infrastructure present at the time (labelled as PB2 in the WSP PSI (WSP, 2008)). It is believed that this production bore has been decommissioned / is no longer accessible due to stockpiling of materials in this area (Stockpiles B and F). From 2009 onward, it is understood that Cell 6 Pty Ltd abstracted groundwater for dust suppression purposes from a production bore that is located off-Site near the north east corner of the Site (labelled as PB3 in the WSP PSI (WSP, 2008)). It is believed that groundwater was pumped from PB3 to 30,000L buffer tanks located west of the waste processing infrastructure (Figure 4). Water from these tanks were then used to fill trucks for dust suppression and for the retic lines and high-pressure hoses (Figure 4).	WSP (2008) Figure 4 LIR Due Diligence Insight Report, Appendix J

<table>
<tr><th>Aspect</th><th>Observation</th><th>Source/Reference</th></tr>
<tr><td></td><td>Section 2 and Map 5a of the LIR Due Diligence Insight Report provided details of registered bores located within a 1km radius of the Site (including what is likely to be PB2 located on-site and PB3 north east of the Site. The bores identified are listed as being used for the following purposes:
• Stock and domestic
• Monitoring
• Irrigation
• Unknown
Given that it is not a requirement in WA to register bores for domestic (residential) purposes, it is likely that bores used for irrigation of lawns and gardens are present at the surrounding residential premises.
There are no surface water bodies in close proximity to the Site.</td><td></td></tr>
<tr><td>Preferential Pathways for Contaminant Migration</td><td>Potential contamination migration pathways at the Site include:
• Leachate or spillage of fluids through soil and fill into groundwater
• Surface runoff infiltrating to ground (not likely to run off-Site)
• Lateral and vertical migration of contaminants in groundwater via the aquifer
• Capture of contaminants by groundwater production wells off-site
• Volatilisation of contaminant vapours from fill and soil toward human receptors
• Vertical and lateral migration of landfill gases via preferential pathways / voids in the fill and via natural soil</td><td>Not applicable</td></tr>
<tr><td>Surrounding Land Uses</td><td>Surrounding land uses include the following:
• North: Commercial / light industrial land use to the north of Furniss Road
• East: Former inert landfill (Lot 2) and residential further to the east beyond Mirrabooka Avenue
• South: Former inert landfill (Lot 2) and residential further to the south
• West: Residential to the west of Driver Road
Further details on the surrounding land uses are provided Sections 4.2 and 4.4 of the LIR Due Diligence Insight Report.</td><td>LIR Due Diligence Insight Report, Appendix J</td></tr>
<tr><td>Location of Sensitive Receptors</td><td>Sensitive Receptors on-Site and in the vicinity of the Site include the following:
• Surrounding residents
• The childcare centre located at the south west corner of Driver Road and Furniss Road
• Workers to be involved in the Site development
• Proposed future site residents
There are no surface water bodies in close proximity to the Site.</td><td>Not applicable</td></tr>
</table>

6 GEOLOGY AND HYDROGEOLOGY

Table O summarises the hydrogeological characteristics of the Site. Information is based on previous investigations and information obtained the LIR Due Diligence *Insight* Report included in Appendix J.

Table O Geology and Hydrogeology

Aspect	Observation	Source/Reference
Stratigraphy	Soil Landscape and Regional Geology Section 1.3 (Map 3a) of the LIR Due Diligence Insight Report indicates that soil landscape in the vicinity of the Site is of the 'Karrakatta Sand Yellow Phase' within the Perth Coastal Zone and provides the following description: *Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. Banksia spp. woodland with scattered emergent E. gomphocephala and E. marginata and a dense shrub layer. Coastal sand dunes and calcarenite. Late Pleistocene to Recent age. Calcareous and siliceous sands and calcarenite. (Quindalup and Spearwood Systems). Sand dunes and plains. Yellow deep sands, pale deep sands and yellow/brown shallow sands.* Section 1.4 (Map 4) of the LIR Due Diligence Insight Report describes the regional geology based on the Perth 1:250 000 geological as follows: • Name: Coastal Limestone • Age: Phanerozoic • Era: Cainozoic • Period: Quarternary • Description: Predominantly quartz sand Bore Logs Bore logs illustrating the stratigraphy encountered during installation of existing and new groundwater monitoring wells and landfill gas monitoring wells are provided in Appendix L. Following Is the typical profile described in bore logs for wells installed within filled areas of the Site (DDW13, G30, G37, G38, NODGW01, NODGW02, NODGW03, NODGW06, GA1 to GA8, GA10, GW1, GW2 and GW3): • Sand cap: poorly sorted sands, brown, fine to medium grained • Fill material: including wood, plastic, brick, metal, concrete, limestone, plant material, rubber, glass, styrofoam • Native Sand: poorly sorted sands, grey and brown, fine to medium grained	LIR Due Diligence Insight Report, Appendix J Well Construction Logs, Appendix L
Potential for Acid Sulfate Soils	Section 1.3 of the LIR Due Diligence Insight Report describes the potential for Acid Sulfate Soils to be 'extremely low probability of occurrence'.	LIR Due Diligence Insight Report, Appendix J
Location of Water Bodies	There are no surface water bodies in close proximity to the Site.	Not applicable
Well Logs	The location of landfill gas and groundwater monitoring wells on-site are presented in Figure 7. Well logs for landfill gas and groundwater monitoring wells present on-site are included as Appendix L.	Figure 7 – Monitoring Well Locations Well Construction Logs, Appendix L
Aquifer Type	Section 2 of the LIR Due Diligence Insight Report describes the aquifer type as 'porous, extensive highly productive'.	LIR Due Diligence Insight Report, Appendix J

Aspect	Observation	Source/Reference
Groundwater Elevations, Flow Direction and Flow Rate	**<u>Published Data – Regional</u>** Section 2.2 and Map 5b of the LIR Due Diligence Insight Report indicates a southwesterly groundwater flow direction in the general Site area. **<u>On-Site Data</u>** Inferred groundwater contours, based on biannual groundwater elevation monitoring undertaken at the Site between 2012 and 2017 as part of compliance monitoring under the Cell 6 Pty Ltd EP Act License are shown in Figure 8. The inferred groundwater flow direction is generally towards the southwest with some bias towards the south in the last four monitoring events. The rate of groundwater flow at the Site is influenced by the groundwater table gradient and the hydraulic conductivity of the aquifer which are expected to be in the order of 1m to 20m per day (Bouwer, 1978) at the Site, depending on the prevailing hydraulic head and the predominant grain size of the sands within the aquifer.	Figure 8 – Groundwater Elevations (2012 to 2017)
Groundwater Discharge Location	Section 2.2 of the LIR Due Diligence Insight Report indicates that there are no identified groundwater dependent ecosystems that rely on the surface expression of groundwater or that rely on the subsurface presence of groundwater within a 500m radius of the Site.	LIR Due Diligence Insight Report, Appendix J
Seasonal Effects on Groundwater	Groundwater monitoring events were conducted biannually in February (summer) and August (winter) between 2011 and 2017. Based on the elevation data collected during these monitoring events, seasonal effects do not appear to have a significant effect on groundwater elevations, with elevations varying between approximately 0 to 0.3m between summer and winter events. Additionally, groundwater flow directions were consistent between these seasons during each year of monitoring (Figure 8).	Figure 8 – Groundwater Elevations (2012 to 2017)
Groundwater Quality	Groundwater quality at the Site is discussed in further detail in Section 8.	Section 8

7 PRELIMINARY CONCEPTUAL SITE MODEL

Development of a conceptual site model is the first step in the risk assessment process. The CSM provides an assessment of the potential risk of harm to humans and the environment based on information that is currently available. Should additional investigations be conducted or new information become available, the CSM should be refined to depict the most relevant conditions at the Site.

This section describes the identified sources, pathways and receptors considered to be relevant at the Site. The information contained in this section is based on information presented in Sections 2 to 6.

7.1 Sources

7.1.1 Potential Primary Sources

The primary sources of known or potential soil, landfill gas and/or groundwater contamination at the Site are summarised in Table P.

Table P Known or Potential Primary Sources

Known and Potential Primary Sources	Comment
Previously filled areas of the Site (Area A – Figure 3)	Soil in Area A has been filled following processing of construction and demolition waste from unknown sources, which may contain CoPCs and/or minor amounts of organic material with the potential to generate unacceptable levels of landfill gas. Soil quality and the presence of asbestos within Area A has not been assessed.
Stockpiled material present at the Site (Figure 6)	As above, this material has been derived from construction and demolition waste of unknown sources, which may contain CoPCs. Given that this material is proposed for use in bringing up levels within Area B of the Site in preparation for Site development, and material in Stockpile A will be potentially accessible to proposed site residents, further characterisation of this material is required.
Waste processing infrastructure (Figure 4)	There is the potential that there have been leaks / spills / discharges to unsealed ground surrounding each of these areas, which have the potential to impact soil and/or groundwater.
Workshop (Figure 4)	
Self-bunded diesel fuel storage area (Figure 4)	
Bunded waste oil storage area (Figure 4)	

7.1.2 Secondary Sources

The known or potential secondary sources of contamination at the Site are summarised in Table Q.

Table Q Secondary Sources

Known and Potential Secondary Source(s)	Assessed	Known	Potential
Minor amounts of organic material present in the previously filled areas of the Site generating landfill gas.	WSP (2012) ESWA (2013) ESWA (2014a) ESWA (2015) Enpoint (2016a) Enpoint (2017) Enpoint (2018)	✓	✓
Potential for CoPCs (including asbestos) to be present in the previously filled areas of the Site.	×	-	✓
Groundwater impacts resulting from leaching through previously filled areas at the Site.	WSP (2012) ESWA (2013) ESWA (2014a) ESWA (2015) Enpoint (2016a) Enpoint (2017) Enpoint (2018)	✓	-
Potential groundwater impacts migrating on-Site from upgradient off-Site source(s).	Enpoint (2016b)	✓	-
Potential asbestos present in Stockpile A.	ESWA (2014a) Enpoint (2017) Enpoint (2018)	-	-
Potential CoPCs present in Stockpile A.		-	✓
Potential asbestos and COPCs present in Stockpiles C and E.	×	-	✓
Potential leaks and spills resulting in soil impacts in unsealed soil surrounding waste processing infrastructure.	×	-	✓
Potential leaks and spills resulting in soil impacts in unsealed soil surrounding the workshop.	×	-	✓
Potential leaks and spills resulting in soil impacts in unsealed soil surrounding the self-bunded diesel fuel storage area.	×	-	✓
Potential leaks and spills resulting in soil impacts in unsealed soil surrounding the bunded waste oil storage area.	×	-	✓

7.1.3 Contaminants of Potential Concern (CoPCs)

Contaminants of potential concern are defined as specific chemicals or substances that may be associated with a given source, which may have the potential to pose a risk to human health, the environment and/or any environmental value. The CoPCs deemed to be relevant to the identified sources are outlined in Table R.

Table R Contaminants of Potential Concern

Source(s)	Release Mechanisms	CoPCs
Previously filled areas of the Site (Area A)	• Site preparation earthworks • Leaching to groundwater • Volatilisation – migration of vapour to indoor air • Degradation – migration of landfill gas to indoor air • Degradation – off-site migration of landfill gas • Subsurface works following site development	• Total recoverable hydrocarbons (TRH) • Benzene, toluene, ethylbenzene and xylenes (BTEX) • Polycyclic aromatic hydrocarbons (PAHs) • Phenols • Metals • OC/OP pesticides • Polychlorinated biphenyls (PCBs) • Nutrients • Per- and poly-fluoroalkyl substances (PFAS) • Asbestos • Landfill gases
Stockpiled material present at the Site		
Waste processing infrastructure	• Spills / leaks / discharges to unsealed ground • Leaching to soil/groundwater • Volatilisation – migration of vapour to indoor air	• TRH • BTEX • PAHs • Metals • Volatile organic compounds (VOCs) • Semi-volatile organic compounds (SVOCs) • Solvents
Workshop		
Self-bunded diesel fuel storage area		
Bunded waste oil storage area		

7.2 Receptor Identification

The following receptors have been identified as having the potential to be exposed to CoPCs at affected areas:

- Current Site occupants (earthworks contractors)
- Intrusive maintenance workers / Site construction workers
- Future Site occupants (residents / commercial premises)
- Potential off-Site groundwater users

Ecological receptors are not considered to be receptors of concern at the Site given the highly urbanised location of the Site it is considered unlikely that any ecological receptors would be present in this area or frequent the Site with any regularity.

7.3 Potential Exposure Pathways

An exposure pathway is a route by which a CoPC can possibly, or is likely to, be transferred from a primary and secondary source to a receptor. The following outlines the potentially complete exposure pathways:

- Airbourne dust generation resulting from processing of stockpiles;
- Airbourne dust generation resulting from site preparation earthworks in previously filled areas of the Site;
- Direct contact with potentially impacted soil present between the proposed geotechnical raft and the 600mm layer of imported clean fill;
- Leaching of contaminants from soil to groundwater;
- Abstraction of groundwater on-site;

- Off-site migration of potentially impacted groundwater originating from the Site;
- Volatilisation of volatile organic contaminants from soil and/or groundwater;
- Degradation of organic material in previously filled areas of the Site and vertical migration of landfill gas to accumulate in proposed buildings on-site; and
- Degradation of organic material in previously filled areas of the Site and lateral migration of landfill gas off-site

7.4 Potential Exposure Routes

The potential exposure routes between the identified potential source areas and the receptors include:

- Site workers potentially inhaling dust generated from processing of stockpiles and/or site preparation earthworks within previously filled areas of the Site;
- Direct contact with potentially impacted soil at the Site by future site occupants and/or intrusive maintenance workers;
- Direct contact with potentially impacted groundwater via abstraction on-site;
- Direct contact with potentially impacted groundwater via abstraction off-site
- Inhalation of volatile contaminants in soil and/or groundwater by future site occupants via vapour intrusion into buildings;
- Inhalation of volatile contaminants in soil by intrusive maintenance workers in a shallow trench;
- Potential explosion and/or asphyxiation associated with potential accumulation of landfill gases in proposed buildings on-site; and
- Potential explosion and/or asphyxiation associated with potential accumulation of landfill gases in buildings off-site.

8 SUMMARY OF TIER 1 SCREENING ASSESSMENT

Tier 1 screening assessments have been completed on landfill gas and groundwater data collected from the Site on a quarterly and biannual basis, respectively, for the period between 2012 and 2017 as part of the Cell 6 Pty Ltd EP Act Licence conditions. Characterisation samples have also been collected from the sand (fines) stockpile (Stockpile A – Figure 6) at regular intervals throughout waste processing activities conducted at the Site between 2009 and 2017.

A summary of the adopted assessment levels and the outcomes of the stockpile characterisation sampling and landfill gas monitoring undertaken at the Site to date along with the most recent groundwater monitoring results (Enpoint, 2018) are presented below.

8.1 Stockpile A Characterisation Sampling

Given that the aggregate stockpiles (Stockpiles B and D, Figure 6) generated from the process outlined in Section 4.6.2 are inert and consist of material that is consolidated (less than 80mm), samples have not been collected from this material. However, soil samples were collected by NOD on a regular basis from the fines that were generated from the primary and secondary screening processes (Stockpile A, Figure 6). Soil sample frequencies, number of samples and sampling methodologies were conducted in accordance with the *Non-Organic Disposals Sampling and Analysis Plan* (SMEC, 2009) included as Appendix M.

8.1.1 Sampling Verification

Given that NOD were conducting the stockpile characterisation sampling themselves, ESWA were engaged to conduct a third-party review of the soil sampling methodology conducted by NOD on 13 March 2012, which was conducted in accordance with SMEC (2009) (Appendix M). A letter was prepared by ESWA to document the third party verification (Appendix N), which outlines compliance of the sampling against the applicable guidelines and some sampling considerations that should be made to address the non-compliance issues that were identified at the time of the review. It should be noted that the non-compliance issues identified as part of the review were for consideration only and were not considered to affect the outcomes of the results obtained from soil characterisation samples collected from Stockpile A.

8.1.2 Analytical Suite

Samples collected from the soil generated from the process (Stockpile A) were analysed by a National Association of Testing Authorities (NATA) accredited laboratory (ALS) for the following suite of analytes, which were deemed to be contaminants of potential concern (CoPCs) given the wastes received at the Site (SMEC, 2009):

- Metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn)
- TRH
- OC pesticides
- Total Organic Carbon (TOC)
- Asbestos

Summary results obtained from the NOD database developed to record results for the above analyses from the soil generated from the process (within Stockpile A – Figure 6) are included as Appendix O.

8.1.3 Number of Samples

A total of 3,019 soil samples were collected from Stockpile A for the analysis of asbestos and varying number of samples were analysed for the other identified CoPCs between the period of 14 September 2009 and 21 September 2017. Table S outlines the number of samples collected for each of the CoPCs compared to the number of samples recommended to adequately characterise soil from stockpiles based on relevant guidance.

Table S Number of Samples

CoPC	Date Range	Number of Samples Analysed	Actual Sampling Rate[1]	Recommended Sampling Rate[1]	Reference
Asbestos	14/09/2009 to 21/09/2017	3,019	1 sample per 53m^3	1 sample per 70m^3	DoH (2009)
Metals	14/09/2009 to 29/08/2014	788	788	24 plus 4 for each additional 10,000m^3 (Total of 84 samples required)	DWER (2018)
TRH					
OC Pesticides	14/09/2009 to 3/11/2016	657	657		

Note[1]: Based on the approximate volume of soil in Stockpile A of 160,000m^3.

Based on the calculated actual sampling rate, a more than adequate number of samples have been collected from Stockpile A to characterise this material. However, although comprehensive sampling has been undertaken on soil within Stockpile A, the presence of PFAS in this material has not been assessed. Therefore, additional characterisation samples would need to be collected of this material and analysed for PFAS to adequately characterise this material prior to use on-Site.

8.1.4 Assessment Levels

As outlined in Section 4.6.3, given that the soil generated from the process is planned for use at the Site as a capping layer beneath an approximate 600mm layer of imported clean fill, and the most sensitive proposed beneficial use of the Site is residential, the soil sample results included in Appendix O were compared to the following assessment levels:

- Ecological Investigation Levels (EILs) (DEC, 2010)
- Health Investigation Levels for residential land use (HIL-A) (DEC, 2010)
- Department of Health (DoH, 2009) guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia

Given that the HIL-A assessment levels for the selected suite of analytes are higher than the respective EILs for the same analytes, the EILs were conservatively used in the summaries included in Appendix O for comparison to the soil sample results obtained from Stockpile A to determine the suitability of the soil for the proposed end use.

Additionally, in the absence of WA guidance relating to the re-use of such material, NOD developed a model whereby the 95% upper confidence limit (UCL) of a batch of a minimum of 12 samples from any sampling period may be calculated and compared against the EIL. This model was developed based on guidance outlined in the EPA Victoria Industrial Waste Resource Guideline – Soil Sampling (IWRG702, June 2009).

8.1.4.1 Updated Assessment Level Considerations

Table T outlines the considerations for use of updated assessment levels for assessing the potential risk the soil in Stockpile A (Figure 6) may pose to receptors under the proposed land use scenario.

Table T Updated Assessment Level Considerations

Assessment Level	Considerations for Use of Updated Assessment Levels
Ecological Investigation Level (EIL)	The results have been compared to the former EILs (DEC, 2010) in accordance with the SMEC (2009) SAP (Appendix M) given that the SAP was developed prior to the release of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (NEPC, 2013), which was amended in May 2013. The amended NEPM requires that the ambient background concentration (ABC) at a site be measured and an added contaminant limit (ACL) be calculated based on site specific soil physicochemical properties and added to the ABC in order to derive EILs. For the purposes of this Tier 1 assessment, given that the ABC of natural soils at the Site has not been determined at this stage, it is deemed appropriate that the former EILs (DEC, 2010) are used as a screening level given that it is not possible to calculate a Site-specific EIL in accordance with NEPC (2013) without understanding the ABC and ACL.
Health Investigation Levels (HIL)	Although the soil sample results included in Appendix O are not compared against the former HIL-A (DEC, 2010) values given that the DEC (2010) EIL is the more conservative of the two assessment levels, the amended NEPM (NEPC, 2013) includes revised HIL-A assessment levels. In the absence of being able to derive Site specific EILs in accordance with the revised NEPM, the soil sample results will also be compared to the amended NEPM HIL-A values.
Ecological and Health Screening Levels	Ecological Screening Levels (ESLs) and Health Screening Levels (HSLs) have also been derived and/or adopted based on international guidance and are included in the amended NEPM (NEPC, 2013). The ESLs and HSLs apply to some volatile organic compounds and are soil texture and depth dependent, respectively. The HILs, ESLs and HSLs that would apply to the analytical suite for soil sample results obtained from samples collected from the Stockpile A in the context of the proposed residential land use at the Site are outlined in Table P below.

The rationale for the adoption of Updated Assessment Levels as part of the Tier 1 Screening assessment of stockpile characterisation samples is outlined in Table U.

Table U Rationale for Adoption of Updated Assessment Levels

Assessment Level	Applicability and Use	Rationale
Health Investigations Levels (HIL-A) (NEPC, 2013a)	Applicable to the assessment of metals and some OC pesticides.	Protective of human health in a low-density residential land use scenario with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)).
Ecological Screening Level (ESL) (NEPC, 2013a)	Applicable to the assessment of TRH fractions F1 (C_6-C_{10}), F2 (>C_{10}-C_{16}), F3 (>C_{16}-C_{34}) and F4 (>C_{34}-C_{40}).	Protective of terrestrial receptors from direct contact in urban residential and public open space land use scenarios.
Health Screening Levels (HSL) for Direct Contact (Friebel & Nadebaum, 2011)		Protective of intrusive maintenance workers (IMW) and residents in a low-density residential land use scenario from direct contact.
Soil HSLs for vapour intrusion (NEPC, 2013)	Depth dependent – applicable to the assessment of TRH fractions F1 and F2.	Protective of residents in a low-high density residential land use scenario from inhalation of volatile organic vapours.

The applicable updated assessment levels for comparison of the stockpile characterisation results in the context of the proposed use of this material at the Site are provided as Table V.

Table V Applicable Updated Assessment Levels

Analyte	HIL-A[1] (mg/kg)	ESL[2] (mg/kg)	HSL-A[3] (mg/kg)	HSL-A & HSL-B[4] (mg/kg)
Arsenic	100	-	-	-
Cadmium	20	-	-	-
Chromium (VI)	100	-	-	-
Copper	6,000	-	-	-
Lead	300	-	-	-
Mercury	40	-	-	-
Nickel	400	-	-	-
Zinc	7,400	-	-	-
DDT+DDE+DDD	240	-	-	-
Aldrin and dieldrin	6	-	-	-
Chlordane	50	-	-	-
Endosulfan	270	-	-	-
Endrin	10	-	-	-
Heptachlor	6	-	-	-
HCB	10	-	-	-
Methoxychlor	300	-	-	-
F1 C_6-C_{10}	-	180	4,400	110
F2 >C_{10}-C_{16}	-	120	3,300	440
F3 >C_{16}-C_{34}	-	300	4,500	-
F4 >C_{34}-C_{40}	-	2,800	6,300	-

Notes:
1. *HIL-A for assessment of potential risks to human health from chronic exposure to contaminants.*
2. *For the purposes of this Tier 1 screening assessment, the ESLs for coarse grained soil (most conservative value) have been adopted in the absence of Site-specific soil texture information.*
3. *HSL-A for direct contact (Friebel & Nadebaum, 2011) under a low-density land use scenario (more conservative than IMW values).*
4. *Soil HSL-A & HSL-B for vapour intrusion (NEPC, 2013) for sandy soil at a depth of 0m to <1m below ground level (which corresponds to the planned depth sand from Stockpile A of 0.6m below ground level – refer to Section 4.6.3 for details on the intended use of this material at the Site).*

8.1.5 Comparison against Applicable Updated Assessment Levels

Table W provides a comparison of the maximum concentration of each analyte over the entire sampling period against the applicable updated assessment level.

Table W Comparison of Max Analyte Concentrations against Updated Assessment Levels

Analyte	HIL-A (mg/kg)	ESL (mg/kg)	HSL-A (mg/kg)	HSL-A & HSL-B (mg/kg)	Maximum Detected Concentration (mg/kg)
Arsenic	100	-	-	-	7
Cadmium	20	-	-	-	0.5
Chromium (VI)	100	-	-	-	63[1]
Copper	6,000	-	-	-	168
Lead	300	-	-	-	148
Mercury	40	-	-	-	0.2
Nickel	400	-	-	-	17
Zinc	7,400	-	-	-	170
DDT+DDE+DDD	240	-	-	-	3[2]
Aldrin and dieldrin	6	-	-	-	1.5
Chlordane	50	-	-	-	0.5[3]
Endosulfan	270	-	-	-	0.5[4]
Endrin	10	-	-	-	0.5
Heptachlor	6	-	-	-	0.5
HCB	10	-	-	-	0.5
Methoxychlor	300	-	-	-	2
F1 C_6-C_{10}	-	*180*	**4,400**	45	5
F2 >C_{10}-C_{16}	-	*120*	**3,300**	110	*240*
F3 >C_{16}-C_{34}	-	*300*	**4,500**	-	*2,350*

Analyte	HIL-A (mg/kg)	ESL (mg/kg)	HSL-A (mg/kg)	HSL-A & HSL-B (mg/kg)	Maximum Detected Concentration (mg/kg)
F4 >C_{34}-C_{40}	-	*2,800*	**6,300**	-	300

Notes:
1. *Maximum concentration for total chromium.*
2. *Sum of 4,4'-DDT, 4,4'-DDE and 4,4'-DDD.*
3. *Maximum concentrations for cis-Chlordane and trans-Chlordane were both 0.5mg/kg.*
4. *Maximum concentration for alpha-Endosulfan and beta-Endosulfan were both 0.5mg/kg.*

8.1.6 Discussion of Results in Comparison with Applicable Updated Assessment Levels

Comparison of the maximum concentrations detected in soil over the entire sampling period against the applicable updated assessment levels indicates the following:

- The maximum concentrations of metals and OC pesticides were all below the HIL-A
- The maximum concentrations of TRH fractions F2 and F3 were above the ESL
- The maximum concentrations of TRH fractions F1 to F4 were all below the HSL-A for direct contact
- The maximum concentration of TRH fraction F2 was above the soil HSL-A/B for vapour intrusion

Although the maximum concentrations for the TRH F2 and F3 fractions detected in soil generated from the process were above the respective ESLs and the TRH F2 fraction was above the soil HSL-A /B for vapour intrusion, the maximum concentration in both cases relates to one sample only. All other samples for these fractions were below the limit of reporting or detected at concentrations below the applicable assessment levels. Therefore, this one sample is not considered representative of the material as a whole.

8.1.7 Asbestos

Asbestos and/or any asbestos containing materials were not accepted at the Site. NOD's waste receival process did identify occurrences of asbestos and these loads were therefore not accepted. However, incidental occurrences of asbestos were identified throughout the process following receipt of waste onto the Site. As such, NOD staff were trained to identify and manage any asbestos occurrences throughout sorting and processing of the waste and this process is detailed in the NOD EIP and AMP (Appendix H). All asbestos identified at the Site was appropriately managed and contained in drums (Plate 16, Appendix G) pending off-Site disposal.

Of the 3,019 samples collected for the detection of asbestos within the sand of Stockpile A, the following were detected at concentrations (%w/w) above the applicable DoH (2009) assessment levels:

- Asbestos containing material (ACM) in five (5) samples
- Asbestos fines in twenty-nine (29) samples

The above results along with the volume of material and number of samples collected indicate that the detection of asbestos is likely to be incidental and not representative of this material as a whole. Furthermore, given that asbestos was not accepted at the Site and the robust quality assurance measures employed during the waste receival and sorting process it is unlikely that asbestos will be present in Stockpile A that would pose a risk to human health.

8.2 Groundwater

Groundwater monitoring has been undertaken at the Site on a biannual basis for compliance purposes under the Cell 6 Pty Ltd EP Act License from 2011 to 2017. An additional three (3) groundwater monitoring wells (GW1 to GW3) were also installed at the Site in June 2020 and a groundwater monitoring event was conducted in July 2020. These groundwater monitoring events were undertaken at the Site as outlined in Table X.

Table X Summary of Groundwater Monitoring Events

Monitoring Locations (Figure 7)	Frequency	Parameter
EP Act Licence Groundwater Monitoring		
Monitoring locations included the following wells: Western Boundary: • DDW13, DDW28 & DDW29 Eastern Boundary: • NODGW01, NODGW02 & NODGW06 Southern Boundary: • NODGW03 & NODGW04 Northern Boundary: • NODGW05	Biannual (undertaken between 2011 and 2017)	• Standing water level (in mAHD and mBGL) • pH • Electrical Conductivity • Dissolved metals (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Hg, Zn) • Nutrients (total ammonia, total nitrogen, total phosphorous) • Total dissolved solids (TDS) • Chemical oxygen demand (COD) • Major cations (Ca, Mg, Na, K) • Major anions (Cl, HCO_3, / alkalinity, SO_4) • Sulphite • Hardness (CaCO3) • Benzene, toluene, ethylbenzene, xylenes (BTEX) • Total recoverable hydrocarbons (TRH) • Organochlorine / organophosphate (OC/OP) pesticides • Phenols • Polycyclic aromatic hydrocarbon compounds (PAHs) • Polychlorinated biphenyls (PCBs) • Dissolved Methane
Recent Groundwater Monitoring (Ace Environmental)		
GW1 to GW3	One-off (July 2020)	• Metals (As, B, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Pb, Hg, Se, V, Zn) • Nutrients (ammonia, total nitrogen, total and reactive phosphorous, nitrate, nitrite, NOx) • TRH • BTEX • OC/OP pesticides • PAHs • Per- and poly-fluoroalkyl substances (PFAS)

8.2.1 Assessment Levels

The groundwater analytical results obtained from the biannual monitoring conducted at the Site have been compared against the Australian Drinking Water Guidelines (NHMRC/ARMCANZ, 2011) and the Non-Potable Use Guidelines (DoH, 2014). The rationale for the selection of these assessment levels is outlined in Table Y.

Table Y Rationale for Selection of Groundwater Assessment Levels

Assessment Levels	Rationale	Limitations
Australian Drinking Water (health and aesthetic) Guidelines (ADWG)	Per DWER, Contaminated sites guideline – Assessment and management of contaminated sites, December 2014 (DWER, 2014) to determine if there is a potential risk associated with potable uses of groundwater, and therefore if any encumbrances related to current or future groundwater at the Site should apply. Potable uses of groundwater may include: • Water intended for human consumption, either directly from the water supply, or indirectly in beverages, ice or foods prepared with water; • Water required for food preparation (e.g. washing dishes, washing fruit and vegetables; and/or • Other domestic purposes such as bathing and showering, filling wading pools and washing clothes.	Currently, groundwater at the Site is abstracted for dust suppression only and is not used for any potable uses. However, groundwater may be abstracted for potable uses under the future proposed residential land use. Additionally, use of these assessment levels is conservative given that the WA Department of Health does not recommend the use of bore water for drinking unless tested and treated.
Non-Potable Use Guidelines (NPUG)	The DoH issued a policy and advice to the public regarding the safe use of bore water, which states that groundwater or bore water should not be used for drinking or swimming unless tested or treated (DoH, 2004). In accordance with the DoH (2004) policy, assessment levels were developed for non-potable use in a domestic setting, which are intended to help protect the health of the public who may have cause to use or may be exposed to groundwater that contains chemical residues (DoH, 2014). Likely reasonable uses for non-treated groundwater are for irrigation of gardens (including the growing of vegetables), flushing of toilets, and washing vehicles. The DoH assessment levels have been adopted to assess if there is a potential human health risk associated with exposure to abstracted groundwater at the Site and therefore, if any encumbrances related to current or future groundwater abstraction at the Site should apply.	Currently, groundwater at the Site is abstracted for dust suppression only and is not used for any non-potable uses specified in DoH (2014). Groundwater may be used at the Site in future for non-potable uses under the proposed residential land use. Additionally, potential groundwater users down-gradient from the Site may use groundwater for non-potable uses.

Long-term irrigation water (LTIW) assessment levels (ANZECC, 2000) were considered in previous monitoring reports. However, the LTIW values were derived to protect crops that have been irrigated with water over a 100-year period in a non-domestic (agricultural) setting. As such, the non-potable use guidelines (DoH, 2014) for groundwater use in a domestic setting are deemed more appropriate for use in a tier 1 risk screening assessment for the Site.

The Ace Environmental (2020) groundwater analytical results (Appendix E) have also been compared to freshwater assessment levels (ANZECC, 2000). However, these assessment levels are not deemed applicable at the Site, given that the nearest down-gradient fresh water receptor is Lake Goollelal, which is located approximately 3km west of the Site. It is not expected that groundwater impacts that may be originating from the Site would reach this receptor.

If the groundwater concentrations are below these conservative assessment levels (ADWG and NPUG) then further assessment is not necessary unless there are specific sensitivities that warrant the derivation and application of lower assessment levels. Conversely, if the assessment levels are considered to be overly conservative, derivation and application of higher, less conservative assessment levels may be warranted.

8.2.2 Monitoring Well Placement

Table Z below summarizes the monitoring well placement at the Site with respect to the groundwater flow direction indicated in Figure 8.

Table Z Monitoring Well Placement

Placement	Well IDs	Rationale
Background	NODGW05	Located along the northern boundary. This monitoring well has been nominated as being representative of background groundwater quality in the area. Up-gradient of this well is Furniss Road, with the Landsdale Industrial Estate located north of Furniss Road. Prior to 2009 (when construction of the Landsdale Industrial Estate commenced), the area up-gradient of the Site was virgin bushland.
Up-gradient	NODGW01 NODGW02 NODGW06	Located along the eastern boundary of the Site. Groundwater quality in these wells is likely to be representative of groundwater impacts that have resulted from the former landfill located directly adjacent to the east of the Site (Lot 2 – potential up-gradient source of groundwater impacts).
Down-gradient	NODGW03 NODGW04	Located along the southern boundary, down-gradient of monitoring wells located on the eastern boundary. These monitoring wells are located down-gradient of areas of the Site that have not yet been filled. Therefore, groundwater quality in these wells is likely to be representative of groundwater quality originating from the former landfill site adjacent to the east rather than any impacts associated with the Site itself.
	DDW13 DDW29 DDW28	Located along the western boundary. These wells are located down-gradient of waste buried at the Site and may also contain groundwater impacts originating from the former landfill site to the east (Lot 2), which have migrated through the Site.
On-Site	GW1 GW2 GW3	GW1 and GW2 are located withing the previously filled area of the Site (Area A – Figure 3) in the northern portion of the Site. GW3 is located at the base of the unfilled area of the Site (Areas B – Figure 3), north of the stockpile of wood (Stockpile F).

8.2.3 Summary of Groundwater Analytical Results

Groundwater analytical data summary tables for the wells sampled as required under the EP Act Licence are included in Appendix P – Tables 1 to 9 and for the newly installed Ace Environmental (2020) wells in Appendix E. A summary of the CoPCs detected at concentrations above the nominated assessment levels at the Site during the most recent groundwater monitoring events (August 2017 for EP Act wells and July 2020 for Ace Environmental wells) is included in Table AA.

Table AA Summary of Groundwater Analytical Results

CoPC	Monitoring Well ID											
	BG	Up-gradient			Down-gradient					On-Site		
	NODGW05	NODGW01	NODGW02	NODGW06	NODGW03	NODGW04	DDW13	DDW28	DDW29	GW1	GW2	GW3
pH										NA	NA	NA
Ammonia as N												
Arsenic		✓			✓					✓	✓	
Benzo(a)pyrene		✓	✓					✓				
Total Hardness										NA	NA	NA
Iron												
Manganese												
Sodium										NA	NA	NA
Sulphate		✓	✓		✓			✓		NA	NA	NA
TDS										NA	NA	NA
PFOS	NA	NA	NA	NA	NA	NA	NA	NA	NA		✓	

Notes:
1. *NA – Not analysed.*
2. *Green shading indicates concentration is above the ADWG (aesthetic) assessment level.*
3. *✓ indicates concentration is above the ADWG (health) assessment level.*
4. *indicates concentration is above the NPUG.*

8.2.4 Interpretation of Groundwater Analytical Results

An interpretation of the groundwater results obtained from the 2017 biannual groundwater monitoring, which were reported at concentrations above the nominated assessment levels, is included in Table BB.

Table BB Interpretation of Groundwater Analytical Results

CoPC	Assessment Level Exceeded	On-Site Distribution	Analyte Information and Possible Site Implications
pH	• ADWG (Aesthetic)	pH was below the lower range (6.5) in background monitoring well NODGW05 during both monitoring events	• pH was slight acidic in monitoring well NODGW05, which is the up-gradient (background) monitoring well, which suggest that groundwater migrating onto the Site is slightly acidic. • pH conditions on-Site are neutral and within the ADWG (aesthetic) range • pH in NODGW05 has always been lower than the other on-Site wells (with the exception of the first monitoring event in February 2011)
Ammonia as N	• ADWG (Aesthetic)	Exceedances detected in all wells except for DDW29, NODGW02 and NODGW05 (background well) during the February monitoring event. Exceedances detected in all wells except for NODGW02 and NODGW05 (background	• Ammonia is used commercially in fertilisers, which may contribute to the source at the Site, caused from an accumulation of soils containing fertilisers buried at the Site • Ammonia is also generated from landfill leachate caused by the decay of vegetative matter • Ammonia in water can result in the corrosion of copper pipes and fittings, causing copper stains on sanitary ware (NHMRC/ARMCANZ, 2004) • Elevated concentrations at wells along the eastern and southern boundaries significantly above those along the western boundary would suggest that it is likely that

CoPC	Assessment Level Exceeded	On-Site Distribution	Analyte Information and Possible Site Implications
		well) during the August monitoring event.	there is an off-Site source of ammonia up-gradient of the Site
Arsenic (filtered)	• ADWG (Health) • NPUG	Exceedances detected in DDW29, NODGW01, NODGW03, NODGW04 and NODGW06 during the February monitoring event. Exceedances detected in NODGW01 and NODGW03 during the August monitoring event.	• Arsenic is used in a wide range of industrial processes such as wood preservatives, alloying agents and pesticides • The elevated arsenic concentrations detected at the western Site boundary are likely a result of fill material present in the northwest portion of the Site • Elevated concentrations of arsenic are present along the eastern (up-gradient) boundary of the Site, which indicates that it is likely that there is an off-Site source of arsenic up-gradient of the Site also contributing to the concentrations detection in wells along the southern boundary
Benzo(a)pyrene	• ADWG (Health)	Exceedances detected in DDW29 and NODGW02 during the February monitoring event. Exceedances detected in DDW28, NODGW01 and NODGW02 during the August monitoring event.	• PAHs are formed in forest fires and combustion of fossil fuels and are present in emissions of motor vehicles • Benzo(a)pyrene concentrations in groundwater are likely due to burning of wood and/or leaching through bituminous material • Benzo(a)pyrene is a carcinogen and is absorbed principally through the gastrointestinal tract and the lungs • The elevated benzo(a)pyrene concentrations detected at the western Site boundary are likely a result of past activities on-Site and/or off-Site (burning of wood) and/or leaching through bituminous material backfilled at the Site/off-Site • Detection in up-gradient wells NODGW01 and NODGW02 suggests that there is likely an off-Site source of benzo(a)pyrene up-gradient of the Site also contributing to the concentrations detected in wells along the southern boundary
Hardness as $CaCO_3$	• ADWG (Aesthetic)	Exceedances detected in all wells except for the up-gradient northern boundary well, NODGW05 during both monitoring events	• Hardness is typical of limestone rich sediments but the lower concentration in the up-gradient well NODGW05 indicates that Site activities may be contributing to raised concentrations of hardness as $CaCO_3$ • Hardness is more elevated in the up-gradient wells NODGW01 and NODGW02, which suggests that there is likely an off-Site source of hardness as $CaCO_3$ up-gradient of the Site
Iron (filtered)	• ADWG (Aesthetic) • NPUG	Exceedances detected in DDW13, DDW29, NODGW03 and NODGW06 during the February monitoring event Exceedances detected in NODGW01 and NODGW06 during the August monitoring event	• Iron concentrations greater than 0.3 mg/L can affect water taste and stain laundry (NHMRC/ARMCANZ, 2004) • Iron bacteria can cause staining around irrigation systems and possibly a slimy film inside pipes (NHMRC/ARMCANZ, 2004) • The elevated concentrations in up-gradient wells along the eastern Site boundary (NODGW02 and NODGW06) suggests that it is likely that there is an off-Site source of iron up-gradient of the Site
Manganese (filtered)	• ADWG (Aesthetic)	Exceedances detected in NODGW06 in the February monitoring event Exceedances detected NODGW01, NODGW03	• Manganese concentrations above 1 mg/L can affect water taste and stain laundry (NHMRC/ARMCANZ, 2004) • Manganese concentrations above 2 mg/L can cause precipitates inside pipes (NHMRC/ARMCANZ, 2004) • The significantly elevated concentration of manganese in up-gradient wells NODGW01 and NODGW06

CoPC	Assessment Level Exceeded	On-Site Distribution	Analyte Information and Possible Site Implications
		and NODGW06 in the August Monitoring event	suggests that it is likely that there is an off-Site source of manganese up-gradient of the Site
Sodium (filtered)	• ADWG (Aesthetic)	Detected in all wells, exceedances detected in DDW28 only	• Sodium is a natural component of water, based on aesthetic considerations (taste), concentrations at DDW28 may affect water quality
Sulphate	• ADWG (Aesthetic & Health)	Detected in all wells during both monitoring events Exceedances detected in NODGW02 and NODGW03 during the February monitoring event Exceedances detected in DDW28, NODGW01, NODGW02, NODGW03 and NODGW04 during the August monitoring event	• Sulphate occurs naturally in a number of minerals. Based on aesthetic considerations (taste), the concentration of sulphate should not exceed 250mg/L. Purgative effects may occur if the concentration exceeds 500mg/L (health value) (NHMRC/ARMCANZ, 2004). • The consistently elevated concentration of sulphate in the up-gradient wells NODGW01 and NODGW02 suggests that it is likely that there is an off-Site source up-gradient of the Site.
Total Dissolved Solids	• ADWG (Aesthetic)	Exceedances detected in all wells except for the up-gradient northern boundary well NODGW05 and the down-gradient western boundary well DDW29 during both monitoring events	• Total Dissolved Solids is a measure of the combined content of all inorganic and organic substances dissolved in groundwater • There is no specific health guideline value for TDS as there are no health effects directly attributable to TDS (NHMRC/ARMCANZ, 2004) • Palatability of drinking water is affected by TDS concentrations exceeding 600mg/L • The significantly elevated concentration of TDS in up-gradient wells NODGW01, NODGW02 and NODGW06 suggest that it is likely that there is an off-Site source up-gradient of the Site
Total Recoverable Hydrocarbons	• N/A	TRH $C_{10\text{-}40}$ was detected in DDW29, NODGW01, NODGW03, NODGW05 and NODGW06 during the February monitoring event TRH $C_{10\text{-}40}$ was detected in DDW13, DDW28, NODGW01, NODGW02, NODGW03, and NODGW04 during the August monitoring event	• The laboratory analysis detects all recoverable hydrocarbons, not just those associated with 'petroleum' • Hydrocarbon concentrations should therefore be regarded as non-specific components until there is reasonable evidence to link them to a particular source • Hydrocarbons in groundwater may be related to natural sources such as the degradation of organic matter (e.g. plant tannins) and from anthropogenic sources (e.g. fuels, cosmetics, cleaners) • Absence of TRH detections in all wells following silica-gel clean-up (SGC) with the exception of NODGW02 suggest that the pre-SGC TRH detections are a result of degradation of organic matter rather than being derived from petroleum hydrocarbons. The presence of TRH in NODGW02 following silica gel clean-up may be indicative of an off-Site up-gradient source or the inefficiency of the silica gel clean-up method when there are significant amounts of biogenic material present in the sample.

8.2.5 Dissolved Methane in Groundwater

Many ground gases are soluble in groundwater and can migrate with flowing groundwater. The solubility of all gases in water increases with increasing pressure and decreases with increasing temperature.

Methane has a solubility of about 22 mg/L at 25°C and a partial pressure of one atmosphere (101 kPa), and 15 mg/L when the partial pressure is 0.65 atmosphere, as may be the case in a landfill. It is possible for this mechanism to generate high concentrations in soil gas above the water table (partitioning is reversible, so equilibrium soil gas concentration is the same as partial pressure in the source), but mass transport rates are likely to be low. This mechanism may become more significant when considering geological sources at great depth and high pressure, because gases are much more soluble under these conditions. Migration in groundwater may be a significant factor in the lateral migration of VOCs.

Research into methane in UK groundwater by the British Geological Survey - Natural Environment Research Council suggests that, assuming that complete outgassing of dissolved methane from groundwater occurs, the minimum dissolved methane concentration required to reach the explosive hazard of 5-15% v/v methane in air is 1.6mg/L

Groundwater monitoring at the Site indicates that methane has partitioned into groundwater, but at concentrations much lower than 1.6mg/L. Dissolved methane was observed in the up-gradient well NODGW05 during the August 2017 monitoring event at low concentrations which may be indicative of up-gradient background concentrations. The highest concentration of methane was observed in the perimeter well NODGW02 during the August 2017 monitoring event and may indicate an adjacent off-Site source of methane.

8.2.6 Assessment of Groundwater Quality Data against Previous Results

Tables summarising all groundwater monitoring data collected at the Site to date are presented as Tables 1 to 9, Appendix P. Time Series Plots are presented in Appendix Q, which show concentrations over time for all monitoring wells that have had detections of a particular analyte above a nominated assessment level (as outlined in Table AA above).

A comparison of the historical data with the 2017 analytical results is presented in Table CC, which provides a qualitative indication of which way the data is trending.

Table CC Temporal Observations

Analyte	Trend		
	Decreasing	Static / No Trend	Increasing
Ammonia (as N)	NODGW02	DDW13 DDW28 DDW29 NODGW01 NODGW03 NODGW04 NODGW06	-
Arsenic	NODGW01 NODGW02	NODGW03 NODGW06	-
Benzo(a)pyrene	-	NODGW01 NODGW03 NODGW04	-
Hardness (as $CaCO_3$)	DDW13	DDW29 NODGW01 NODGW02 NODGW03 NODGW04 NODGW06	DDW28

Analyte	Trend		
	Decreasing	Static / No Trend	Increasing
Iron (filtered)	NODGW01 NODGW02 NODGW03 NODGW06	DDW13 DDW29	-
Manganese (filtered)	DDW28	DDW13 NODGW01 NODGW02 NODGW03	NODGW06
Sodium	NODGW02	DDW13 DDW28 NODGW03 NODGW06	NODGW04
Sulphate	-	DDW13 DDW28 NODGW04 NODGW06	NODGW02 NODGW03
Total Dissolved Solids	-	DDW13 DDW29 NODGW01 NODGW06	DDW28 NODGW02 NODGW03 NODGW04

Notes:
1. *Blue text indicates up-gradient monitoring wells along the eastern site boundary.*
2. *Purple text indicates down-gradient monitoring wells along the southern boundary, likely to be indicative of off-site sources.*
3. *Red text indicates monitoring wells along the western boundary, likely to be indicative of on-site sources.*

These plots show that, in general, concentrations of CoPCs in up-gradient wells are higher than or comparable to concentrations observed in down-gradient wells. There are some instances where concentrations of CoPCs in down-gradient wells display a spike in concentration above that detected historically in up-gradient monitoring wells. These include the following:

- Ammonia in NODGW03 and NODGW04 in August 2014, February 2015, February 2017 and August 2017
- Arsenic in NODGW03 in August 2014, February 2015, February 2017 and August 2017
- Benzo(a)pyrene in NODGW04 in April 2014, February 2015 and February 2016
- Sodium in DDW28 in February 2015

These spikes appear to be anomalous given that concentrations of these CoPCs in these wells return to pre-spike concentrations in most instances during following monitoring events. Where this is not the case, the spikes appear to be seasonal. These spikes may also be attributed to biases caused by the sampling method and/or analytical methods, but these potential biases have not been considered as part of this assessment.

Overall, the time series plots indicate that, given that concentrations of CoPCs in the up-gradient wells have generally been detected at concentrations greater than those detected in the down-gradient wells, groundwater impacts detected on-Site are likely a result of impacted groundwater migrating onto the Site originating from the former landfill on Lot 2.

8.3 Landfill Gas

Landfill gas monitoring has been undertaken at the Site on a quarterly basis for compliance purposes under the Cell 6 Pty Ltd EP Act License from 2011 to 2017. An additional fourteen (14) landfill gas monitoring wells (GA1 to GA11 and GW1 to GW3[6]) were also installed at the Site in June 2020 and four (4) landfill gas monitoring events were conducted between July and October 2020. These landfill gas monitoring events were undertaken at the Site as outlined in Table DD.

Table DD Summary of Landfill Gas Monitoring Events

Monitoring Locations (Figure 7)	Frequency	Parameter
EP Act Licence Landfill Gas Monitoring		
Monitoring locations included the following wells: Northern Boundary: • G31, G32 & G33 Western Boundary: • NODG01, NODG02R, G34 and G35 Northern Central Portion of the Site: • G30 and G38 Western Central Portion of the Site: • G37 Southern Central Portion of the Site: • G36	Quarterly (undertaken between 2011 and 2017)	The monitoring included measurement of flow (L/hr) and the following gases using an infra-red landfill gas analyser at each of the monitoring wells: • Methane (%v/v) • Carbon dioxide (%v/v) • Oxygen (%v/v) • Hydrogen sulphide (ppm) • Carbon monoxide (ppm)
Recent Landfill Gas Monitoring (Ace Environmental)		
GA1 to GA11 and GW1 to GW3	• 14 July 2020 • 19 August 2020 • 12 September 2020 • 9 October 2020	The monitoring included measurement of flow (L/hr) and the following gases using an infra-red landfill gas analyser at each of the monitoring wells: • Methane (%v/v) • Carbon dioxide (%v/v) • Oxygen (%v/v) • Hydrogen sulphide (ppm) • Carbon monoxide (ppm)

[6] The newly installed groundwater monitoring wells were constructed as dual-purpose landfill gas and groundwater monitoring wells.

8.3.1 Assessment Levels

In the absence of any Australian guidelines for the investigation of landfill gas, the results obtained from the landfill gas monitoring at the Site have been compared against the criteria provided in CIRIA C665 (2007), which is outlined in Table EE below.

Table EE Rationale for Selection of Landfill Gas Assessment Levels

Component	Assessment Levels
Methane	• 1% v/v – reference value for assessing risk posed by ground gases to buildings at the Site above which protective measures may need to be considered (CIRIA C665, 2007)[1] • Gas screening value (GSV)[2] per CIRIA C665 (2007) Table 8.5
Carbon Dioxide	• 5% v/v – reference value for assessing risk posed by ground gases to buildings at the Site above which protective measures may need to be considered (CIRIA C665, 2007)[1] • 5,000ppm - time-weighted average occupational exposure limit (NOHSC, 1995)[3] for exposure of humans to air concentrations • GSV[2] per CIRIA C665 (2007) Table 8.5
Carbon Monoxide	• 30ppm time-weighted average occupational exposure limit (NOHSC, 1995)
Hydrogen Sulphide	• 10ppm time weighted average occupational exposure limit (NOHSC, 1995)

Notes:

1. *Per CIRIA C665 Table 8.5 for concentrations of methane and carbon dioxide that may necessitate raising the CIRIA Characteristic Situation and DETR Classification*
2. *GSV: (Litres of gas per hour) is calculated by multiplying the maximum gas concentration (%) by the maximum measured borehole flow rate (L/hr). The 0.07L/hr GSV threshold value is the value below which no protection measures in buildings are required (as listed in Table 8.5 of Wilson et al., 2007)*
3. *Occupational exposure limits cannot be directly compared to concentrations of gases in ground*

8.3.2 Gas Screening Values

Table FF summarises the Gas Screening Value (GSV) data and the relative risk levels for the most recent monitoring event conducted under the EP Act (2017) as well as the recent landfill gas monitoring conducted by Ace Environmental (2020). A summary of the GSV and all landfill gas monitoring data collected from 2012 to 2017 is presented in Appendix R. Landfill gas monitoring data collected by Ace Environmental (2020) is presented in Appendix E.

Table FF Gas Screening Values

Monitoring Event	Well ID	GSV CO_2 (L/hr)	GSV CH_4 (L/hr)	Additional Factors[1] CH_4[2]	CO_2[3]	Flow[4]	CIRIA CS	Relative Risk	Typical Source of Gas Generation
Quarterly EP Act Landfill Gas Monitoring (2017)									
February 2017	NODG01	0.0004	0	0	0.4	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	NODG02	0.008	0	0	8	0			
	G30R[5]	0.0039	0.0222	22.2	3.9	0			
	G31	0.0019	0	0	1.9	0			
	G32	0.0035	0	0	3.5	0			
	G33	0.0022	0	0	2.2	0			
	G34	0.0084	0	0	8.4	0			
	G35	0.0052	0	0	5.2	0			
	G36	0.0061	0	0	6.1	0			
	G37	0	0	0	0	0			
	G38	0	0	0	0	0			
May 2017	NODG01	0.0037	0	0	3.7	0	CS 1	Very Low Risk	Natural soils with low organic content
	NODG02	0.0055	0	0	5.5	0			

Monitoring Event	Well ID	GSV CO_2 (L/hr)	GSV CH_4 (L/hr)	Additional Factors[1] CH_4[2]	CO_2[3]	Flow[4]	CIRIA CS	Relative Risk	Typical Source of Gas Generation
	G30R[5]	0.0041	0.0172	17.2	4.1	0			"Typical" made ground
	G31	0.0018	0	0	1.8	0			
	G32	0.0021	0	0	2.1	0			
	G33	0.0025	0	0	2.5	0			
	G34	0.005	0	0	5.0	0			
	G35	0.0082	0	0	8.2	0			
	G36	0.0051	0	0	5.1	0			
	G37	0.0135	0	0	13.5	0			
	G38	0.0059	0	0	5.9	0			
August 2017	NODG01	0.0047	0	0	4.7	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	NODG02	0.0055	0	0	5.5	0			
	G30R[5]	0.0039	0.0167	16.7	3.9	0.1			
	G31	0.0028	0	0	2.8	0			
	G32	0.0024	0	0	2.4	0			
	G33	0.0027	0	0	2.7	0			
	G34	0.0089	0	0	8.9	0			
	G35	0.0092	0	0	9.2	0			
	G36	0.0048	0	0	4.8	0			
	G37	0.0108	0	0	10.8	0			
	G38	0.0077	0	0	7.7	0			
November 2017	NODG01	0.0045	0	0	4.5	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	NODG02*	0.0038	0	0	3.8	0			
	G30R[5]	0.0038	0.0179	17.9	3.8	0			
	G31	0.0027	0	0	2.7	0			
	G32	0.0024	0	0	2.4	0			
	G33	0.0026	0	0	2.6	0			
	G34	0.0047	0	0	4.7	0			
	G35	0.0077	0	0	7.7	0			
	G36	0.0045	0	0	4.5	0			
	G37	0.0103	0	0	10.3	0			
	G38	0.0037	0	0	3.7	0			
Ace Environmental Landfill Gas Monitoring (2020)									
14 July 2020	GA1	0.0010	0	0	1.0	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	GA2	0.0013	0	0	1.3	0			
	GA3	0.0014	0.0023	2.3	1.4	0			
	GA4	0.0008	0.0024	2.4	0.8	0			
	GA5	0.0008	0.0007	0.7	0.8	0			
	GA6	0.0005	0	0	0.5	0			
	GA7	0.0017	0.0018	1.8	1.7	0			
	GA8	0.0015	0.0012	1.2	1.5	0			
	GA9	0.0017	0	0	1.7	0			
	GA10	0.0014	0	0	1.4	0			
	GA11	0.0001	0	0	0.1	0			
	GW1	0.0019	0.0013	1.3	1.9	0			
	GW2	0.0007	0.0031	3.1	0.7	0			
	GW3	0.0021	0	0	2.1	0			
19 August 2020	GA1	0.0018	0	0	1.8	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	GA2	0.0056	0.0115	11.5	5.6	0			
	GA3	0.0042	0.0033	3.3	4.2	0			
	GA4	0.0028	0.0071	7.1	2.8	0			
	GA5	0.0046	0.0008	0.8	4.6	0			
	GA6	0.0046	0	0	4.6	0			
	GA7	0.0044	0.0009	0.9	4.4	0			

Monitoring Event	Well ID	GSV CO_2 (L/hr)	GSV CH_4 (L/hr)	Additional Factors[1] CH_4[2]	Additional Factors[1] CO_2[3]	Additional Factors[1] Flow[4]	CIRIA CS	Relative Risk	Typical Source of Gas Generation
	GA8	0.0054	0	0	5.4	0			
	GA9	0.0060	0	0	6.0	0			
	GA10	0.0031	0	0	3.1	0			
	GA11	0.0002	0	0	0.2	0			
	GW1	0.0026	0.0009	0.9	2.6	0			
	GW2	0.0008	0.0190	19.0	0.8	0			
	GW3	0.0023	0	0	2.3	0			
12 September 2020	GA1	0.0001	0	0	0.1	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	GA2	0.0042	0	0	4.2	0			
	GA3	0.0026	0.0004	0.4	2.6	0			
	GA4	0.0031	0.0012	1.2	3.1	0			
	GA5	0.0002	0	0	0.2	0			
	GA6	0.0035	0	0	3.5	0			
	GA7	0.0014	0	0	1.4	0			
	GA8	0.0044	0	0	4.4	0			
	GA9	0.0006	0	0	0.6	0			
	GA10	0.0018	0	0	1.8	0			
	GA11	0.0005	0	0	0.5	0			
	GW1	0.0080	0.0040	4.0	8.0	0			
	GW2	0.0028	0.0156	15.6	2.8	0			
	GW3	0.0022	0	0	2.2	0			
9 October 2020	GA1	0.0040	0	0	4.0	0	CS 1	Very Low Risk	Natural soils with low organic content "Typical" made ground
	GA2	0.0006	0	0	0.6	0			
	GA3	0.0000	0	0	0	0			
	GA4	0.0006	0.0004	0.4	0.6	0			
	GA5	0.0020	0	0	2.0	0			
	GA6	0.0041	0	0	4.1	0			
	GA7	0.0040	0	0	4.0	0			
	GA8	0.0044	0	0	4.4	0			
	GA9	0.0006	0	0	0.6	0			
	GA10	0.0033	0	0	3.3	0			
	GA11	0.0008	0	0	0.8	0			
	GW1	0.0001	0	0	0.1	0			
	GW2	0.0000	0	0	0	0			
	GW3	0.0021	0	0	2.1	0			

Notes:

1. *Per CIRIA C665 Table 8.5 for concentrations of methane, carbon dioxide and borehole flow that may necessitate raising the CIRIA Characteristic Situation (CS) and DETR Classification.*
2. *If methane concentration is greater than 1%, then consider increasing to CIRIA Characteristic Situation 2.*
3. *If carbon dioxide concentration is greater than 5%, then consider increasing to CIRIA Characteristic Situation 2.*
4. *If flow is greater than 70 L/hr, then consider increase to CIRIA Characteristic Situation 3.*
5. *G30 was found to be destroyed in 2012. A replacement well (G30R) was installed at the Site in the vicinity of the former G30 (approximately 50m to the northwest) by the Cell 6 Pty Ltd in 2013.*

8.3.3 Discussion of Results

The data in the above table for monitoring conducted in 2017 and 2020 show that the calculated GSVs indicate that the Site represents a 'very low risk' (Characterisation Situation (CS) 1), in accordance with Table 8.5 of CIRIA C665. However, during each of the monitoring events, with the exception of the 9/10/2020 monitoring event, there were methane and/or carbon dioxide concentrations above 1% and 5%, respectively. In accordance with the 'Additional Factors' outlined in Table 8.5 of CIRIA C665, consideration should be given to increasing to CS 2 if warranted.

9 REVISED CONCEPTUAL SITE MODEL

The preliminary CSM for the Site, provided in Section 7, identified the sources, the potential receptors and exposure pathways relevant to the Site, based on the history of the Site, the Site inspection, current and historical land uses and investigations conducted at the Site to date. Table GG provides a revised CSM for the Site, based on the outcomes of the Tier 1 screening assessment.

Table GG Revised Conceptual Site Model

Exposure Scenario	Exposure Pathways	Discussion
Site workers potentially inhaling of dust by generated from processing of stockpiles and/or site preparation earthworks within previously filled areas of the Site.	Pathway considered incomplete	Although it is not currently known if asbestos and or other CoPCs are present withing the unprocessed stockpiles and/or previously filled areas of the Site, dust suppression will be undertaken during processing of remaining stockpiles at the Site and during Site preparation works. Therefore, this pathway is considered to be incomplete and is not considered to pose risk to site workers.
Direct contact with potentially impacted soil at the Site by future site occupants and/or intrusive maintenance workers.	Pathway potentially complete	It is proposed that the entire Site surface will be covered with a 600mm layer of imported clean fill, so there will be no direct contact risk associated with the top 600mm at the Site Although subsurface works at depths greater than 600mm under the proposed land use scenarios is unlikely, this could occur (i.e. installation of deep sewer, installation of pools, etc.). Investigation of the soil within Area A to remain above the raft and further characterisation of soil of Stockpile A for PFAS is required to determine if this material poses a risk to the identified receptors. Therefore, disturbing soil at depths greater than 600mm at the Site has the potential to pose risk to future site occupants and/or intrusive maintenance workers if CoPCs are present at concentrations above the relevant human health assessment levels.
Direct contact with potentially impacted groundwater via abstraction on-site.	Pathway potentially complete	Although it appears that elevated concentrations of CoPCs may be originating from an off-site up-gradient source, current groundwater investigations indicate that there are several CoPCs present in groundwater beneath the Site above human health and non-potable use assessment levels. Therefore, groundwater impacts have the potential to pose risk to potential future groundwater users at the Site if abstracted for use.
Direct contact with potentially impacted groundwater via abstraction off-site.	Pathway potentially complete	Current groundwater investigations indicate that CoPCs are present at the down-gradient site boundary at concentrations above human health and non-potable use assessment levels. Additionally, sampling at the newly installed groundwater monitoring wells have indicated the presence of PFAS above the human health assessment level. PFAS has not yet been analysed for in the wells along the down-gradient Site boundary. It is also unknown if there are any groundwater users down-gradient from the Site. Therefore, impacted groundwater originating from the Site that may be migrating off-site has the potential to pose risk to any down-gradient groundwater users, if present.
Inhalation of volatile contaminants in soil and/or groundwater by future site occupants via vapour intrusion into buildings.	Pathway potentially complete	The potential for volatile contaminants to be present in soils surrounding the workshop, diesel and waste oil storge areas and waste processing infrastructure has not been assessed. Therefore, potential impacts in soil in these areas has the potential to pose risk to future site occupants and/or intrusive maintenance workers.
Inhalation of volatile contaminants in soil by intrusive maintenance workers in a shallow trench	Pathway potentially complete	

Exposure Scenario	Exposure Pathways	Discussion
Potential explosion and/or asphyxiation associated with potential accumulation of landfill gases in proposed buildings on-site	Pathway potentially complete	Landfill investigations conducted at the Site to date (24 monitoring events between 2011 and 2017) within fill material at the Site have not identified concentrations of gases requiring gas mitigation measures in buildings in the last 2 years of monitoring at existing wells or during 4 recent monitoring events at the newly installed wells. However, additional monitoring is required at wells within previously filled areas at the Site in accordance with frequency and durations outlined in CIRIA C665 to adequately characterise the gas risk at the Site. Additionally, investigations are required at the southern and eastern boundaries of the Site to determine if landfill gas originating from fill material present on Lot 2 may be migrating on-site at concentrations that may pose risk. Therefore, landfill gas at the Site has the potential to pose risk to future site occupants if additional monitoring identifies landfill gas at concentrations that pose a risk.
Potential explosion and/or asphyxiation associated with potential accumulation of landfill gases in buildings off-site	Pathway considered incomplete	Landfill investigations conducted at the Site to date (24 monitoring events between 2011 and 2017) along the perimeter of the Site have not identified the presence of landfill gas. Therefore, this pathway is considered to be incomplete and is not considered to pose risk to occupants of any off-Site buildings.

Notes:

Green shading and red text indicate that a potentially complete exposure pathway has been identified at the Site requiring further investigation and/or management.

10 DATA GAPS

The following data gaps require consideration in order to further refine the CSM and develop appropriate site management measures to support the development of an MAR and re-classification of the Site for its proposed future land use.

10.1 Administrative

10.1.1 Drivers and Stakeholders

The current driver for investigation is the *Contaminated Sites Act, 2003* in the context of the proposed development of the Site. It has been identified that additional soil, groundwater and landfill gas investigations (and management, as appropriate) are required to address the identified data gaps prior to development of the Site.

Once all investigations and any required management measures have been completed in order to demonstrate that the Site is suitable for the proposed use, re-classification will be sought via a MAR with the expected endpoint classification under the CS Act to be *'Remediated – restricted use'.* Any restrictions on the use of the Site will be outlined in a Site Management Plan (SMP).

The stakeholders include:

- the accredited contaminated sites Auditor (Vanessa Bryant – Senversa) who has been engaged to review / endorse reports documenting the investigations undertaken at the Site and ultimately to prepare the MAR in support of the proposed endpoint classification under the CS Act.
- The DWER who are responsible for re-classification of the Site under the CS Act providing that it has been adequately demonstrated via the MAR process that the Site is suitable for the proposed land use.
- potential purchasers who will need to be made aware of the contamination status of the Site at the time of purchase (via Form 6 of section 68 of the CS Act.

10.1.2 Administrative Controls

Administrative controls in the form of restrictions on the use of the Site (via Memorials on Title) under the proposed residential land use will be required to restrict:

- access to material beneath the geotechnical raft that has not been and is not planned to be investigated; and
- abstraction of groundwater.

The specific restrictions will be outlined in an SMP to be developed once all relevant data gaps have been addressed and prior to development of the Site.

10.2 Technical

10.2.1 Sources

Potential sources of contaminants at the Site that have not yet been investigated and/or fully characterised include the following:

- Soil within Area A that is to remain above the geotechnical raft and below the 600mm layer of imported clean fill.
- Stockpile A for PFAS as part of the stockpile characterisation sampling regime (as outlined in Section 8.1).
- Soil within Stockpile E requires characterisation following processing as outlined in Section 4.6.3.1 and prior to use above the geotechnical raft as outlined in Section 4.6.3.2.
- Unsealed ground in the area of the workshop, fuel and waste oil storage and waste processing infrastructure.
- Further assessment of the landfill gas generation potential of the material in Area A to determine if gas protection measures may be required in proposed buildings at the Site.
- Further assessment of the presence of PFAS in groundwater beneath the Site, including at the down-gradient Site boundary to assess the potential for PFAS impacted groundwater to be migrating off-Site.

10.2.2 Assessed Media

Media assessed during previous investigations has included asbestos, soil, groundwater and landfill gas. The assessed media is considered applicable under the current conceptual model for the Site.

A vapour assessment has not been completed at the Site. Given that volatile hydrocarbons have not been assessed in the areas of fuel and waste oil storage, the workshop or waste processing infrastructure, an assessment of these compounds in soil in these areas as an initial screen is required to assess the potential risk to future site occupants. This soil assessment will determine if further vapour assessment may be required.

10.2.3 Contaminants of Potential Concern

The following CoPCs require further consideration:

- PFAS is required to be characterised in soil of Stockpile A prior to use during site preparation works in Area B.
- The sand generated from the processing of Stockpile E requires characterisation in accordance with the CoPCs outlined in Section 7.1.3.
- PFAS is required to be analysed in groundwater samples collected monitoring wells located along the down-gradient site boundary.
- Unsealed ground in the area of the workshop, fuel and waste oil storage and waste processing infrastructure requires assessment in accordance with the CoPCs outlined in Section 7.1.3.

10.2.4 Receptors

With respect to the potential for off-site migration of groundwater impacts from the Site, it is not currently known if there are any off-site groundwater users located down-gradient from the Site.

10.2.5 Exposure Assessment

Further investigation / management is required to address the following components of the exposure assessment:

- Current health risk statements suggest that there is the potential for intrusive maintenance workers and future site occupants to be exposed to CoPCs (if present) via direct contact if disturbing soil at depths greater than 600mm at the Site (i.e. beneath the layer of imported clean fill). Investigation of the soil within Area A to remain above the raft and further characterisation of soil of Stockpile A for PFAS is required to determine if this material poses a risk to the identified receptors.

- Current health risk statements suggest that the exposure pathway via groundwater abstraction by future Site occupants may be complete if abstracted for non-potable use on-site. Restrictions on groundwater abstraction via Memorials on Title will be required.

- Current health risk statements suggest that the exposure pathway via groundwater abstraction by potential off-Site groundwater users may be complete if present. Further investigation of the presence of PFAS along the down-gradient boundary of the Site is required. Additional investigations are also required to determine if:
  - groundwater impacts orignating from the Site are migrating off-Site to pose risk to any potential off-site groundwater users; and/or
  - bore users are present down-gradient from the Site via a bore survey.

- Current health risk statements suggest that there is the potential for intrusive maintenance workers and future site occupants to be exposed to volatile organic vapours via inhalation. Additional investigations are required to assess the presence of volatile contaminants to be present in soils surrounding the workshop, diesel and waste oil storge areas and waste processing infrastructure.

- Current health risk statements suggest that it is unlikely that landfill gases will accumulate in future proposed buildings at the Site at concentrations that pose a risk. However, additional monitoring is required to adequately characterise the gas risk on-site and to determine if landfill gas is migrating on-site from Lot 2. The current landfill gas monitoring well network within the previously filled areas at the Site (Area A) is adequate to address the spacing requirements as outlined in Table 4.2 of CIRIA C665 (2007). Therefore, the additional landfill gas investigations would need to consider the following:
  - Spacing of monitoring wells along the eastern and southern boundaries of the Site to adequately determine the potential for landfill gas to be migrating onto the Site.
  - Frequency and duration of monitoring required as per Table 8.5 of CIRIA C665.

11 RECOMMENDED CORRECTIVE ACTIONS

11.1 Additional Investigations

Development of a sampling and analysis quality plan (SAQP) outlining the following additional investigations is recommended:

- Investigation of quality of the soil within Area A to remain above the geotechnical raft to determine the suitability of this material for the proposed end use. The investigation will need to consider the volume of soil that will be potentially accessible beneath the clean fill layer and the proposed land use (i.e. residential or commercial/industrial).
- Further characterisation of the soil from Stockpile A for the presence of PFAS.
- Characterisation of the soil generated from the processing of Stockpile E in accordance with the sampling frequency outlined in DWER (2018) and for the suite of CoPCs as follows:
  - TRH
  - BTEX
  - PAHs
  - Phenols
  - Metals
  - OC/OP pesticides
  - PCBs
  - Nutrients
  - PFAS
  - Asbestos
- Investigation of the quality of soil surrounding the workshop, fuel and waste oil storage and waste processing infrastructure. The investigation should target surface and subsurface soils to determine the vertical and lateral extents of any soil impacts and incorporate the following suite of CoPCs:
  - TRH
  - BTEX
  - PAHs
  - Metals
  - VOCs / SVOCs
  - Solvents
- Further assessment of the gas regime within previously filled areas at the Site via landfill gas monitoring at existing and new landfill gas monitoring wells in accordance with the frequency and duration of monitoring outlined in Table 8.5 of CIRIA C665 (2007).
- Installation of additional landfill gas monitoring wells along the eastern and southern boundaries (or alternatively seek permission from the owner of Lot 2 to access the existing monitoring well network along these boundaries[7]) to determine if landfill gas is migrating on-Site from fill material present at Lot 2.

[7] Provided that the monitoring wells area installed appropriately to assess migration of landfill gas and are of adequate spacing in accordance with Table 4.2 of CIRIA C665 (2007). Consideration should also be given as to whether they are installed within natural soils or within fill material in Lot 2, as this may provide potential false positives from a migration perspective onto the Site.

- Conduct an additional groundwater monitoring event at all new and existing groundwater monitoring wells at the Site for the suite of analytes outlined in the EP Act License plus PFAS in order to assess the extent of PFAS on-site and the potential for PFAS impacted groundwater to be migrating off-Site.
- Conduct an off-site groundwater investigation as follows:
  - Installation of off-site groundwater monitoring wells at down-gradient locations to assess if impacted groundwater originating from the Site may be migrating off-site; and/or
  - Conduct a bore survey of properties down-gradient from the Site to determine if there are any down-gradient groundwater users;
  - Obtain permission to sample identified bores to determine quality of abstracted bore water and presence of any CoPCs that may be indicative of impacted groundwater originating from the Site.

It is recommended that each of the above investigations is incorporated into an SAQP for review and endorsement by the Auditor prior to implementation. The outcomes of the SAQP implementation should be documented in a Detailed Site Investigation (DSI) report (or separate stand-alone reports as deemed appropriate). If additional data gaps or any unacceptable risks are identified following completion of the investigations outlined in the SAQP, the following will be required:

- Further investigations to address the identified data gaps.
- Remediation as required to mitigate any unacceptable risks.

Any required remediation should be documented in a Remedial Action Plan (RAP) and the effectiveness any remediation should be validated and documented in a Site Remediation and Validation (SRV) report.

Each of the above stages of investigation / remediation (if required) should be done in consultation with the Auditor.

11.2 Site Management Plan

At this stage, given the current understanding of the contamination status at the Site, the following is recommended to be incorporated into an SMP:

- Detail the depth of the clean fill capping layer and the geofabric warning barrier over the geotechnical raft.
- Detail the allowable depths of intrusive works during and post site development and depths / locations of underground service infrastructure.
- Details of any gas protection measures required in buildings and associated construction quality assurance (CQA) requirements (if required based on the investigations outlined above)
- Outline the restrictions on groundwater use on-site and any other restrictions deemed necessary based on the above investigations.

Table HH provides a summary of the data gaps and scope of work recommended to demonstrate that Site does not pose unacceptable risk under the proposed land use.

Table HH Data Gaps Summary and Recommended Scope of Work

Issue	Component	Data Gap	Objective	Task	Scope/Outcomes	Proposed Timing
Incomplete Exposure Assessment	Investigation Drivers	• Additional investigations (and/or management, as appropriate) are required to address the identified data gaps prior to development of the Site • Development of an SMP based on the outcomes of the additional investigations • All investigation reports along with the SMP to be reviewed and approved by the Auditor to support the development of an MAR • Re-classification of the Site under the CS Act	Refine investigation scopes, understand remediation objectives and provide relevant information so that a robust SMP and MAR can be developed to allow the subsequent re-classification of the Site under the CS Act as '*Remediated – restricted use*'	Submit reports for Auditor Review upon completion of investigations and management at the Site (as appropriate)	• Re-classification of the Site under the CS Act	Dependent on timing of completion of additional investigations and SMP
		• Formal disclosure of the contamination status of the Site following re-classification to potential purchasers	Compliance with section 68 of the CS Act	Submission of a Form 6 under section 68 of the CS Act	• Facilitation of the sale of subdivided blocks of land	Upon sale of each individual block following subdivision
	Sources	• Soil within Area A that is to remain above the geotechnical raft and below the 600mm layer of imported clean fill requires assessment • Soil within Stockpile A requires further characterisation • Soil within Stockpile E requires characterisation following processing and prior to use above the geotechnical raft • Unsealed ground in the area of the workshop, fuel and waste oil storage and waste processing infrastructure requires investigation • The landfill gas generation potential of the material in Area A requires further assessment. • Groundwater at the Site and downgradient of the Site requires further assessment	Provide sufficient data to support the SMP	Develop an SAQP for Auditor review / endorsement Implement SAQP Document SAQP implementation in a DSI report and update CSM Complete any required remediation in accordance with a RAP and document effectiveness in an SRV report (if required) Incorporate findings into the SMP	• Complete soil, groundwater and landfill gas investigations as outlined in the Auditor endorsed SAQP • Detail any remediation requirements in a RAP and document effectiveness in an SRV report (if required) • Incorporate management measures into SMP (as required)	Q1-Q3 2021
	CoPCs	• PFAS in soils of Stockpile A may pose a risk to future site occupants and/or intrusive maintenance workers. • Potential CoPCs in sand generated from the processing of Stockpile E require characterisation. • PFAS in groundwater may pose a risk to off-site groundwater users (if present). • Potential CoPCs in unsealed ground in the area of the workshop, fuel and waste oil storage and waste processing infrastructure requires assessment.	Assess if CoPCs are present at concentrations that pose a risk requiring further assessment and/or management			
	Receptors	• The presence of off-site groundwater users is currently unknown.	Determine if off-site groundwater users are present down-gradient of the Site.		• Complete a bore survey to determine if down-gradient groundwater users are present • Sample bores to determine quality of abstracted bore water • Determine any restriction requirements	
	Pathways	• The direct contact pathway via potential soil impacts beneath the clean fill layer to future site occupants and/or intrusive maintenance workers requires further assessment.	Determine if the direct contact pathway requires consideration into the CSM / SMP		• Complete soil investigation within this layer of soil as outlined in the Auditor endorsed SAQP	
		• The exposure pathway via groundwater abstraction by potential off-Site groundwater users may be complete and requires further assessment.	Determine if impacted groundwater is migrating off-site		• Complete an off-site groundwater investigation as outlined in the Auditor endorsed SAQP	
		• The exposure pathway via inhalation of volatile organic vapours in soils surrounding the workshop, diesel and waste oil storge areas and waste processing infrastructure by intrusive maintenance workers and future site occupants may be complete and requires further assessment.	Determine if the vapour intrusion pathway requires consideration into the CSM / SMP		• Complete soil investigation within these areas as outlined in the Auditor endorsed SAQP	
		• The exposure pathway via accumulation of landfill gases in future proposed buildings at the Site requires further assessment	Determine the gas risk in accordance with CIRIA C665 (2007)		• Conduct landfill gas investigation • Determine if gas mitigation measures are required to be incorporated into buildings • Incorporate management measures into SMP (as required)	
Site Management		• Specific requirements for site management currently not well understood	Incorporate CSM and risk characterisation into SMP following completion of the above	Complete SMP	• Incorporate tier 1 risk statements • Develop contingency plans • Develop ongoing monitoring program (if required) • Determine end points and criteria for no further action (if applicable)	Q4 2021

END

12 REFERENCES

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13 LIMITATIONS

This report has been prepared in accordance with the scope of services described in the previous sections of this report. The report has been prepared for the sole use of the Client and the Auditor engaged to review investigations conducted at the Site as stipulated under the *Contaminated Sites Act 2003*.

The report or document does not purport to provide legal advice and any conclusions or recommendations made should not be relied upon as a substitute for such advice.

The report relies upon data, surveys, measurements and results taken at or under the Site at particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and the Auditor and Enpoint accepts no responsibility for its use by other parties. The Client and Auditor agree that Enpoint's report or associated correspondence will not be used or reproduced in full or in part for promotional purposes and cannot be used or relied upon by any other individual, party, group or company in any prospectus or offering. Any individual, party, group or company seeking to rely on this report cannot do so and should seek their own independent advice.

No warranties, express or implied, are made. Subject to the scope of work undertaken, Enpoint's assessment is limited strictly to identifying typical environmental conditions associated with the subject property based on the scope of work and testing undertaken and does not include an evaluation of the structural conditions of any buildings on the subject property or any other issues that relate to the operation of the site and operational compliance of the site with state or federal laws, assessment levels, standards or other industry recommendations or best practice. Scope of work undertaken for assessments are agreed in advance with the Client and may not necessarily comply with state or federal laws or industry assessment levels for the type of assessment conducted.

This report is based upon (if undertaken as part of the scope work) a site inspection conducted by Enpoint personnel and/or information from interviews with people who have knowledge of site conditions and/or information provided by the Client.

While normal assessments of data reliability have been made, Enpoint assumes no responsibility or liability for errors in any data obtained from the Client, statements from sources outside of Enpoint, or developments resulting from situations outside the scope of this project/assessment.

Enpoint is not engaged in environmental auditing and/or reporting of any kind for the purpose of advertising sales promoting, or endorsement of any Clients' interests, including raising investment capital, recommending investment decisions, or other publicity purposes.

Information relating to soil, groundwater, waste, air or other matrix conditions in this document is considered to be accurate at the date of issue. Surface, subsurface and atmospheric conditions can vary across a particular site or region, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site that may exist. Subsurface conditions including contaminant concentrations can change in a limited period of time and typically have a high level of spatial heterogeneity.

From a technical perspective, there is a high degree of uncertainty associated with the assessment of subsurface, aquatic and atmospheric environments. They are prone to be heterogeneous, complex environments, in which small subsurface features or changes in geologic conditions or other environmental anomalies can have substantial impact on water, air and chemical movement.

Major uncertainties can also occur with source characterisation, assessment of chemical fate and transport in the environment, assessment of exposure risks and health effects, and remedial action performance. These factors make uncertainty an inherent feature of potentially impacted sites. Technical uncertainties are characteristically several orders of magnitude greater at impacted sites than for other kinds of projects.

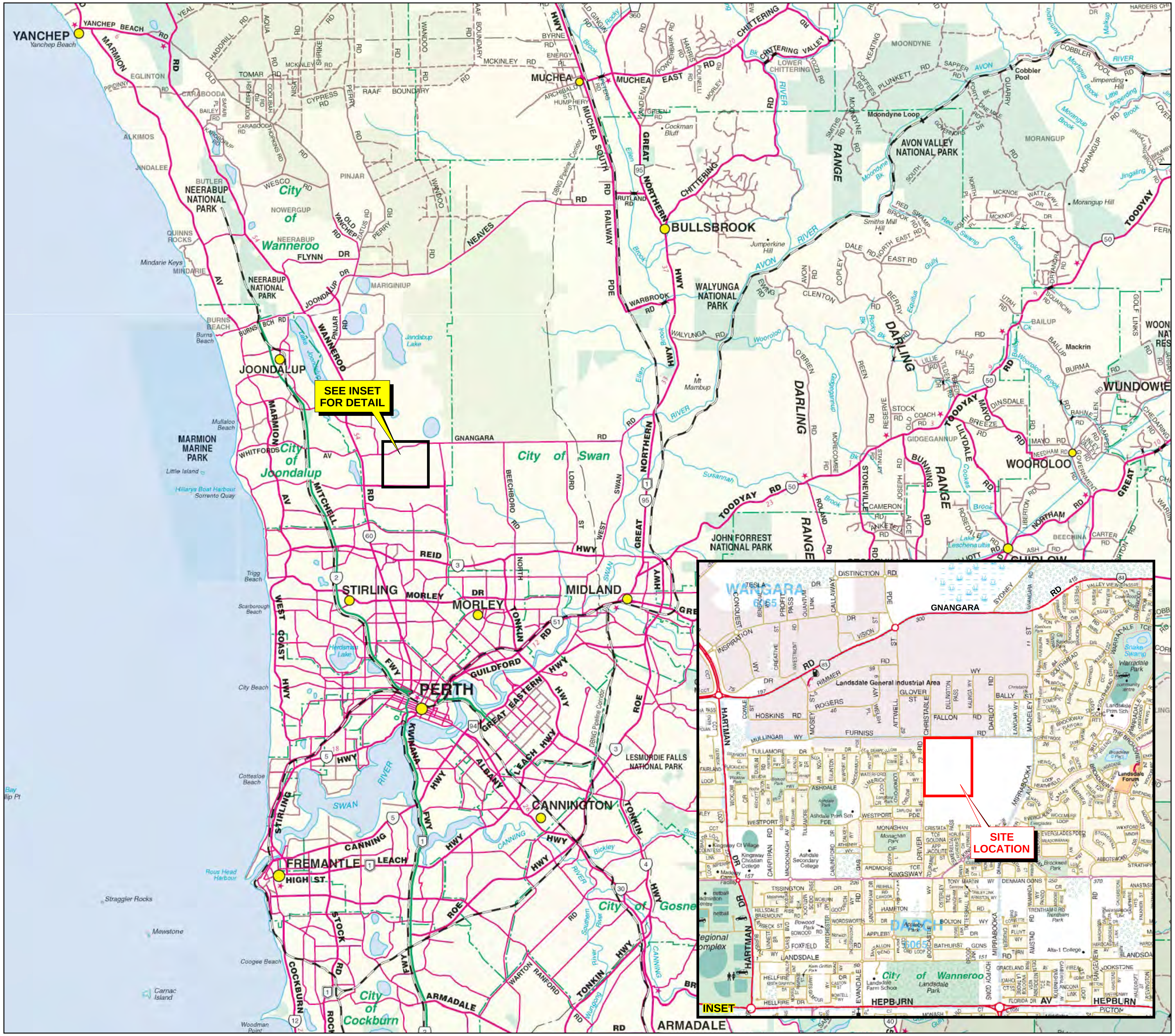
In relation to the conduct of Asbestos inspections or the preparation of hazardous materials reports Enpoint has conducted inspections and the identification of hazardous material within the constraints presented by the property. Whist efforts are made to access areas not normally accessed during normal use of the site to identify the presence of asbestos or other hazardous material, unless explicitly tested no guarantee can be provided that such material is or is not present.

Enpoint's professional opinions are based upon its professional judgment, experience, and training. These opinions are also based upon data derived from the limited testing and analysis described in this report or reports reviewed. It is possible that additional testing and analysis might produce different results and/or different opinions or other opinions. Enpoint has limited its investigation(s) to the scope agreed upon with its Client. Enpoint believes that its opinions are reasonably supported by the testing and analysis that has been undertaken (if any), and that those opinions have been developed according to the professional standard of care for the environmental consulting profession in this area at this time. Other opinions and interpretations may be possible. That standard of care may change and new methods and practices of exploration, testing and analysis may develop in the future, which might produce different results.

ACRONYMS

ABC	Ambient Background Concentration
ACL	Added Contaminant Limit
ADWG	Australian Drinking Water Guidelines
AEC	Average Exposure Concentration
AS	Australian Standard
ASC	Assessment of Site Contamination
CIRIA	Construction Industry Research and Information Association Report
CS	Characteristic Situation
CS Act	Contaminated Sites Act 2003
CoPC	Contaminants of Potential Concern
CoW	City of Wanneroo
CSM	Conceptual Site Model
DER	Department of Environment Regulation
DoH	Department of Health
DWER	Department of Water and Environmental Regulation
EIL	Ecological Investigation Level
EP Act	Environmental Protection Act 1989
ESL	Ecological Screening Level
HIL	Health Investigation Levels
LTIW	Long-term Irrigation Water
MA	Mandatory Audit
mAHD	metres Australian Height Datum
MAR	Mandatory Auditor's Report
NATA	National Association of Testing Authorities
NEPC	National Environmental Protection Council
NEPM	National Environment Protection Measure
NOD	Non-Organic Disposals
NPUG	Non-Potable Groundwater Use Guideline
PFAS	Per- and poly-fluoroalkyl substances
PSI	Preliminary Site Investigation
SAQP	Sampling, Analysis and Quality Plan
SMP	Site Management Plan
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
WAPC	Western Australian Planning Commission

FIGURES



0 2.5 5 7.5 10km

SCALE 1 : 250 000 at A4 (MGA)

NOTES:

PRELIMINARY
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Newsquare Nominees

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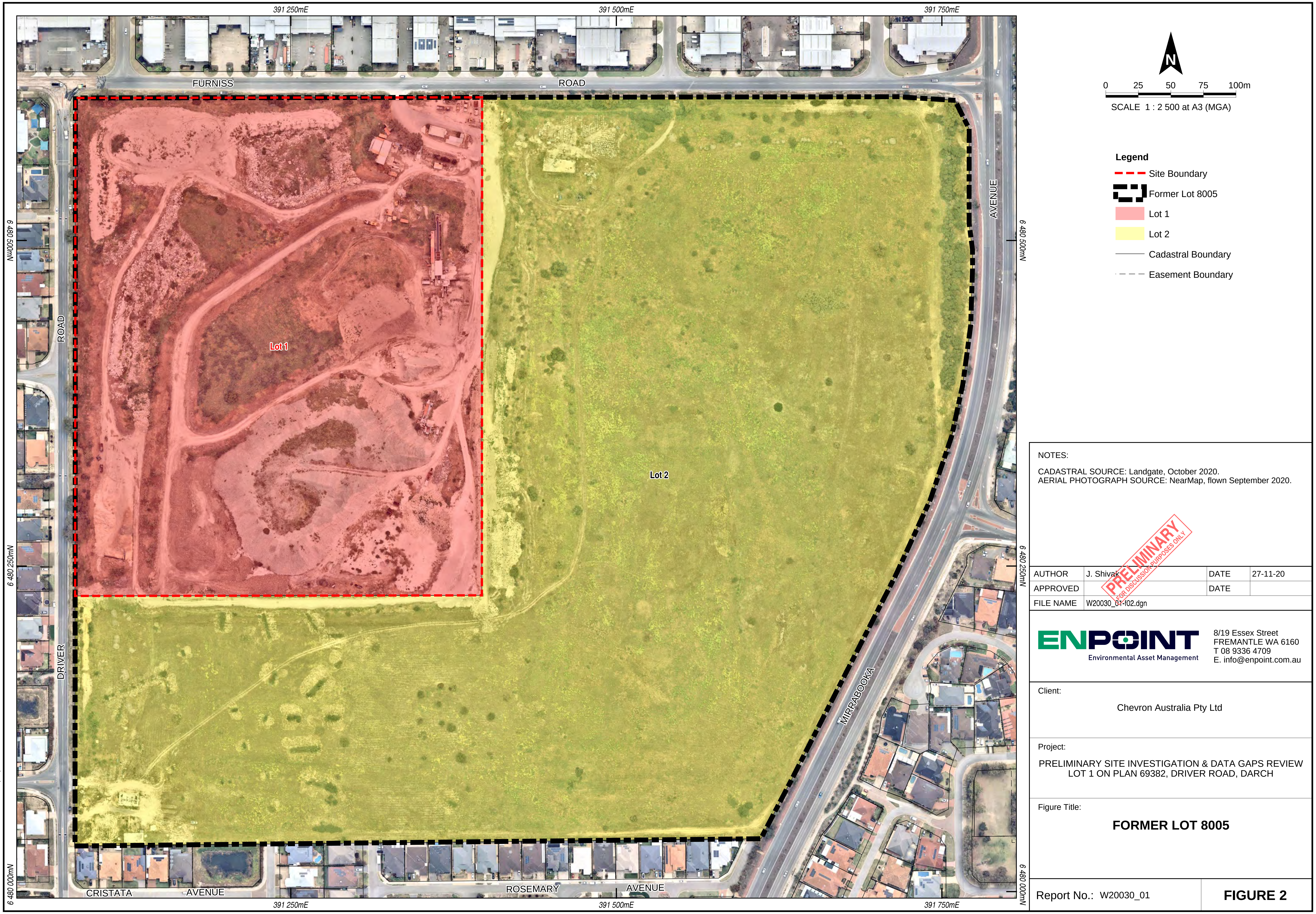
PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

SITE LOCATION

Report No.: W20030_01

FIGURE 1



NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

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LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

FORMER LOT 8005

Report No.: W20030_01

FIGURE 2

PINPOINT CARTOGRAPHICS (08) 9562 7136

N

0 20 40 60 80 100m

SCALE 1 : 1 750 at A3 (MGA)

Legend

- Non-organic Disposals Boundary
- Cadastral Boundary
- Area A - Previously Filled (7.52ha)
- Area B - Unfilled (4.43ha)

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

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PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

SITE PLAN - PREVIOUSLY FILLED AND UNFILLED AREAS

Report No.: W20030_01

FIGURE 3

N

0 20 40 60 80 100m

SCALE 1 : 1 750 at A3 (MGA)

Legend

- Non-organic Disposals Boundary
- Cadastral Boundary
- Auto Retic Lines
- High Pressure 25mm Hose Location

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

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PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
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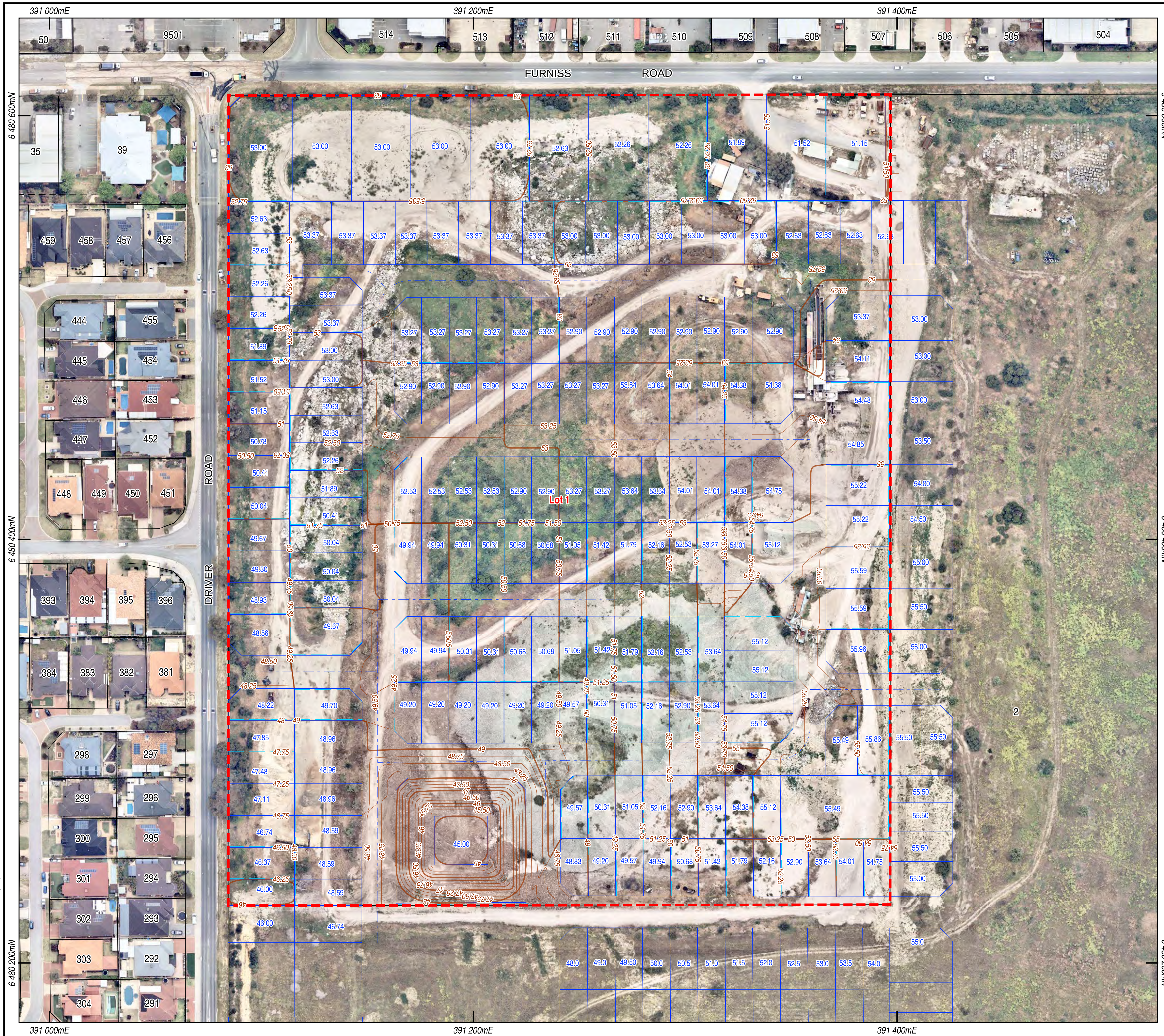
Figure Title:

SITE PLAN SHOWING EXISTING SITE LAYOUT AND INFRASTRUCTURE

Report No.: W20030_01

FIGURE 4

PINPOINT CARTOGRAPHICS (08) 9562 7136



0 20 40 60 80 100m

SCALE 1 : 1 750 at A3 (MGA)

Legend

- Non-organic Disposals Boundary
- Cadastral Boundary
- Proposed Subdivision Boundary
- 52.63 Finished Lot RL (m AHD)
- Finished Level Contour (m AHD)

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

PRELIMINARY FOR DISCUSSION PURPOSES ONLY

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PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

PROPOSED SITE LAYOUT

Report No.: W20030_01

FIGURE 5

PINPOINT CARTOGRAPHICS (08) 9562 7136

N

0 20 40 60 80 100m

SCALE 1 : 1 750 at A3 (MGA)

Legend

Non-organic Disposals Boundary

Cadastral Boundary

Stockpile Material

A Sand (fines) - Approximately 160,000m³

B Aggregate - Approximately 160,000m³

C Concrete - Approximately 55,000m³

D Fine Aggregate

E Unprocessed Material - Approximately 14,000m³

F Wood - Approximately 6,500m³

G Plastic - Approximately 13,000m³

H Yellow Sand

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

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PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

RESIDUAL STOCKPILED MATERIALS

Report No.: W20030_01

FIGURE 6

N

0 20 40 60 80 100m

SCALE 1 : 1 750 at A3 (MGA)

Legend

- Non-organic Disposals Boundary
- Cadastral Boundary
- Former Landfill Gas Monitoring Well Location (Destroyed)
- Existing Groundwater Monitoring Well Location
- Existing Landfill Gas Monitoring Well Location
- Newly Installed Groundwater Monitoring Well Location
- Newly Installed Landfill Gas Monitoring Well Location

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

PRELIMINARY
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PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

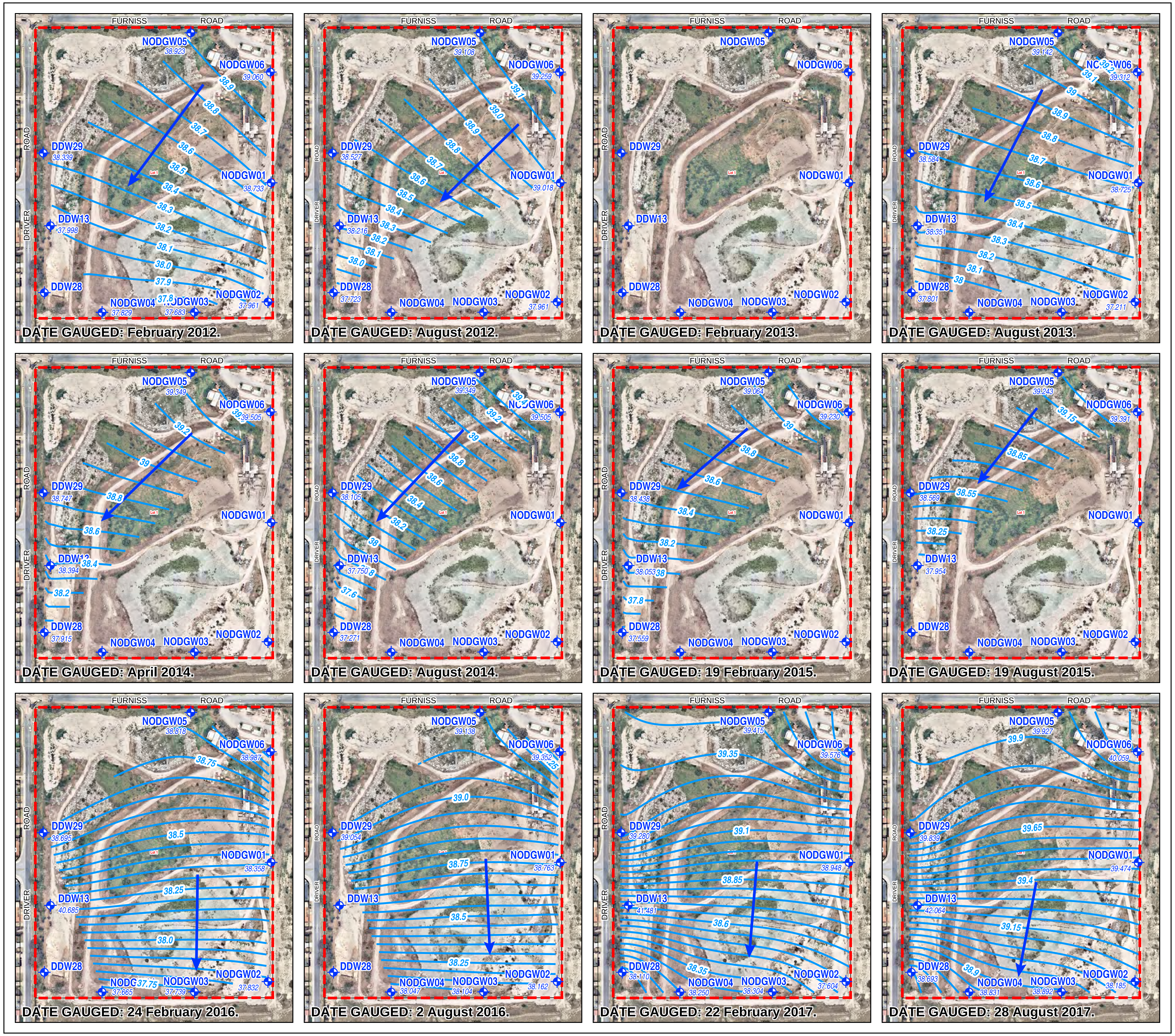
Figure Title:

MONITORING WELL LOCATIONS

Report No.: W20030_01

FIGURE 7

PINPOINT CARTOGRAPHICS (08) 9562 7136



N

0 50 100 150 200m

SCALE 1 : 5 000 at A3 (MGA)

Legend

- Non-organic Disposals Boundary
- Cadastral Boundary
- Easement Boundary
- Groundwater Monitoring Well Location
- 37.961 Groundwater Elevation (mAHD)
- Inferred Groundwater Elevation Contour (mAHD)
- Inferred Groundwater Flow Direction

NOTES:

CADASTRAL SOURCE: Landgate, October 2020.
AERIAL PHOTOGRAPH SOURCE: NearMap, flown September 2020.

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APPROVED		DATE	
FILE NAME	W20030_01-f08.dgn		

ENPOINT
Environmental Asset Management
8/19 Essex Street
FREMANTLE WA 6160
T 08 9336 4709
E. info@enpoint.com.au

Client:

Chevron Australia Pty Ltd

Project:

PRELIMINARY SITE INVESTIGATION & DATA GAPS REVIEW
LOT 1 ON PLAN 69382, DRIVER ROAD, DARCH

Figure Title:

GROUNDWATER ELEVATIONS (2012 TO 2017)

Report No.: W20030_01

FIGURE 8

APPENDIX A

BASIC SUMMARY OF RECORDS

Government of Western Australia
Department of Water and Environmental Regulation

Contaminated Sites Act 2003
Basic Summary of Records Search Response

Report generated at 02:51:07PM, 12/11/2020

Receipt No:	
ID No:	*65505*

Search Results

This response relates to a search request received for:

50 Driver Rd
Darch, WA, 6065

This parcel belongs to a site that contains 2 parcel(s).

According to Department of Water and Environmental Regulation records, this land has been reported as a known or suspected contaminated site.

Address	50 Driver Rd Darch, WA, 6065
Lot on Plan Address	Lot 1 On Plan 69382
Parcel Status	**Classification:** 24/11/2009 - *Contaminated - restricted use* **Nature and Extent of Contamination:** The Site contains up to 25m thickness of construction and demolition waste including metal, plastic, plaster board and wood fragments, asbestos containing materials and hydrocarbon residues. Soils within the waste body contain lead, copper and zinc contamination and fragments of asbestos containing materials. Groundwater underlying the Site is impacted by arsenic, manganese and total chromium contamination. Landfill gas is present within the Site that contains methane and carbon dioxide. **Restrictions on Use:** The landuse of the Site is restricted to a managed "Landfill Site" only. All public access to the site should be prohibited. No soils or groundwater should be disturbed, excavated or abstracted without the implementation of a Health, Safety and Environmental Management Plan. The Site should be subject to an on-going program of on-site and perimeter landfill gas and groundwater monitoring. **Reason for Classification:** This Site was reported to the Department of Environment and Conservation (DEC) under section 11 of the 'Contaminated Sites Act 2003', which commenced on 1 December 2006. This Site classification is based on information submitted to DEC by 14 September 2009.

Contaminated Sites Act 2003
Basic Summary of Records Search Response

Report generated at 02:51:07PM, 12/11/2020

The Site comprises approximately 36 hectares of land bounded by Furniss Road in the north and Mirrabooka Road on the east. The Site lies within an area currently used for the disposal of Class 1 (Inert) construction and demolition waste in accordance with the requirements of a Waste Disposal License (Ref 6832/11). Filling operations on approximately 25 hectares of land to the east and southeast of the operational landfill have been completed.

The Site is currently used for the disposal of waste, a land uses that has the potential to cause contamination as per the guideline "Potentially Contaminating Activities, Industries and Land Uses" (Department of Environment, October 2004). In addition, the southwest corner of the Site is used for the preparation and sale of stone, mechanical workshops and for the storage and distribution of fuel oils such as diesel.

The east and south eastern part of the Site (the filled portion of the Site) has been the subject of soil, groundwater and landfill gas investigations conducted between 2005 and 2009. Investigations were initially conducted with a view to the sale and redevelopment of the Site for residential purposes.

The 2005 investigation identified the presence of up to 24m thickness of demolition and construction waste, including significant quantities of metal, wood, plaster board, and plastic fragments. In addition, bore records note the presence of asbestos containing materials (ACM), hydrocarbon residues and motor vehicle waste. Soil sampling from the waste body identified fragments of asbestos containing materials (ACM). Landfill gas samples taken from monitoring bores within the waste body showed the presence of methane in soils exceeding the upper explosive limit of methane in air (i.e. 15%v/v methane in air), carbon dioxide and a corresponding depletion in oxygen concentration, suggesting the production of landfill gas from within the waste body.

A soil, groundwater and landfill gas investigation was carried out in June 2008. The limited soil investigations identified the presence of lead within the waste body, at concentrations exceeding health investigation levels for residential land uses with access to soils (HIL-A) and copper and zinc at concentrations exceeding Ecological Investigation Levels (EIL) as set out in the guideline "Assessment Levels for Soil, Sediment and Groundwater" (Department of Environment, November 2003). A surface inspection and laboratory analysis of soil samples identified the presence of fragments of asbestos containing materials (ACM) within the waste body and exposed at the surface in the eastern and south-eastern areas of the Site.

A limited groundwater investigation characterised the groundwater beneath the waste body as slightly acidic, saline and with high levels of organic components. Analysis identified the presence of arsenic, chromium and manganese at concentrations exceeding Australian Drinking Water Guidelines as set out in "Assessment Levels for Soil, Sediment and Groundwater" (DoE, November 2003), but below Department of Health levels for Non-Potable Residential Uses as set out in 'Contaminated Sites Reporting Guideline for Chemicals in Groundwater' (Department of Health, 2006).

The 2008 investigation detected the presence of up to 55%v/v methane in soil, exceeding the upper explosive limit of methane in air (i.e. 15% methane) and 15.3%v/v carbon dioxide from within gas monitoring wells predominantly in the southeast corner of the Site. Hydrogen sulphide concentrations in soil were recorded at up to 196ppm exceeding the published occupational health and safety exposure limit in air (OSHA 10ppm).

The 2008 investigation provided photographs of a quarry stone processing and sales business located in the southwest portion of the Site. The photographs show the presence of hydrocarbon staining in soils around the underground fuel storage tank and bowser, mechanical workshops, waste fuel sumps and around unbunded drum storage areas.

Contaminated Sites Act 2003
Basic Summary of Records Search Response

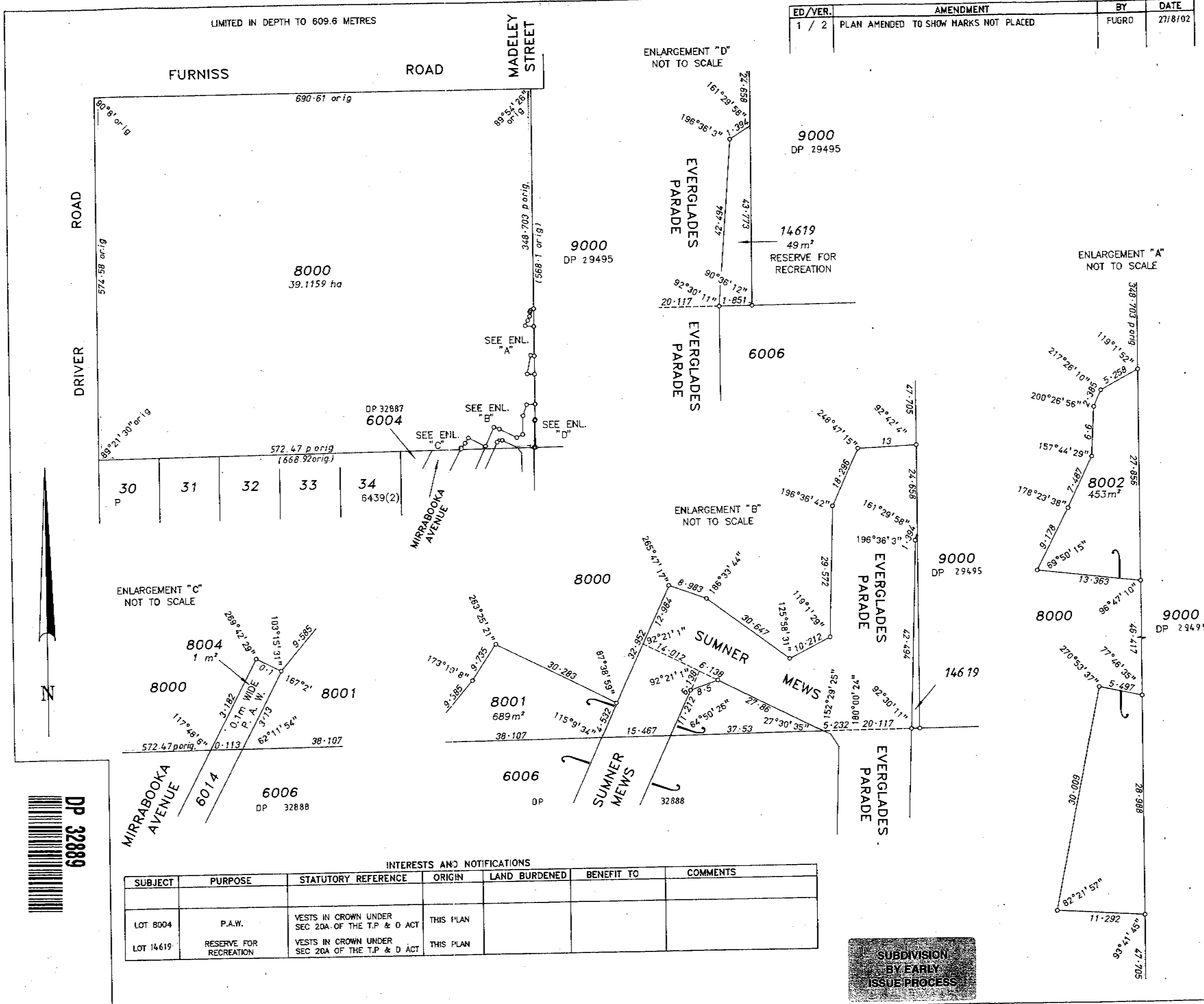
Report generated at 02:51:07PM, 12/11/2020

	The Site was the subject of additional landfill gas monitoring from existing and new perimeter monitoring well locations around the Site in September 2008, and in February, May, June and August 2009. The most recent monitoring data shows that methane gas is being generated within the southeast and northwest of the waste body at concentrations up to 46.6%v/v methane, and is present in soils at up to 0.2%v/v on the western perimeter of the Site. In addition, carbon dioxide generation is occurring within the eastern half of the landfill site up 16.9%v/v and is present in soils along the northern and south-eastern perimeters of the landfill up to 4.6%v/v. Gas flow rates are greatest within the southeast of the landfill site, but perimeter monitoring indicates that currently no landfill gas is migrating through soils beyond the site boundary. A preliminary risk assessment suggests that, based on current gas flow and concentration data, the site is unsuitable for any development or use other than as a managed "landfill site". As the Site is known to be contaminated but has been subject to risk assessment that has shown that the site is suitable for certain restricted land uses, the Site is classified as 'Contaminated - Restricted Use' restricting the landuse of the Site to a managed "Landfill Site" only and be subject to an on-going program of landfill gas and groundwater monitoring. The on-going landfill gas and groundwater investigations and assessments should include detailed characterisation and delineation of the landfill gas and groundwater contamination. DEC notes that landfill gas monitoring to date has not been carried out over a representative range of atmospheric conditions including the "worst-case conditions". Further landfill gas monitoring is required to provide sufficient information to predict current and future trends in landfill gas generation and movement from the Site. The results of on-going monitoring should be used to further assess human health and environmental risks, including risks to future and adjacent land users. All investigations and assessments should be carried out by a suitably qualified environmental consultant in accordance with Contaminated Sites Management Series guidelines or where necessary other relevant national or international technical guidance. DEC, in consultation with Department of Health, has classified this Site based on the information available at the time of classification. It is acknowledged that the contamination status may have changed since this time, and as such the usefulness of this information may be limited. In accordance with Department of Health advice if groundwater is being, or is proposed to be, abstracted DEC recommends that analytical testing should be carried out to determine whether the groundwater is suitable for its intended use.
Certificate of Title Memorial	Under the Contaminated Sites Act 2003, this Site has been classified as "Contaminated - restricted use". For further information on the contamination status of this Site, please contact the Contaminated Sites section of the Department of Environment & Conservation.
Current Regulatory Notice Issued	**Type of Regulatory Notice:** *Nil* **Date Issued:** *Nil*
General	No other information relating to this parcel.

APPENDIX B

CERTIFICATES OF TITLE

ED/VER.	AMENDMENT	BY	DATE
1 / 2	PLAN AMENDED TO SHOW MARKS NOT PLACED	FUGRO	27/8/02



TYPE	FREEHOLD
PURPOSE	SUBDIVISION

PLAN OF

LOTS 8000 - 8002, 8004, 14619 & ROADS

DISTRICT SWAN
TOWNSITE
DOLA FILE
LOCAL AUTHORITY CITY OF WANNEROO
LOCALITY DARCH & LANDSDALE

EARLY ISSUE YES

FORMER TENURE
LOT 1441
ON DP 256246
C/T 1313/358

FIELD BOOK
79980
87768

ON
INDEX BG35(2) 12.01 & 13.01
PUBLIC

SCALE: 1:4000
ALL DISTANCES ARE IN METRES
0 50 100 150 200 250m

SURVEYOR'S CERTIFICATE – Reg 54
I, O.F. TEMBY hereby certify that this plan is a correct representation of the survey and / or calculation from measurements recorded in the field book lodged for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.
19.7.02
Licensed Surveyor Date

SURVEYOR'S CERTIFICATE – Compiled
hereby certify that this compiled plan (a) is a correct and accurate representation of the survey(s) of the subject land; and (b) is in accordance with the relevant law in relation to which it is lodged.
Licensed Surveyor Date

SURVEY FIRM FUGRO SPATIAL SOLUTIONS Pty. Ltd.
18 PROWSE STREET
WEST PERTH, W.A. 6005
TEL (08) 9322 4355
FAX (08) 9322 1775
LANDSDALE STAGE 24
PLAN No. LS/9276-157 Rev:0

LODGED
DATE 18-07-02
FEE PAID $298
ASSESS No. 352327

TYPE OF VALIDATION
FULL AUDIT
LEGAL COMPONENT ✓
DOCKET PLAN 32986
CERTIFIED CORRECT 23.9.02
F.S.C. 234-2002

APPROVED BY WESTERN AUSTRALIAN PLANNING COMMISSION
FILE 117865
DELEGATED UNDER S.20 WAPC ACT 1985
DATE 25-10-2002

IN ORDER FOR DEALINGS
SUBJECT TO
Sec. 295(5) of the Local Govt Act and Sec. 20 A of the T.P. & D. Act
28.10.2002
FOR INSPECTOR OF PLANS & SURVEYS / AUTHORISED LAND OFFICER DATE

APPROVED
APPROVED 11.12.2002
INSPECTOR OF PLANS & SURVEYS / AUTHORISED LAND OFFICER DATE

DOLA
Department of LAND ADMINISTRATION

DEPOSITED PLAN
32889

SHEET 1 OF 1
EDITION 1 VERSION 2

INTERESTS AND NOTIFICATIONS

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS
LOT 8004	P.A.W.	VESTS IN CROWN UNDER SEC 20A OF THE T.P & D ACT	THIS PLAN			
LOT 14619	RESERVE FOR RECREATION	VESTS IN CROWN UNDER SEC 20A OF THE T.P & D ACT	THIS PLAN			

SUBDIVISION BY EARLY ISSUE PROCESS

DP 32889

TRANSFER 12219 VOL. 683 , FOL. 34
33023/29 1929.
17844/34
15364/411
1499/56

INDEXED. 7a

ORIGINAL.

OFFICE OF TITLES
PERTH
C/T. VOL. 1014 FOLIO 385
Road Districts Act, 1919-1
A new certificate of Title must issue for the land herein, and to include the closed road, before any further dealing may be registered.
Fee in Vol. 683 Fol. 34 F. A. Blott
Registrar of Titles
23508/3/59—500

REGISTER BOOK.
Vol. 1014 Fol. 385.

Certificate of Title

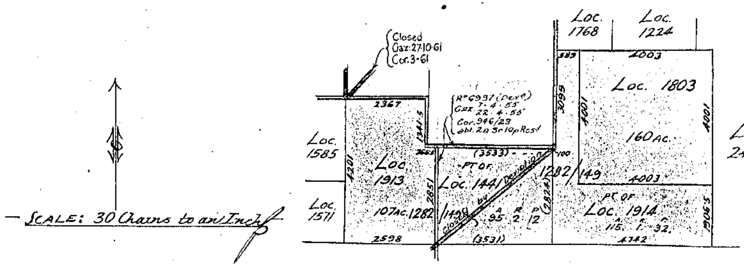
(56 Vict., 14.)

CT 1014 0385 F

CANCELLED

Denis Keane of Osborne Park, Farmer

is now the sole proprietor of an estate in fee simple in possession subject to the easements and encumbrances notified hereunder in the natural surface and so much as is below the natural surface to a depth of two thousand feet of all those pieces of land delineated and coloured green on the map hereon, containing in the aggregate four hundred and seventy eight acres and four perches or thereabouts, being Swan Locations 1803, 1913 and part of each of Swan Locations 1914 and 1441.



CANCELLED

Dated the twenty second day of October One thousand nine hundred and twenty-nine.

Assistant Registrar of Titles.

Transfer 7711/1934 Transferred to Maurice Patrick Keane of Osborne Park Farmer Registered 23rd November 1934 at 1.5 o'clock

Assistant Registrar of Titles.

Transfer 7551/1941. Transferred to Dudley Meredith Pilbeam of Wanneroo Road, Tuart Hill, Meatworker. Registered 30th September 1941 at 2-40 o'c.

Assistant Registrar of Titles.

CANCELLED

Portion resumed alone remains

F11746/29

For encumbrances and other matters affecting the land see back.

EASEMENTS AND ENCUMBRANCES REFERRED TO.

Caveat 2110/1955 Lodged ... 1955 at 3.0 WITHDRAWN
ASSISTANT REGISTRAR OF TITLES.

Withdrawal 74222/63 of Caveat 2110/1955 Lodged 11.12.1963 at 9.15
REGISTRAR OF TITLES

APPLICATION 19447/64 a separate certificate issued for the unresumed portion
Registered 1st April 1964 at 2.12 o'c
1282-149 Includes closed Road
Registrar of Titles

Title is cancelled

CT 1014 0385 B

Certificate of Title.

Registered Vol.................... Fol....................

Application 19447/64 (60705) jt
Volume 683 Folio 34
1014 385

WESTERN AUSTRALIA.

ORIGINAL
REGISTER BOOK.

INDEXED *SU.*

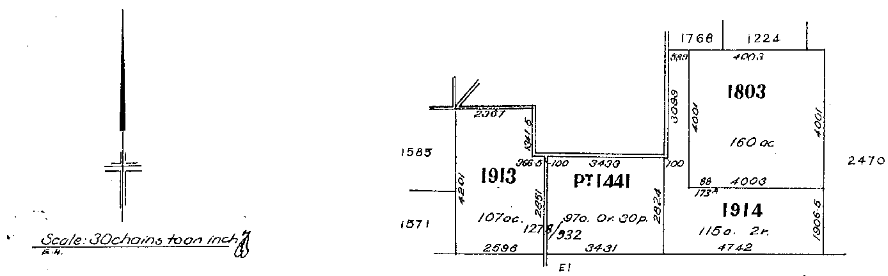
Vol. 1282 *Fol.* 149

CT 1282 0149 F

Certificate of Title

under "The Transfer of Land Act, 1893" (56 Vic., 14. Sch. 5).

Dudley Meredith Pilbeam of 84 Baden Street, Joondanna Heights, Meat Worker, is now the proprietor of an estate in fee simple subject to the easements and encumbrances notified hereunder in the natural surface and therefrom to a depth of two thousand feet of all those pieces of land delineated and coloured green on the map hereon containing in the aggregate four hundred and seventy-nine acres two roods and thirty perches or thereabouts, being Swan Locations 1803, 1913, 1914 and portion of Swan Location 1441.



Dated the first day of April One thousand nine hundred and sixty-four.

Registrar of Titles.

Transfer 74323/63 to William Gray Robertson of 9 Brae Road, Claremont, Estate agent. Registered 1st April 1964 at 2.12 o'c.

TOTALLY CANCELLED
APPLICATION *A 34493.*
Registered *17th April 1968 at 10 o'c*
Balance (Locations 1803 and 1914)
To Vol. *88* Fol. *173A.*
ASSISTANT REGISTRAR OF TITLES

66191/12/62—48,500—17/C

For encumbrances and other matters affecting the land see back.

EASEMENTS AND ENCUMBRANCES REFERRED TO

[illegible] 74224/63 Location 1913 and the portion of Location 1441 comprised herein to Rippon Lea Holdings Pty Ltd

1st April 1964 at 2.12 pm

O. Johnson
Registrar of Titles

1278-932

Mortgage 85785/67 to Commercial & General Acceptance Limited. Registered 31st October 1967 at 9.53 am.

Edwards
ASSISTANT REGISTRAR OF TITLES

CT 1282 0149 B

CERTIFICATE OF TITLE

Vol. 1282 *Fol.* 149

Transfer 74224/63 (36925) JLT

Volume 1282 Folio 149

ORIGINAL REGISTER BOOK. INDEXED

Vol. 1278 Fol. No 932

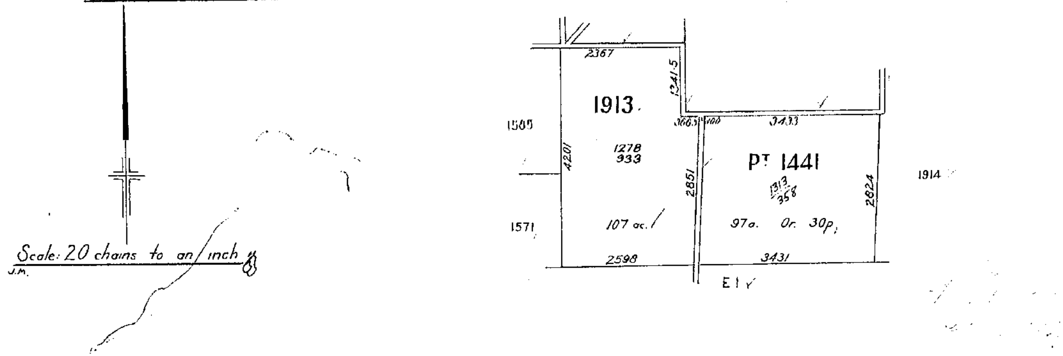
WESTERN AUSTRALIA.

CT 1278 0932 F

Certificate of Title

under "The Transfer of Land Act, 1893" (56 Vic., 14. Sch. 5).

Rippon Lea Holdings Pty. Ltd., having its office at the offices of Messrs. Saw Wheatley & Co. 55 Saint George's Terrace, Perth, is now the proprietor of an estate in fee simple subject to the easements and encumbrances notified hereunder in the natural surface and therefrom to a depth of two thousand feet of all those pieces of land delineated and coloured green on the map hereon containing together two hundred and four acres and thirty perches or thereabouts, being Swan Location 1913 and portion of Swan Location 1441.



Dated the first day of April One thousand nine hundred and sixty-four.

Registrar of Titles.

TOTALLY CANCELLED
TRANSFER 44492/66 Balance (part 1441)
TO Vol 1313 Fol 358
Registered 5th July 1966 at 11.34 a.c.
REGISTRAR OF TITLES

For encumbrances and other matters affecting the land see back.

66191/12/62—48,500—11/C

EASEMENTS AND ENCUMBRANCES REFERRED TO

TRANSFER 74225/63 , Lot 1913 to H.A. Robinson Pty. Ltd.
Registered 1st April 1964 at 2.12 cc 1278-933

Registrar of Titles

CT 1278 0932 B

CERTIFICATE OF TITLE

Vol. 1278 *Fol.* Nº 932

Transfer 44492/66

Volume 1278 Folio 932

JT

ORIGINAL

REGISTER BOOK.

INDEXED

WESTERN AUSTRALIA.

Vol. 1313 Fol. Nº 358

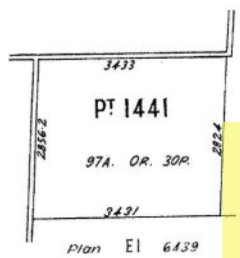
CT 1313 0358 F

Certificate of Title

under "The Transfer of Land Act, 1893" (56 Vic., 14. Sch. 5).

P. & M. Holdings Pty. Ltd., having its office at 300A Albany Highway, Victoria Park, Brian Sles of 100 Second Avenue, Maylands, Company Director, Albert George Webster of 374 Canning Highway, Bicton, Manager, Kazimierz Kotkowski, Company Director, and Zofia Kotkowski, his Wife, both of 100 Vincent Street, Mount Lawley, Eve Starke of 17 Alvin Street, Mount Lawley and Esther Ryszman of 91 Armadale Crescent, Mount Lawley, Married Women, are now the proprietors as tenants in common in the shares set out hereunder of an estate in fee simple subject to the easements and encumbrances notified hereunder in the natural surface and therefrom to a depth of two thousand feet of all that piece of land delineated and coloured green on the map hereon containing ninety-seven acres and thirty perches or thereabouts, being portion of Swan Location 1441.
To be held by them in the following shares:
That is to say to each of them the said P. & M.Holdings Pty. Ltd., Brian Sles and Albert George Webster two undivided tenth shares and to the said Kazimierz Kotkowski and Zofia Kotkowski as joint tenants two undivided tenth shares and to each of them the said Eve Starke and Esther Ryszman one undivided tenth share.

Dated the 5th day of July, 1966.



Scale: 2 chains to an inch.
D.A.W.

A 508916 — 919.

1914

REGISTRAR OF TITLES.

Transfer A508918 to Antonio Alfredo Salamone, Vincento Benicemento Giovanni Salamone, Umberto Giovanni Salamone, and Salvatore Salamone, all of Lot 174 Howe Street, Osborne Park, Earth Moving Contractors, as tenants in common in equal shares. Registered 12th April 1972 at 10.58 o'c.

Transfer C696833 to Antonio Alfredo Salamone of 67 Avocet Road, Stirling, of two undivided sixth shares, Vincento Benicemento Giovanni Salamone, of Lot 500 Driver Road, Wanneroo, of one undivided sixth share, Umberto Giovanni Salamone, of 15 Alexander Street, Balcatta, of one undivided sixth share, and Salvatore Salamone of Lot 1441 Driver Road, Wanneroo, of two undivided sixth shares, all Earth Moving Contractors, as tenants in common. Registered 24th January 1984 at 9.26 o'c.

The correct address of the following registered proprietors is now Antonio Alfredo Salamone of 59 Clements Drive, Karrinyup and Umberto Giovanni Salamone of 28 Ida Street, Balcatta. By C936310 dated this 14th day of January 1985 at 9.23 o'c.

As to one undivided sixth share of Vengenzo Beniamono Giovanni Salamone only:

Application E494313. The registered proprietor is Maria Salamone of 35 Driver Road, Landsdale, as Executrix of the Will of Vingenzo Beniamono Giovanni Salamone, known as Vicento Benicemento Giovanni Salamone who died on 6.9.1989. (Probate granted 16.10.1990)

23rd November 1990

Transfer E494314. The one undivided sixth share of Maria Salamone as Executrix of the Will of Vingenzo Beniamono Giovanni Salamone is transferred to Maria Salamone.
The registered proprietors are now Antonio Alfredo Salamone of 59 Clements Drive, Karrinyup, of two undivided sixth shares, Umberto Giovanni Salamone of 28 Ida Street, Balcatta, of one undivided sixth share, Salvatore Salamone of Lot 1441 Driver Road, Wanneroo, of two undivided sixth shares and Maria Salamone of 35 Driver Road, Landsdale, of one undivided sixth share, as tenants in common. Registered 23rd November 1990 at 10.36 hrs.

86360/7/64—48,500—T1/C

For encumbrances and other matters affecting the land see back.

EASEMENTS AND ENCUMBRANCES REFERRED TO

Mortgage 44493/66 to Rippon Lea Holdings Pty Ltd Registered 5th July 1966 at 11.34 o'c. DISCHARGED
REGISTRAR OF TITLES

Caveat 2328/68. Lodged 12-7-1968 at 11.26 o'c. WITHDRAWN
ASSISTANT REGISTRAR OF TITLES

Caveat 384/69. Lodged 30-1- WITHDRAWN o'c.
ASSISTANT REGISTRAR OF TITLES

Withdrawal A235738 of Caveat 384/1969. Lodged 21.11.1969 at 11.47 o'c.
ASSISTANT REGISTRAR OF TITLES

Caveat A387621 Lodged 2-4-1971 at 10.03 o'c WITHDRAWN

Discharge A418989 of Mortgage 44493/66. Registered 14 July 1971 at 3.25 o'c.

Withdrawal A508916 of Caveat 2328/68. Lodged 12-4-1972 at 10.58 o'c.

Withdrawal A508917 of Caveat A387621. Lodged 12-4-1972 at 10.58 o'c.

Mortgage A508919 to THE COMMISSIONERS OF THE RURAL AND INDUSTRIES BANK OF WESTERN AUSTRALIA Registered 12th April 1972 at 10.58 o'c. DISCHARGED

Mortgage A829362 to THE COMMISSIONERS OF THE RURAL AND INDUSTRIES BANK OF WESTERN AUSTRALIA Registered 29th May 1974 at 9.31 o'c. DISCHARGED

Discharge C276813 of Mortgages A829362 and A508919. Registered 22nd December 1981 at 9.05 o'c.

Mortgage C275814 to THE COMMISSIONERS OF THE RURAL AND INDUSTRIES BANK OF WESTERN AUSTRALIA Registered 22nd December 1981 at 9.05 o'c. DISCHARGED

As to the one undivided fifth share of Antonio Alfredo Salamone only
Warrant C497033 (Plaint 1727/82) Lodged 14.2.1983 at 12.45 o'c.

Discharge C696832 of Mortgage C275814. Registered 24th January 1984 at 9.26 o'c.

Mortgage C834069 to Esanda Ltd. Registered 13th August, 1984 at 9.13 o'c. DISCHARGED

Discharge C936309 of Mortgage C834069. Registered 14th January 1985 at 9.23o'c.

Mortgage C936310 to National Australia Savings Bank Ltd. Registered 14th January 1985 at 9.23 o'c.

Mortgage C936311 to National Australia Bank Ltd. Registered 14th January 1984 at 9.23 o'c.

Discharge E552461 of Mortgage C936310. Registered 22nd February 1991 at 8.57 hrs.

Discharge E552462 of Mortgage C936311. Registered 22nd February 1991 at 8.57 hrs.

Mortgage E552463 to National Australia Bank Ltd. Registered 22nd February 1991 at 8.57 hrs.

Caveat F395916. Lodged 14.12.93 at 15.33 hrs.

CT 1313 0358 B

CERTIFICATE OF TITLE

Vol. 1313 Fol. No 358

Date and time of search:	21/08/2020
Title identifier:	1313-358
Register number:	1441/DP256246
Previous titles:	1278-932
First titles:	GC20-230

History

Completed Document Transaction Summary

15/05/2002			Converted to digital register.
	I204808		ML-Memorial - Miscellaneous. Withdrawn. 22/10/2002 14:06
27/09/2002	I208703		XE-Sundry- Miscellaneous (not affecting nix & does not cancel the title). Registered. 19/08/2002 13:37
		ON	NB1 I208703 NOTE: DEPOSITED PLAN 33353 LODGED
		CT	NOCT
17/12/2002	I324963		XE-Sundry- Miscellaneous (not affecting nix & does not cancel the title). Registered. 12/12/2002 14:06
		ON	NB1 I324963 NOTE: DEPOSITED PLAN 35042 LODGED
		CT	NOCT
17/12/2002	I323792		WC-Withdrawal of Caveat. Lodged. 11/12/2002 15:40
		UNDR	C F395916 ON UC I323792 WITHDRAWAL OF CAVEAT F395916 AS TO LOTS 8004 AND 14619 ON DEPOSITED PLAN 32889 ONLY.
		CT	NOCT
17/12/2002	I303484		D-Discharge of Mortgage or Charge. Registered. 11/12/2002 15:40
		UNDR	MNAB E552463 ON UMD I303484 DISCHARGE OF MORTGAGE E552463 AS TO LOTS 8001, 8002, 8004 AND 14619 ON DEPOSITED PLAN 32889 ONLY.
		CT	NOCT
17/12/2002	I303485		WC-Withdrawal of Caveat. Lodged. 11/12/2002 15:40

Warning: This history search is a record of the transactions affecting this Register, only since it became a digital title. A full search of the Certificate of Title and the relevant documents is required for legal purposes.

	UNDR	C F395916 ON UC I303485 WITHDRAWAL OF CAVEAT F395916 AS TO LOTS 8001 AND 8002 ON DEPOSITED PLAN 32889 ONLY.
	CT	NOCT
17/12/2002 I303486		AF-Application for New Title Subject of a Svy, Strata or Svy Strata. Registered. 11/12/2002 15:40
	FCCPD	PLAN=DP32889 FOLIOS IN=1441/256246. FOLIOS OUT=
	ON	ZZA I303486 FOLIO CANCELLED. NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) ON DP32889 TO VOLUME 2529 FOLIOS 579 TO 583 (INCLUSIVE)
	CT	NOCT

*** END OF SEARCH ***

Warning: This history search is a record of the transactions affecting this Register, only since it became a digital title. A full search of the Certificate of Title and the relevant documents is required for legal purposes.

REGISTER NUMBER	
1441/DP256246	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

WESTERN AUSTRALIA

VOLUME	FOLIO
1313	358

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 1441 ON DEPOSITED PLAN 256246

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ANTONIO ALFREDO SALAMONE OF 59 CLEMENTS DRIVE, KARRINYUP
IN 2/6 SHARE
UMBERTO GIOVANNI SALAMONE OF 28 IDA STREET, BALCATTA
IN 1/6 SHARE
SALVATORE SALAMONE OF LOT 1441 DRIVER ROAD, WANNEROO
IN 2/6 SHARE
MARIA SALAMONE OF 35 DRIVER ROAD, LANDSDALE
IN 1/6 SHARE
AS TENANTS IN COMMON

(T E494314) REGISTERED 23/11/1990

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE.
2. E552463 MORTGAGE TO NATIONAL AUSTRALIA BANK LTD REGISTERED 22/2/1991.
   *I303484 DISCHARGE OF MORTGAGE E552463 LOTS 8001, 8002, 8004 AND 14619 ON DEPOSITED PLAN 32889 ONLY. REGISTERED 11/12/2002.
3. *F395916 CAVEAT BY CITY OF WANNEROO LODGED 14/12/1993.
   *I323792 WITHDRAWAL OF CAVEAT F395916 AS TO LOTS 8004 AND 14619 ON DEPOSITED PLAN 32889 ONLY. LODGED 11/12/2002.
   *I303485 WITHDRAWAL OF CAVEAT F395916 AS TO LOTS 8001 AND 8002 ON DEPOSITED PLAN 32889 ONLY. LODGED 11/12/2002.
4. *I303486 FOLIO CANCELLED. NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) ON DP32889 TO VOLUME 2529 FOLIOS 579 TO 583 (INCLUSIVE) REGISTERED 11/12/2002.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

END OF PAGE 1 - CONTINUED OVER

--END OF CERTIFICATE OF TITLE--

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	1313-358 (1441/DP256246)
PREVIOUS TITLE:	1278-932
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	NO LOCAL GOVERNMENT AUTHORITY INFORMATION AVAILABLE

NOTE 1:	A000001A	LAND PARCEL IDENTIFIER OF SWAN LOCATION 1441 (OR THE PART THEREOF) ON SUPERSEDED PAPER CERTIFICATE OF TITLE CHANGED TO LOT 1441 ON DEPOSITED PLAN 256246 ON 15-MAY-02 TO ENABLE ISSUE OF A DIGITAL CERTIFICATE OF TITLE.
NOTE 2:		THE ABOVE NOTE MAY NOT BE SHOWN ON THE SUPERSEDED PAPER CERTIFICATE OF TITLE OR ON THE CURRENT EDITION OF DUPLICATE CERTIFICATE OF TITLE.
NOTE 3:	I208703	DEPOSITED PLAN 33353 LODGED
NOTE 4:	I324963	DEPOSITED PLAN 35042 LODGED

REGISTER NUMBER	
8000/DP32889	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	**17/12/2002**

WESTERN AUSTRALIA

VOLUME	FOLIO
2529	579

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 8000 ON DEPOSITED PLAN 32889

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ANTONIO ALFREDO SALAMONE OF 59 CLEMENTS DRIVE, KARRINYUP
IN 2/6 SHARE
UMBERTO GIOVANNI SALAMONE OF 28 IDA STREET, BALCATTA
IN 1/6 SHARE
SALVATORE SALAMONE OF LOT 1441 DRIVER ROAD, WANNEROO
IN 2/6 SHARE
MARIA SALAMONE OF 35 DRIVER ROAD, LANDSDALE
IN 1/6 SHARE
AS TENANTS IN COMMON

(AF I303486) REGISTERED 11/12/2002

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. E552463 MORTGAGE TO NATIONAL AUSTRALIA BANK LTD REGISTERED 22/2/1991.
   *I587386 DISCHARGE OF MORTGAGE E552463 LOTS 14994 TO 14997 (INC) ON DP36178 ONLY REGISTERED 12/8/2003.
2. *I589528 MEMORIAL. TOWN PLANNING AND DEVELOPMENT ACT 1928. AS TO LOTS 7, 8, 12 - 20, 1653 AND 1656 ON DP36178 ONLY REGISTERED 13/8/2003.
3. *I569471 FOLIO CANCELLED. NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) ON DP36178. (VOL 2544 FOL 57 - 74 INC) REGISTERED 13/8/2003.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND: DP32889

END OF PAGE 1 - CONTINUED OVER

RECORD OF CERTIFICATE OF TITLE

PREVIOUS TITLE:	1313-358
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	NO LOCAL GOVERNMENT AUTHORITY INFORMATION AVAILABLE

NOTE 1: I403148 DP36178 LODGED

REGISTER NUMBER	
8005/DP36178	
DUPLICATE EDITION **3**	DATE DUPLICATE ISSUED **23/9/2009**

VOLUME **2544** FOLIO **70**

WESTERN AUSTRALIA

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 8005 ON DEPOSITED PLAN 36178

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ANTONIO ALFREDO SALAMONE OF 2 LONGFORD CIRCUIT, DARCH
IN 2/6 SHARE
UMBERTO GIOVANNI SALAMONE OF 28 IDA STREET, BALCATTA
IN 1/6 SHARE
SALVATORE SALAMONE OF LOT 1441 DRIVER ROAD, WANNEROO
IN 2/6 SHARE
MARIA SALAMONE OF 35 DRIVER ROAD, LANDSDALE
IN 1/6 SHARE
AS TENANTS IN COMMON

(AF I569471) REGISTERED 13/8/2003

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
2. *K757622 MEMORIAL. CONTAMINATED SITES ACT 2003 (CONTAMINATED SITE - REMEDIATION REQUIRED) REGISTERED 31/10/2008.
3. L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
4. *L463821 FOLIO CANCELLED. 2544-70 (1/1) CANCELLED TO 2756-288 (2/6), 2756-289 (4/6). REGISTERED 27/10/2010.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
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--END OF CERTIFICATE OF TITLE--

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land

END OF PAGE 1 - CONTINUED OVER

and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP36178
PREVIOUS TITLE:	2529-579
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	NO LOCAL GOVERNMENT AUTHORITY INFORMATION AVAILABLE

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	18/11/2010

WESTERN AUSTRALIA

VOLUME	FOLIO
2756	288

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

2/6 UNDIVIDED SHARES OF
LOT 8005 ON DEPOSITED PLAN 36178

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ANTONIO ALFREDO SALAMONE OF 2 LONGFORD CIRCUIT, DARCH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(XA L463821) REGISTERED 27/10/2010

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
2. L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
3. *L730321 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
4. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
5. *L817341 CAVEAT BY CITY OF WANNEROO LODGED 22/12/2011.
6. *L853126 FOLIO CANCELLED. NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) ON DP69382 TO VOLUME 2785 FOLIOS 196 & 197. REGISTERED 9/2/2012.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND: DP36178

END OF PAGE 1 - CONTINUED OVER

PREVIOUS TITLE:	2544-70
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	NO LOCAL GOVERNMENT AUTHORITY INFORMATION AVAILABLE

NOTE 1: L797709 DEPOSITED PLAN 69382 LODGED.

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	18/11/2010

VOLUME 2756 FOLIO 289

WESTERN AUSTRALIA

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

4/6 UNDIVIDED SHARES OF
LOT 8005 ON DEPOSITED PLAN 36178

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

UMBERTO GIOVANNI SALAMONE OF 28 IDA STREET, BALCATTA
IN 1/4 SHARE
SALVATORE SALAMONE OF LOT 1441 DRIVER ROAD, WANNEROO
IN 2/4 SHARE
MARIA SALAMONE OF 35 DRIVER ROAD, LANDSDALE
IN 1/4 SHARE
AS TENANTS IN COMMON
OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(XA L463821) REGISTERED 27/10/2010

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
2. *L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
3. *L730320 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
4. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
5. *L817342 CAVEAT BY CITY OF WANNEROO LODGED 22/12/2011.
6. *L853126 FOLIO CANCELLED. NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) ON DP69382 TO VOLUME 2785 FOLIOS 196 & 197. REGISTERED 9/2/2012.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
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--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND:	DP36178
PREVIOUS TITLE:	2544-70
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	NO LOCAL GOVERNMENT AUTHORITY INFORMATION AVAILABLE

NOTE 1: L797709 DEPOSITED PLAN 69382 LODGED.

REGISTER NUMBER
1/DP69382

DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

WESTERN AUSTRALIA

VOLUME 2785 FOLIO 196

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 1 ON DEPOSITED PLAN 69382

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

UMBERTO GIOVANNI SALAMONE OF 15 TALIA DRIVE, STIRLING
IN 1/6 SHARE
SALVATORE SALAMONE OF 184 HAWKINS ROAD, WANNEROO
IN 2/6 SHARE
MARIA SALAMONE OF 12 KARRINYUP ROAD, KARRINYUP
IN 1/6 SHARE
ANTONIO ALFREDO SALAMONE OF 2 LONGFORD CIRCUIT, DARCH
IN 2/6 SHARE
AS TENANTS IN COMMON

(AF L853126) REGISTERED 9/2/2012

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
2. *L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
3. *L730320 MEMORIAL. CONTAMINATED SITES ACT 2003 AS TO THE FOUTH UNDIVIDED SIXTH SHARE OF UMBERTO GIOVANNI SALAMONE, SALVATORE SALAMONE AND MARIA SALAMONE ONLY. REGISTERED 9/9/2011.
4. *L730321 MEMORIAL. CONTAMINATED SITES ACT 2003 AS TO THE TWO UNDIVIDED SIXTH SHARE OF ANTONIO ALFREDO SALAMONE ONLY. REGISTERED 9/9/2011.
5. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
6. *L817341 CAVEAT BY CITY OF WANNEROO AS TO THE TWO UNDIVIDED SIXTH SHARE OF ANTONIO ALFREDO SALAMONE ONLY. LODGED 22/12/2011.
7. *L817342 CAVEAT BY CITY OF WANNEROO AS TO THE FOUTH UNDIVIDED SIXTH SHARE OF UMBERTO GIOVANNI SALAMONE, SALVATORE SALAMONE AND MARIA SALAMONE ONLY. LODGED 22/12/2011.
8. *L859813 FOLIO CANCELLED. NEW FOLIOS CREATED. VOLUME 2786 FOLIO 701 AS TO 2/6 SHARE AND

END OF PAGE 1 - CONTINUED OVER

VOLUME 2786 FOLIO 702 AS TO 4/6 SHARE. REGISTERED 16/2/2012.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
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--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND:	DP69382
PREVIOUS TITLE:	2756-288, 2756-289
PROPERTY STREET ADDRESS:	115 FURNISS RD, DARCH.
LOCAL GOVERNMENT AUTHORITY:	CITY OF WANNEROO

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	16/2/2012

VOLUME	FOLIO
2786	701

WESTERN AUSTRALIA

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

THIS IS A SHARE TITLE

LAND DESCRIPTION:

2/6 UNDIVIDED SHARES OF
LOT 1 ON DEPOSITED PLAN 69382

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(T M148592) REGISTERED 31/12/2012

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *L730321 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
2. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
3. *L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
4. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
5. *M183679 FOLIO CANCELLED. 2786-701 (2/6), 2786-702 (4/6) CANCELLED TO 2807-995 (1/1). REGISTERED 12/2/2013.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
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--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND: DP69382
PREVIOUS TITLE: 2785-196

END OF PAGE 1 - CONTINUED OVER

PROPERTY STREET ADDRESS: 115 FURNISS RD, DARCH.
LOCAL GOVERNMENT AUTHORITY: CITY OF WANNEROO

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	16/2/2012

WESTERN AUSTRALIA

VOLUME	FOLIO
2786	702

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

THIS IS A SHARE TITLE

LAND DESCRIPTION:

4/6 UNDIVIDED SHARES OF
LOT 1 ON DEPOSITED PLAN 69382

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

(T M148592) REGISTERED 31/12/2012

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *L730320 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
2. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
3. *L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   *L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
4. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
5. *M183679 FOLIO CANCELLED. 2786-701 (2/6), 2786-702 (4/6) CANCELLED TO 2807-995 (1/1). REGISTERED 12/2/2013.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

--END OF CERTIFICATE OF TITLE--

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP69382
PREVIOUS TITLE: 2785-196

END OF PAGE 1 - CONTINUED OVER

PROPERTY STREET ADDRESS: 115 FURNISS RD, DARCH.
LOCAL GOVERNMENT AUTHORITY: CITY OF WANNEROO

REGISTER NUMBER	
1/DP69382	
DUPLICATE EDITION 2	DATE DUPLICATE ISSUED 9/12/2019

WESTERN AUSTRALIA

VOLUME 2807 FOLIO 995

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 1 ON DEPOSITED PLAN 69382

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW

(XA M183679) REGISTERED 12/2/2013

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *K192639 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 16/5/2007.
2. L046136 LEASE TO MILIND PTY LTD OF 50 DRIVER ROAD, LANDSDALE EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 19/8/2009.
   L046135 TRANSFER OF LEASE L046136, LESSEE NOW CELL 6 PTY LTD OF 196 SCARBOROUGH BEACH ROAD, DOUBLEVIEW REGISTERED 19/8/2009.
3. *L730320 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
4. *L730321 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 9/9/2011.
5. *L796683 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 30/11/2011.
6. *M148594 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 31/12/2012.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
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Lot as described in the land description may be a lot or location.

--END OF CERTIFICATE OF TITLE--

STATEMENTS:

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SKETCH OF LAND:	DP69382
PREVIOUS TITLE:	2786-701, 2786-702
PROPERTY STREET ADDRESS:	115 FURNISS RD, DARCH.
LOCAL GOVERNMENT AUTHORITY:	CITY OF WANNEROO

INSTRUCTIONS

1. If insufficient space in any section, Additional Sheet Form B1, should be used with appropriate headings. The boxed sections should only contain the words "see page....."
2. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.
3. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.

NOTES

1. **DESCRIPTION OF LAND**
   Lot and Diagram/Plan/Strata/Survey-Strata Plan number or Location name and number to be stated.
   Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated. If this document relates to only part of the land comprised in the Certificate of Title further narrative or graphic description may be necessary. The volume and folio number to be stated.
2. **REGISTERED PROPRIETOR**
   State full name and address of the Registered Proprietors as shown on the Certificate of Title and the address / addresses to which future notices can be sent.
3. **INFORMATION CONCERNING SITE CLASSIFICATION**
   Include information concerning site classification as either: contaminated – restricted use, contamination – remediation required, remediated for restricted use or possibly contaminated – investigation required.
4. **CHIEF EXECUTIVE OFFICER'S ATTESTATION**
   This document must be signed by or on behalf of the Chief Executive Officer, Department of Environment and Conservation under Section 91 of Contaminated Sites Act 2003. An Adult Person should witness this signature. The address and occupation of the witness must be stated.

EXAMINED

OFFICE USE ONLY

L730320 ML
09 Sep 2011 15:59:02 Perth
REG $ 160.00

MEMORIAL
CONTAMINATED SITES ACT 2003

LODGED BY
Department of Environment and Conservation

ADDRESS
Level 4, 168 St Georges Terrace
Perth, WA 6842

PHONE No. 1300 762 982

FAX No. (08) 9333 7575

REFERENCE No. 16733

ISSUING BOX No. 888V

PREPARED BY
Contaminated Sites Section
Department of Environment and Conservation

ADDRESS
Level 4, 168 St Georges Terrace
Perth, WA 6842

PHONE No. 1300 762 982 FAX No. (08) 9333 7575

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

1/2

TITLES, LEASES, DECLARATIONS ETC LODGED HEREWITH

1. ______
2. ______
3. ______
4. ______
5. ______
6. ______

Received Items

Nos. 0

Receiving Clerk

Lodged pursuant to the provisions of the TRANSFER OF LAND ACT 1893 as amended on the day and time shown above and particulars entered in the Register.

REGISTRAR OF TITLES WESTERN AUSTRALIA

APPROVAL NUMBER

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Client ID 2765

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

MEMORIAL

CONTAMINATED SITES ACT 2003

SECTION 58(1) (a) (i) (I) (II) (III) (IV)

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
4/6 UNDIVIDED SHARES OF LOT 8005 ON DEPOSITED PLAN 36178	Whole	2756	289

REGISTERED PROPRIETOR (Note 2)

UMBERTO GIOVANNI SALAMONE OF 28 IDA STREET, BALCATTA IN ¼ SHARE
SALVATORE SALAMONE OF LOT 1441 DRIVER ROAD, WANNEROO IN ½ SHARE
MARIA SALAMONE OF 35 DRIVER ROAD, LANDSDALE IN ¼ SHARE

AS TENANTS IN COMMON OF THE SHARE SHOWN IN THE LAND DESCRIPTION

INFORMATION CONCERNING SITE CLASSIFICATION (Note 3)

Under the Contaminated Sites Act 2003, this Site has been classified as "Contaminated - restricted use". For further information on the contamination status of this Site, please contact the Contaminated Sites section of the Department of Environment & Conservation.

Dated this Sixth day of September Year 2011

CHIEF EXECUTIVE OFFICER'S ATTESTATION (Note 4)

Andrew Miller
SECTION MANAGER

DELEGATE OF THE CHIEF EXECUTIVE OFFICER
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
UNDER SECTION 91 OF THE
CONTAMINATED SITES ACT 2003

SIGNATURE OF WITNESS

FULL NAME: Christopher Chau
ADDRESS: 168 St Georges Tce PERTH WA 6000
OCCUPATION: Data Management Officer

INSTRUCTIONS

1. If insufficient space in any section, Additional Sheet Form B1, should be used with appropriate headings. The boxed sections should only contain the words "see page....."

2. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.

3. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.

NOTES

1. **DESCRIPTION OF LAND**
Lot and Diagram/Plan/Strata/Survey-Strata Plan number or Location name and number to be stated.
Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated. If this document relates to only part of the land comprised in the Certificate of Title further narrative or graphic description may be necessary. The volume and folio number to be stated.

2. **REGISTERED PROPRIETOR**
State full name and address of the Registered Proprietors as shown on the Certificate of Title and the address / addresses to which future notices can be sent.

3. **INFORMATION CONCERNING SITE CLASSIFICATION**
Include information concerning site classification as either: contaminated – restricted use, contamination – remediation required, remediated for restricted use or possibly contaminated – investigation required.

4. **CHIEF EXECUTIVE OFFICER'S ATTESTATION**
This document must be signed by or on behalf of the Chief Executive Officer, Department of Environment and Conservation under Section 91 of Contaminated Sites Act 2003. An Adult Person should witness this signature. The address and occupation of the witness must be stated.

EXAMINED

OFFICE USE ONLY

L730321 ML
09 Sep 2011 15:59:02 Perth
REG $ 160.00

MEMORIAL
CONTAMINATED SITES ACT 2003

LODGED BY
Department of Environment and Conservation

ADDRESS
Level 4, 168 St Georges Terrace
Perth, WA 6842

PHONE No. 1300 762 982

FAX No. (08) 9333 7575

REFERENCE No. 16733

ISSUING BOX No. 888V

PREPARED BY
Contaminated Sites Section
Department of Environment and Conservation

ADDRESS
Level 4, 168 St Georges Terrace
Perth, WA 6842

PHONE No. 1300 762 982 FAX No. (08) 9333 7575

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

d/2

TITLES, LEASES, DECLARATIONS ETC LODGED HEREWITH

1. ~~_____~~
2. ~~_____~~
3. ~~_____~~
4. ~~_____~~
5. ~~_____~~
6. ~~_____~~

Received Items

Nos. 9

Receiving Clerk

Lodged pursuant to the provisions of the TRANSFER OF LAND ACT 1893 as amended on the day and time shown above and particulars entered in the Register.

REGISTRAR OF TITLES WESTERN AUSTRALIA

APPROVAL NUMBER

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Client ID 2765

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

MEMORIAL

CONTAMINATED SITES ACT 2003

SECTION 58(1) (a) (i) (I) (II) (III) (IV)

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
2/6 UNDIVIDED SHARES OF LOT 8005 ON DEPOSITED PLAN 36178	Whole	2756	288

REGISTERED PROPRIETOR (Note 2)

ANTONIO ALFREDO SALAMONE OF 2 LONGFORD CIRCUIT, DARCH
AS SOLE PROPRIETOR OF THE SHARE SHOWN IN THE LAND DESCRIPTION

INFORMATION CONCERNING SITE CLASSIFICATION (Note 3)

Under the Contaminated Sites Act 2003, this Site has been classified as "Contaminated - restricted use". For further information on the contamination status of this Site, please contact the Contaminated Sites section of the Department of Environment & Conservation.

Dated this Sixth day of September Year 2011

CHIEF EXECUTIVE OFFICER'S ATTESTATION (Note 4)

Andrew Miller
SECTION MANAGER

DELEGATE OF THE CHIEF EXECUTIVE OFFICER
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
UNDER SECTION 91 OF THE
CONTAMINATED SITES ACT 2003

SIGNATURE OF WITNESS

FULL NAME: Christopher Chau
ADDRESS: 168 St Georges Tce PERTH WA 6000
OCCUPATION: Data Management Officer

L796683 NR
30 Nov 2011 11:58:56 Perth

REG $ 160.00

NOTIFICATION

INSTRUCTIONS

1. If insufficient space in any section, Additional Sheet Form B1, should be used with appropriate headings. The boxed sections should only contain the words "see page....."
2. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.
3. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialed by the persons signing this document and their witnesses.

NOTES

1. **DESCRIPTION OF LAND**
Lot and Diagram/Plan/Strata/Survey-Strata Plan number or Location name and number to be stated.
Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated.
The Volume and Folio number to be stated.
2. **REGISTERED PROPRIETOR**
State full name and address of the Registered Proprietors as shown on the Certificate of Title and the address / addresses to which future Notices can be sent.
3. **LOCAL GOVERNMENT / PUBLIC AUTHORITY**
State the name of the Local Government or the Public Authority preparing and lodging this notification.
4. **FACTOR AFFECTING THE USE AND ENJOYMENT OF LAND**
Describe the factor affecting the use or enjoyment of land.
5. **ATTESTATION OF LOCAL GOVERNMENT / PUBLIC AUTHORITY**
To be attested in the manner prescribed by the Local Government Act or as prescribed by the Act constituting the Public Authority.
6. **REGISTERED PROPRIETOR'S EXECUTION**
A separate attestation is required for every person signing this document. Each signature should be separately witnessed by an Adult Person. The full name, address and occupation of the witness must be stated.

Landgate

LODGED BY

BRITTEN PARTNERS
SOLICITORS

ADDRESS
Suite 1, 14 Leura Street
NEDLANDS WA 6009
Ph: 6389 1622
Fax: 6389 1644

PHONE No.

FAX No.

REFERENCE No. SAL1877

ISSUING BOX No. 888 Room.

PREPARED BY Britten Partners

ADDRESS P.O. Box 5
INGLEWOOD WA 6932

PHONE No. 6389 1622 FAX No. 6389 1644

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

TITLES, LEASES, DECLARATIONS ETC LODGED HEREWITH

1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________

Received Items

Nos.

Receiving Clerk

EXAMINED

Lodged pursuant to the provisions of the *TRANSFER OF LAND ACT 1893* as amended on the day and time shown above and particulars entered in the Register.

REGISTRAR OF TITLES WESTERN AUSTRALIA

FORM N1

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

NOTIFICATION
UNDER SECTION 70A

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
Lot 8005 on Deposited Plan 36178	Whole Whole	2756 2756	288 289

REGISTERED PROPRIETOR (Note 2)

ANTONIO ALFREDO SALAMONE of 2 Longford Circuit, Darch, UMBERTO GIOVANNI SALAMONE of 28 Ida Street, Balcatta, SALVATORE SALAMONE of Lot 1441 Driver Road, Wanneroo and MARIA SALAMONE of 35 Driver Road, Landsdale

LOCAL GOVERNMENT / PUBLIC AUTHORITY (Note 3)

CITY OF WANNEROO

FACTOR AFFECTING USE OR ENJOYMENT OF LAND (Note 4)

The subject site forms part of a "Landfill Precinct" under East Wanneroo Cell 6 Agreed Structure Plan and has been identified as being potentially contaminated. The City of Waneroo is not prepared to consider any further development or subdivision within the Landfill Precinct until the Agreed Structure Plan has been modified to remove the Landfill Precinct zoning and replace it with an appropriate zoning under the Scheme. Such a modification will only be supported if it can be clearly demonstrated that any geotechnical, contamination or other environmental clearances have been obtained to the satisfaction of Council, the Western Australian Planning Commission, Department of Environment and Conservation and Department of Health, as the case requires.

Dated this 28 day of NOVEMBER. Year 2011

LOCAL GOVERNMENT/PUBLIC AUTHORITY ATTESTATION (Note 5)	REGISTERED PROPRIETOR/S SIGN HERE (Note 6)
THE COMMON SEAL OF THE CITY OF WANNEROO was hereunto affixed by authority of a resolution of the Council in the presence of: Tracey Roberts MAYOR CHIEF EXECUTIVE OFFICER	Signed in the presence of See Pages 2 and 3 for registered proprietor attestation Signed in the presence of

CITY OF WANNEROO COMMON SEAL

SIGNED by)
MARIA SALAMONE) X M Salamone
in the presence of:)

Witness (sign) X

Witness name: GREGORY JOHN LEWIS
Witness Address 5 CRISTATA TCE, DARCH. 6065

Witness Occupation mechanic

FORM B 1
FORM APPROVED
NO B5496

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

ADDITIONAL PAGE TO NOTIFICATION

Dated 28 November 2011.

SIGNED by)
ANTONIO ALFREDO SALAMONE) X A. Salamone
in the presence of:)

Witness (sign) X

Witness name: GREGORY JOHN LEWIS
Witness Address 5 CRISTATA TCE DARCH 6065

Witness Occupation MOTOR MECHANIC.

SIGNED by)
UMBERTO GIOVANNI SALAMONE) X
in the presence of:)

Witness (sign) X

Witness name: Gregory John Lewis
Witness Address 5 Cristata Tce. Darch. 6065.

Witness Occupation Mechanic

SIGNED by)
SALVATORE SALAMONE) X S. Salamone
in the presence of:)

Witness (sign) X

Witness name: Gregory John Lewis
Witness Address 5 Cristata Tce. Darch. 6065.

Witness Occupation Mechanic

M148594 NR
31 Dec 2012 12:32:45 Perth
REG $ 160.00

NOTIFICATION

INSTRUCTIONS

1. If insufficient space in any section, Additional Sheet, Form B1, should be used with appropriate headings. The boxed sections should only contain the words "see page ..."
2. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.
3. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.

NOTES

1. DESCRIPTION OF LAND
Lot and Diagram/Plan/Strata/Survey-Strata Plan number or Location name and number to be stated.
Extent - Whole, part or balance of the land comprised in the Certificate of Title to be stated.
The Volume and Folio number, to be stated.
2. REGISTERED PROPRIETOR
State full name and address of the Registered Proprietors as shown on the Certificate of Title and the address / addresses to which future Notices can be sent.
3. LOCAL GOVERNMENT / PUBLIC AUTHORITY
State the name of the Local Government or the Public Authority preparing and lodging this notification.
4. FACTOR AFFECTING THE USE AND ENJOYMENT OF LAND
Describe the factor affecting the use or enjoyment of land.
5. ATTESTATION OF LOCAL GOVERNMENT / PUBLIC AUTHORITY
To be attested in the manner prescribed by the Local Government Act or as prescribed by the Act constituting the Public Authority.
6. REGISTERED PROPRIETOR'S EXECUTION
A separate attestation is required for every person signing this document. Each signature should be separately witnessed by an Adult Person. The address and occupation of the witness must be stated.

EXAMINED

LODGED BY	McLeods
ADDRESS	220 - 222 Stirling Highway CLAREMONT WA 6010
PHONE No.	9383 3133
FAX No	9383 4935
REFERENCE No.	PW:GY:WANN-25840
ISSUING BOX No.	346K

PREPARED BY	McLeods
ADDRESS	220 - 222 Stirling Highway CLAREMONT WA 6010
PHONE No. 9383 3133	FAX No. 9383 4935

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY.

S

TITLES, LEASES, DECLARATIONS ETC. LODGED HEREWITH

1. p/c deed.
2.
3.
4.
5.
6.

Received Items

Nos. 1

Receiving Clerk

Lodged pursuant to the provisions of the TRANSFER OF LAND ACT 1893 as amended on the day and time shown above and particulars entered in the Register.

REGISTRAR OF TITLES W.A.

NOTIFICATION UNDER SECTION 70A

THE COMMON SEAL of the CITY OF WANNEROO was hereunto affixed by authority of a resolution of the Council in the presence of:)

CITY OF WANNEROO COMMON SEAL

A/ MAYOR

LAURA GWENDOLYN GRAY
(Print Full Name)

CHIEF EXECUTIVE OFFICER

Daniel John Simms
Chief Executive Officer
City of Wanneroo
Print Full Name)

Executed by CELL 6 PTY LTD (ACN 130 417 542) by authority of its directors in accordance with Section 127 of the Corporations Act:)

DIRECTOR PETER NICHOLAS MARGETIC

DIRECTOR ROCKY MARIO ZAMPIN

NOTIFICATION UNDER SECTION 70A

FORM N 1

FORM APPROVED
NO. B2594

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

NOTIFICATION UNDER SECTION 70A

DESCRIPTION OF LAND (Note 1)	EXTENT	VOLUME	FOLIO
Lot 1 on Deposited Plan 69382	Whole	2807	995

REGISTERED PROPRIETOR (Note 2)

CELL 6 PTY LTD (ACN 130 417 542) of 196 Scarborough Beach Road, Doubleview

LOCAL GOVERNMENT / PUBLIC AUTHORITY (Note 3)

CITY OF WANNEROO

FACTOR AFFECTING USE OR ENJOYMENT OF LAND (Note 4)

Registered proprietors and prospective interest-holders of the land described above are notified that the land is within the "East Wanneroo Cell 6 Agreed Structure Plan Area"; that infrastructure costs become payable to the City of Wanneroo in respect of land within that Area upon certain events pursuant to a planning scheme (currently District Planning Scheme No 2); that in so far as Lot 1 on DP 69382 was created out of a subdivision of parent Lot 8005 on DP 36178, no infrastructure costs were paid upon that subdivision for reasons identified in a Deed with the City of Wanneroo; that accordingly liability for infrastructure contributions will accrue upon a later event; and that further information is available from the City of Wanneroo.

Dated this 29 day of DECEMBER Year 2012.

LOCAL GOVERNMENT / PUBLIC AUTHORITY ATTESTATION (Note 5)

REGISTERED PROPRIETOR/S SIGN HERE (Note 6)

APPENDIX C

CURRENT ENVIRONMENTAL PROTECTION ACT LICENSE

Government of **Western Australia**
Department of **Environment Regulation**

Licence
FINAL

Licence Number	L6832/1997/13
Licence Holder	Cell 6 Pty Limited
ACN	130 417 542
Registered business address	Suite 1, 42 Dellamarta Road WANGARA WA 6065
File Number	2011/000651
Duration	21/06/2017 to 20/06/2021
Date of issue	17 June 2020
Prescribed Premises	Category 13: Crushing of building material Category 62: Solid waste depot
Premises	Non Organic Disposals 115 Furniss Road DARCH WA 6065 Lot 1 on Deposited Plan 69382 Certificate of Title Volume 2807 Folio 995

This Licence is granted to the Licence Holder, subject to the following conditions, on 17 June 2020 by:

Tracey Hassell

A/MANAGER, WASTE INDUSTRIES

Officer delegated under section 20 of the Environmental Protection Act 1986

Explanatory notes

These explanatory notes do not form part of this Licence.

Defined terms

Definition of terms used in this Licence can be found at the end of this Licence. Terms which are defined have the first letter of each word capitalised throughout this Licence.

Department of Environment Regulation

The Department of Environment Regulation (DER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences, takes enforcement action and develops and implements licensing and industry regulation policy.

Licence

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased, or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered, or permitted to be altered, from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Licence does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007;*
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Licence Holder to ensure that any action or activity referred to in this Licence is permitted by, and is carried out in compliance with, other statutory requirements.

The Licence Holder must comply with the Licence. Contravening a Licence Condition is an offence under s.58 of the EP Act.

Responsibilities of a Licence Holder

Separate to the requirements of this Licence, general obligations of Licence Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Licence Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under section 61; and
- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a works approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Licence Holder has a duty to report to DER all discharges of waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences, including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA).*
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA).*

Section 53 of the EP Act provides that a Licence Holder commits an offence if Emissions are caused, or altered from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a Closure Notice or an Environmental Protection Notice.

Defences to certain offences may be available to a Licence Holder and these are set out in the EP Act. Section 74A(b)(iv) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Licence Holder can prove that an Emission or Discharge occurred in accordance with a Licence.

This Licence specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of Specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The Specified and General Emissions and Discharges from Primary Activities conducted on the Prescribed Premises are authorised to be conducted in accordance with the Conditions of this Licence.

Emissions and Discharges caused from other activities not related to the Primary Activities at the Premises have not been Conditioned in this Licence. Emissions and Discharges from other activities at the Premises are subject to the general provisions of the EP Act.

Amendment of licence

The Licence Holder can apply to amend the Conditions of this Licence under s.59 of the EP Act. An application form for this purpose is available from DER.

The CEO may also amend the Conditions of this Licence at any time on the initiative of the CEO without an application being made.

Amendment Notices constitute written notice of the amendment in accordance with s.59B(9) of the EP Act.

Duration of Licence

The Licence will remain in force for the duration set out on the first page of this Licence or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Licence in accordance with s.59A of the EP Act.

Fees

The Licence Holder must pay an annual licence fee. Late payment of annual licence fees may result in the licence ceasing to have effect. A licence that has ceased to have effect due to non-payment of annual licence fees continues to exist; however, it ceases to provide a defence to an offence under s.74A of the EP Act.

Late fees are a component of annual licence fees and should a Licence Holder fail to pay late fees within the time specified the licence will similarly cease to have effect.

Definitions and interpretation

Definitions

In this Licence, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACM	means Asbestos containing material and has the meaning defined in the *Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia* (DOH, 2009)
ACN	Australian Company Number
Amendment Notice	means an amendment granted under s.59 of the EP Act in accordance with the procedure set out in s.59B of the EP Act.
Annual Period	means a 12 month period commencing from 1 January until 31 December in the same year.
Asbestos	means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite anthophyllite, chrysotile, crocidolite, tremolite and any mixture containing 2 or more of those.
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@der.wa.gov.au
Classified Load	means the classification of waste loads during acceptance and post acceptance based on the risk of waste material containing Asbestos or ACM and through visual inspection.
Clean Fill	has the meaning defined in the Landfill Definitions
Compliance Report	means a report in a format approved by the CEO as presented by the Licence Holder or as specified by the CEO (guidelines and templates may be available on the Department's website).

Term	Definition
Condition	means a condition to which this Licence is subject under s.62 of the EP Act.
Damp	means moist to the touch.
Department	means the department established under s.35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Licence Holder in writing and sent to the Licence Holder's address for notifications, as described at the front of this Licence, in relation to: (a) compliance with the EP Act or this Licence; (b) the Books or other sources of information maintained in accordance with this Licence; or (c) the Books or other sources of information relating to Emissions from the Premises.
DER Asbestos Guidelines	means the document titled "Guidelines for managing asbestos at construction and demolition waste recycling facilities", published by the Department of Environment and Conservation, as amended from time to time.
Discharge	has the same meaning given to that term under the EP Act.
Emission	has the same meaning given to that term under the EP Act.
Environmental Harm	has the same meaning given to that term under the EP Act.
EP Act	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *Environmental Protection Regulations 1987* (WA).
High Risk Loads	refers to loads classified as "high risk" in accordance with the DER Asbestos Guidelines *Risk Classification Matrix* included in Attachment 1 of this Licence.
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
Inert Waste Type 1	has the meaning defined in the Landfill Definitions
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.

Term	Definition
Landfill Definitions	means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer by the Department of Environment, as amended from time to time.
Licence	refers to this document, which evidences the grant of a Licence by the CEO under s.57 of the EP Act, subject to the Conditions.
Licence Holder	refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence.
Low Risk Loads	refers to loads classified as "low risk" in the DER Asbestos Guidelines *Risk Classification Matrix* included in Attachment 1 of this Licence.
Material Environmental Harm	has the same meaning given to that term under the EP Act.
Operate	Refers to the activities of receiving customers and operating machinery associated with the crushing and screening of materials.
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Primary Activities	refers to the Prescribed Premises activities listed on the front of this Licence as described in Schedule 2, at the locations shown in Schedule 1.
Products	refers to Wastes which have undergone crushing, processing or screening to create a useable recycled product and which has been tested and conforms with the specifications of this Licence.
Quarterly	refers to the four inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December.
Reportable Event	means an exceedance above the target limit specified in Column 4 of Table 6, in Schedule 3.
Sediment	means any naturally occurring material (e.g. sand, mud, soil,

Term	Definition
	silt) or processed waste-derived material that has the potential to be transported by the action of wind, water or through vehicular movement.
Serious Environmental Harm	has the same meaning given to that term under the EP Act.
Stockpile Base	refers to the toe of a stockpile, being the furthest point at the base of the stockpile that the material extends to.
Unreasonable Emission	has the same meaning given to that term under the EP Act.
Waste	has the same meaning given to that term under the EP Act.

Interpretation

In this Licence:

(a) the words ‘including’, ‘includes’ and ‘include’ will be read as if followed by the words ‘without limitation’;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a Condition, each row in a table constitutes a separate Condition;

(d) any reference to an Australian or other standard, guideline or code of practice in this Licence means the version of the standard, guideline or code of practice in force at the time of granting of this Licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Licence; and

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Emissions

1. The Licence Holder must not cause any Emissions from the Primary Activities on the Premises except for specified Emissions and general Emissions described in Column 1 of Table 2 subject to the exclusions, limitations or requirements specified in Column 2 of Table 2.

Table 2: Authorised Emissions table

Column 1	**Column 2**
Emission type	**Exclusions/Limitations/Requirements**
Specified Emissions	
Fugitive dust	Subject to compliance with Conditions 2, 4, 10, 12 to 14, 16 and 18 to 28
Noise emissions from crushing activities and site based vehicles	Subject to compliance with Conditions 34 to 35
General Emissions (excluding Specified Emissions)	
Emissions which: • arise from the Primary Activities set out in Schedule 2;	Emissions excluded from General Emissions are: • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy; or • Emissions or Discharges which do not comply with a prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or • Emissions or Discharges the subject of

Column 1	**Column 2**
Emission type	**Exclusions/Limitations/Requirements**
	offences under regulations prescribed under the EP Act, including materials discharged under the Environmental *Protection (Unauthorised Discharges) Regulations 2004*.

Throughput restrictions

2. Subject to stockpile management requirements in Condition 18, the Licence Holder must not accept more than 325,000 tonnes of Waste per Annual Period.

3. The Licence Holder must monitor and record the volumes of incoming and outgoing Waste and outgoing Products at the Premises for the parameter stipulated in Column 1 of Table 3, using the units specified in Column 2 of Table 3 at the frequency specified in Column 3 of Table 3.

Table 3: Monitoring of inputs and outputs

<table>
<tr><th>Column 1</th><th>Column 2</th><th>Column 3</th></tr>
<tr><th>Parameter</th><th>Units</th><th>Frequency</th></tr>
<tr><td>Waste Inputs -
Clean Fill,
Inert Waste Type 1</td><td rowspan="3">Tonnes – as measured by certified load scales on wheel loaders.
OR
m^3 and calculated tonnes – a conversion factor of 1.3 tonnes in every m^3 must be used to calculate tonnage.</td><td>Each load arriving at the Premises.</td></tr>
<tr><td>Waste Outputs -
Waste type as defined in the Landfill Definitions</td><td>Each load leaving or rejected from the Premises.</td></tr>
<tr><td>Product Outputs –
Product type</td><td>Each load leaving the Premises.</td></tr>
</table>

Waste type restrictions and waste classification

4. The Licence Holder must only accept the following types of Waste onto the Premises for storage, sorting or crushing:

(a) Inert Waste Type 1; and

(b) Clean Fill.

5. Waste must not be accepted onto the Premises when:

(a) it contains visible Asbestos or ACM, inspected and classified in accordance with Condition 7; or

(b) the Licence Holder has not obtained a signed declaration from the supplier of the source material with each delivery that:

(i) sets out the details of the Waste source, carrier, registration number of the vehicle and the date of delivery;

(ii) sets out the Waste type and volume being delivered; and

(iii) warrants that the load does not contain any Asbestos or ACM.

6. The Licence Holder must maintain a clearly visible sign specifying "No Asbestos" at the entry to the Premises.

7. The Licence Holder must visually inspect all loads of Waste when they arrive at the Premises, prior to unloading, to determine the risk of a load containing Asbestos or ACM and each load shall be classified in accordance with the risk classification procedure outlined in Attachment 1 (Classified Load).

8. Where the visual inspection identifies that Waste is not permitted by the Licence, the Licence Holder must:

(a) reject the Waste for acceptance;

(b) record the details of the Waste source, waste carrier, registration number of the vehicle and the date of rejection; and

(c) maintain accurate and auditable records of all rejected loads on the Premises.

9. The Licence Holder must retain all documentation recorded under Conditions 3 and 8 on the Premises for a period of three years.

Waste processing restrictions

10. Subject to the Waste Type restrictions in Condition 8, the Licence Holder must ensure that all Wastes specified in Column 1 of Table 4 are only subject to the processes stipulated in Column 2 of Table 4, and in accordance with any process limits specified in Column 3 of Table 4.

Table 4: Waste processing restrictions

Column 1	**Column 2**	**Column 3**
Waste Type	**Processes**	**Process limits**
Solid Waste: Clean Fill, Inert Waste Type 1	Receipt, handling, associated storage and processing by mechanical sorting (screening) and/or crushing. No infilling of Wastes shall occur on the Premises.	Subject to compliance with: • Throughput, Waste type restrictions and Waste type classification requirements as specified in Conditions 2 to 8. • Waste acceptance and load inspection requirements as specified in Conditions 11 to 17. • Stockpile management requirements as specified in Condition 18. • Dust Emission controls as specified in Conditions 22 to

		28. • Product testing and supply requirements as specified in Conditions 29 to 33. • Noise Emission controls as specified in Conditions 34 to 35.

Waste acceptance and load inspection

11. Upon acceptance of Waste, the Licence Holder must direct each Classified Load to an unloading area at the site for further inspection. The unloading area must be appropriately designed and constructed to ensure the Classified Load will not mix with other Waste prior to inspection.

12. At the unloading area, the Licence Holder must keep all Waste wetted down throughout the inspection process using the infrastructure specified in Row 2 of Table 5 set out in Condition 21. The Licence Holder must visually inspect loads classified as Low Risk Loads, while the material is being unloaded to determine whether any Asbestos can be identified.

13. If Asbestos is suspected or identified, the load must be reclassified as a High Risk Load and the Licence Holder must implement the High Risk Load procedure set out in Attachment 2.

14. High Risk Loads must be visually inspected and handled in accordance with the procedure set out in Attachment 2.

15. The Licence Holder must maintain accurate and auditable records of all loads that have been inspected and suspected or found to contain Asbestos. Those records must show the source and originating site and actions taken to address the issue with the source customer.

16. The Licence Holder must continue to visually inspect Waste on the Premises at all stages of the storage, sorting and screening process. Suspected Asbestos identified at any stage of the process must be handled in accordance with the procedure set out in Attachment 2 and records maintained in accordance with Condition 15.

17. The Licence Holder must by 1 August 2017, ensure that any existing timber, plastics and scrap metal wastes removed during the sorting and screening process are removed from the Premises and thereafter must ensure these wastes are removed from the Premises on at least a weekly basis.

Stockpile management

18. By 20 August 2017, The Licence Holder must ensure that:

(a) material on the Premises is maintained in at least three separate stockpile areas for unprocessed Waste, Products tested for Asbestos or ACM and Products awaiting testing for Asbestos or ACM; and

(b) unprocessed Waste and Product stockpiles are kept clearly separated at a minimum three metre distance from the Stockpile Base;

(c) Products tested for Asbestos or ACM and Products awaiting testing for Asbestos or ACM are clearly separated by a minimum three metre distance from the toe of the stockpile; and

(d) Clearly visible and legible signage is erected on individual stockpiles to clearly identify and delineate tested Products, untested Products and unprocessed Waste.

Infrastructure and equipment

19. By 20 September 2017, automated sprinklers that meet the requirements of Row 5 of Table 5 must be installed on all Waste and Product stockpiles subject to the requirements of Condition 23.

20. By 20 September 2017, wheel washing facilities must be implemented onsite which meet the requirements of Row 6 of Table 5 must be installed on the Premises.

21. The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 5 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 5.

Table 5: Infrastructure and equipment controls table

	Column 1	**Column 2**
	Site infrastructure and equipment	**Operational requirements**
	Dust and Asbestos controls	
1.	Auto reticulation lines and water buffer tanks with a total storage capacity of 60,000L	Located around the Premises, auto reticulation lines must have the ability to be set automatically at varying cycles depending on seasonal weather and water availability.
2.	4 x high pressure hoses and 3 x pumps	Used to wet down all incoming loads during tipping and all outgoing loads prior to removal.
3.	Water cart (minimum 30,000L capacity) with sprays and cannon	Roadways and all Product and Waste stockpiles must remain in a damp state at all times to prevent dust lift off. Targeted wetting must occur when material handling such as reclaiming from the stockpiles has the potential to generate fugitive dust.

	Column 1	Column 2
	Site infrastructure and equipment	**Operational requirements**
4.	Water sprays on primary and secondary crusher	Series of sprays at dust emission points on crushers to prevent fugitive dust from crushing of Wastes and Products. Sprays on machines need to produce water droplets that are fine enough to form a droplet cloud and interact with dust particles effectively. Water must be effectively delivered to Wastes and Products and not blown away by wind. Sprays are to be maintained in good working order to ensure availability during operation of equipment. Sprays must be operational at all times when equipment is operating.
5.	Automated sprinklers on top of Product and Waste stockpiles	Series of sprinklers on top of Product and Waste stockpiles to supplement wetting by water truck sprays which are capable of wetting down the entire surface of all stockpiles evenly to maintain the stockpiles in a Damp state. Sprinklers on the stockpiles need to effectively wet the surface and suppress airborne dust particles. The positioning and setup of sprinklers must effectively deliver water to stockpiles and must not be blown away by wind. Sprinklers must have the ability to be set automatically to maintain stockpiles in a Damp state outside of operational hours. Sprinklers are to be maintained in good working order to ensure continuous availability.
6.	Wheel washing facilities	Capable of removing sediment from the wheels and the underside of trucks and vehicles leaving the Premises.

	Column 1	Column 2
	Site infrastructure and equipment	**Operational requirements**
	Groundwater monitoring	
7.	Groundwater monitoring bores: NODGW01, NODGW02, NODGW03, NODGW04, NODGW05, NODGW06, DDW13, DDW28, DDW29	Located in accordance with the Monitoring locations map in Schedule 3. Bores must be capable of monitoring groundwater in accordance with the requirements of Condition 36.
	Landfill gas monitoring	
8.	Landfill gas monitoring wells: G30 (G30R), G31, G32, G33, G34, G35, G36, G37, G38, NODG01, NODG02	Located in accordance with the Monitoring locations map in Schedule 3. Wells must be capable of monitoring landfill gas in accordance with the requirements of Condition 37.

Dust emission controls

22. The Licence Holder must ensure that:

(a) all Product and Waste stockpiles; and

(b) all unsealed access roads

are maintained in a damp state at all times by use of infrastructure and equipment specified in Rows 1 to 5 of Table 5 set out in Condition 21 or are managed in accordance with the requirements of Condition 23.

23. The Licence Holder must by 20 September 2017, prevent the visible uplift of dust at all times on Product and Waste stockpiles through the use of:

(a) automated sprinklers on top of stockpiles to prevent the visible uplift of dust at all times in accordance with Row 5 of Table 5; or

(b) effective chemical dust suppressant application on stockpiles.

24. By 20 August 2017, the Licence Holder must apply an effective chemical dust suppressant to prevent the visible uplift of dust from all soil bunds within the Premises.

25. The Licence Holder must reapply the chemical dust suppressant required by Conditions 23(b) and 24 to relevant stockpiles and all soil bunds within the Premises as per the manufacturer's instructions to ensure it remains effective at preventing the visible uplift of dust.

26. The Licence Holder must ensure that all Products removed from the Premises are wetted down prior to loading using the infrastructure and equipment specified in Row 2 of Table 5 set out in Condition 21.

27. The Licence Holder must ensure that the wheel wash specified in Row 5 of Table 5 set out in Condition 21 is used for all vehicle movements from the Premises.

28. The Licence Holder must ensure that all vehicles operate at speeds of less than 10km/hr through the Premises.

Product testing and supply

29. The Licence Holder must ensure that testing of all Products is undertaken in accordance with the Product testing procedures specified in Attachment 3.

30. The Licence Holder must ensure that Products are only supplied to customers where they have been tested in accordance with Condition 29 and shown to conform with the product specification of 0.001% Asbestos weight for weight (w/w) for Asbestos content (in any form) within any recycled Products.

31. The Licence Holder must maintain accurate and auditable records of all Asbestos Product testing undertaken in accordance with Condition 29. These records must include:

(a) details of sample size;

(b) a statement of limit of detection of the analysis;

(c) results in relation to Asbestos detected (positive result exceeding the 0.001% w/w limit) or not;

(d) description of any Asbestos detected; and

(e) an estimate of the concentration of Asbestos detected if practical to do so.

32. The records maintained in accordance with Condition 31 must be kept for at least two years and must be made available to the Department and customers on request.

33. The Licence Holder is not authorised to implement a reduced Product testing rate as per the reduced sampling criteria section of Attachment 3.

Noise emission controls

34. The Licence Holder must ensure the Premises only Operate between the hours of 07:00 to 16:00 Monday to Friday and 07:00 to 12:00 on Saturdays.

35. The Licence Holder must maintain the noise bund located on the western side of the Premises boundary as depicted in Schedule 1.

Monitoring requirements

36. The Licence Holder must undertake groundwater monitoring in accordance with the requirements specified in Schedule 3.

37. The Licence Holder must undertake landfill gas monitoring in accordance with the requirements specified in Schedule 3.

38. All monitoring must be undertaken by laboratories with current NATA accreditation for the analysis specified unless otherwise specified in Schedule 3.

Record-keeping

39. The Licence Holder must maintain accurate and auditable Books including the following records, information, reports and data required by this Licence:

(a) the calculation of fees payable in respect of this Licence;

(b) the works conducted in accordance with Conditions 19 and 20 of this Licence;

(c) the maintenance of infrastructure required to ensure that it is kept in good working order in accordance with Condition 21 of this Licence;

(d) the application of chemical dust suppressant, type of suppressant, location, time and date in accordance with Condition 23 of this Licence;

(e) monitoring undertaken in accordance with Conditions 36 and 37 of this Licence;

(f) complaints received under Condition 40 of this Licence; and

In addition, the Books must:

(g) be legible;

(h) if amended, be amended in such a way that the original and subsequent amendments remain legible and are capable of retrieval;

(i) be retained for at least 3 years from the date the Books were made; and

(j) be available to be produced to an Inspector or the CEO.

40. The Licence Holder must record the number and details of any complaints received by the Licence Holder relating to its obligations under this Licence and its compliance with Part V of the EP Act at the Premises, and any action taken by the Licence Holder in response to the complaint. Details of complaints must include:

(a) an accurate record of the concerns or issues raised, for example a copy of any written complaint or a written note of any verbal complaints made;

(b) the name and contact details of the complainant, if provided by the complainant;

(c) the date of the complaint; and

(d) the details and dates of the actions taken by the Licence Holder in response to the complaints.

Reporting

41. The Licence Holder must submit to the CEO, no later than 31 January, a Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the preceding Annual Period.

42. The Compliance Report required by Condition 41 must include a summary of the groundwater monitoring and landfill gas monitoring results in accordance with Condition 36 and Condition 37 including:

(a) a tabulated summary of results as well as all raw data provided in an excel document;

(b) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the DER Guideline Assessment and management of contaminated sites ;

(c) an interpretive summary and assessment of results against previous monitoring results; and

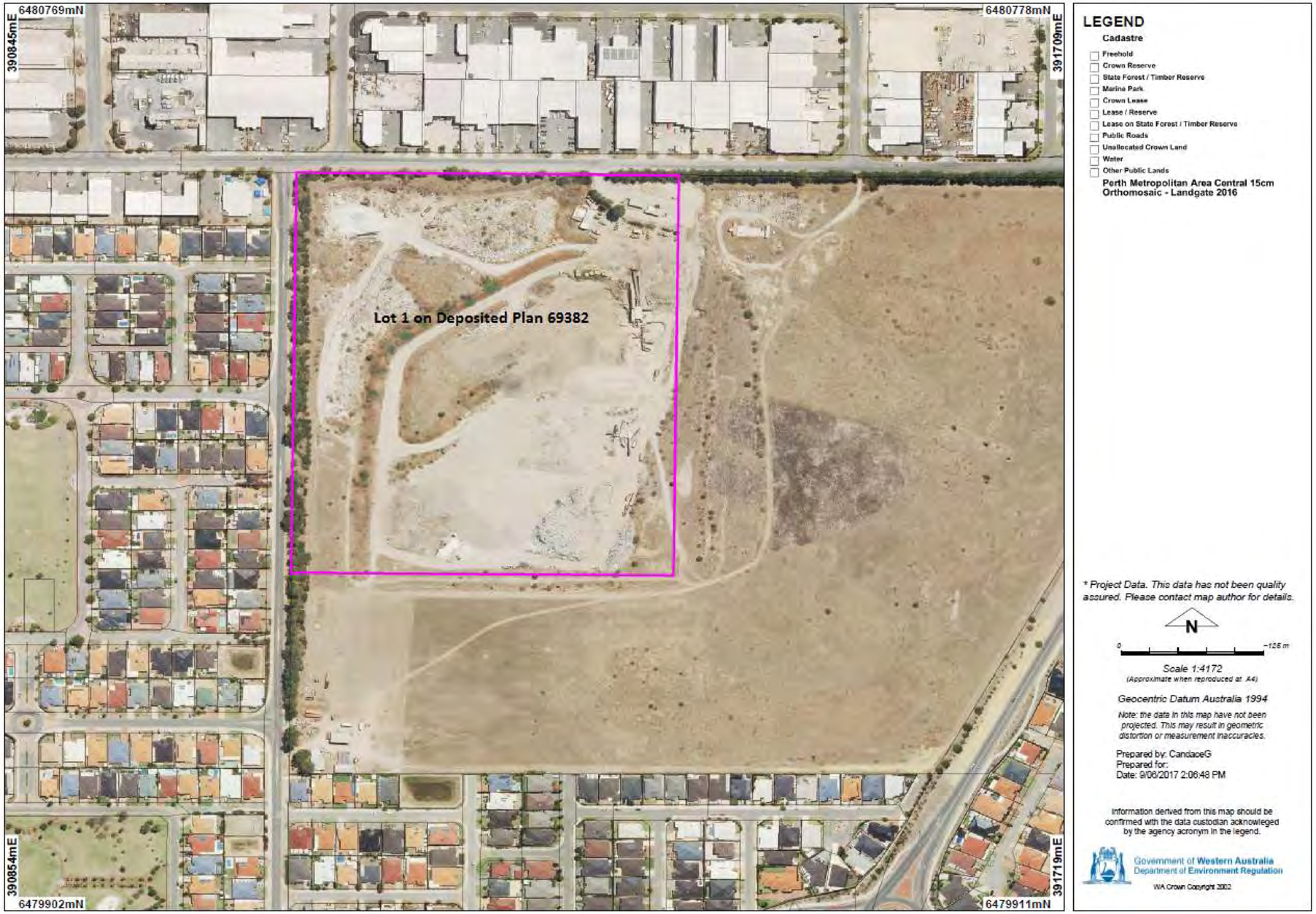
(d) trend graphs to support the interpretive summary.

43. The Licence Holder must comply with a Department Request, within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

Premises map

The Premises are shown in the map below. The pink line indicates the Premises boundary.



Site plan

The general layout of the Premises are shown in the map below.

Noise bund location

The location of the noise bund is shown in the map below.

L6832/1997/13

Document Version: *IR-T06 Licence Template*

Schedule 2: Primary Activities

At the time of assessment, Emissions and Discharges from the following Primary Activities were considered in the determination of the risk and related Conditions for the Premises.

The Primary Activities are listed in Table 6:

Table 6: Primary Activities

Primary Activity	Premises production or design capacity
Category 13 – Crushing of building material: premises on which waste building or demolition material (for example, bricks, stones or concrete) is crushed or cleaned.	325,000 tonnes per annual period
Category 62 – Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or re-use.	325,000 tonnes per annual period

Infrastructure and equipment

The Primary Activity infrastructure and equipment situated on the Premises is listed in Table 7.

Table 7: Infrastructure and equipment

Infrastructure and equipment	Plan reference
Feed belt	Site plan: Feed belt
Scalping screen	Site plan: Scalping screen
Picking belt	Site plan: Picking belt
Primary crusher including sprays	Site plan: Primary crusher
Secondary crusher including sprays	Site plan: Secondary crusher
Tertiary 2 deck screen	Site plan: Tertiary 2 deck screen
3 x front end loaders	N/A
Auto reticulation lines	Site plan: Auto Retic Lines
2 x water buffer tanks	Site plan: Water buffer tanks
4 x high pressure hoses fed by 3 x pumps	Site plan: High pressure 22mm hose locations
Water cart – Bell 30,000L capacity	N/A

Site layout

The Primary Activity infrastructure and equipment is set out on the Premises in accordance with the site layout specified on the Site plan in Schedule 1.

Schedule 3: Monitoring

Groundwater monitoring

The Licence Holder must monitor the locations specified in Column 1 for the parameters specified in Column 2 of Table 8. Emissions must be calculated as an average over the period specified in Column 3, at the frequency specified in Column 4, and in accordance with the method specified in Column 5.

Table 8: Ambient groundwater monitoring table

Column 1	Column 2	Column 3	Column 4	Column 5
Location	**Parameter**	**Averaging period**	**Frequency**	**Method**
NODGW01 NODGW02 NODGW03 NODGW04 NODGW05 NODGW06 DDW13 DDW28 DDW29	Standing water level in m(AHD) and m(BGL)	Spot sample	Six monthly (at least five months apart)	AS 5667.11:1998
	pH[1]			
	Electrical conductivity			
	Arsenic, Cadmium, Chromium, Copper, Manganese, Nickel, Lead, Mercury, Zinc, Iron			
	Total ammonia			
	Total nitrogen			
	Total phosphorus			
	Total dissolved solids			
	COD (chemical oxygen demand)			
	Potassium			
	Chloride			
	Sulphate			
	Sulphite			
	Hardness ($CaCO_3$)			
	Benzene			
	Ethyl benzene			
	Toluene			
	Xylenes			
	Total recoverable hydrocarbons			
	Organochlorines			
	Organophosphates			
	Phenols			
	Polycyclic aromatic hydrocarbons (PAHs)			
	Polychlorinated biphenyls (PCBs)			
	Dissolved methane			

Note 1: In-field non-NATA accredited analysis permitted.

Landfill gas monitoring

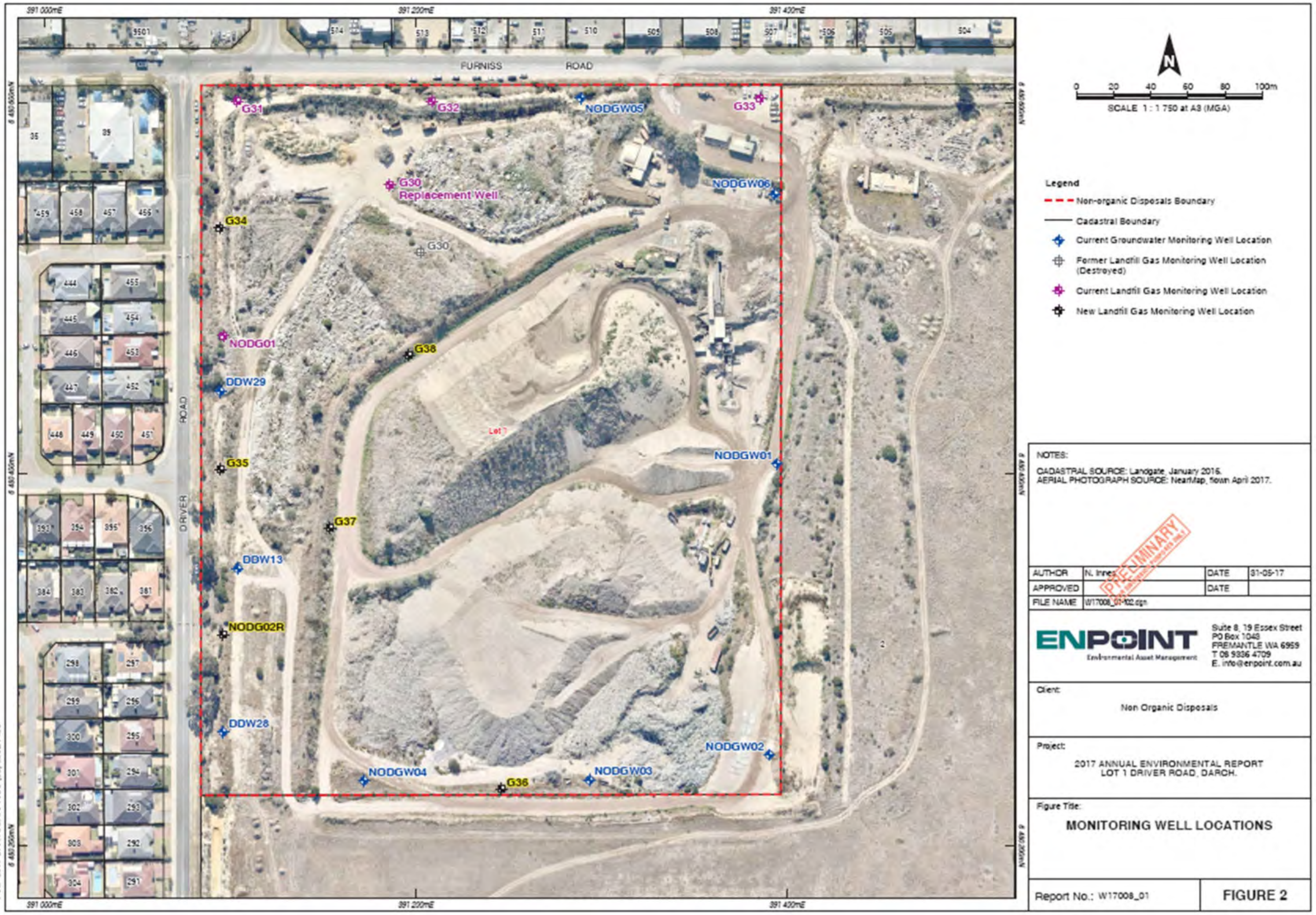
The Licence Holder must monitor the locations specified in Column 1 for the parameters specified in Column 2 of Table 9. Emissions must be monitored at the frequency specified in Column 4 and in accordance with the method specified in Column 5 of Table 9.

Table 9: Monitoring of landfill gas

Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**
Monitoring reference point	**Parameter**	**Units**	**Frequency**	**Method**
G30 (G30R) G31 G32 G33 G34 G35 G36 G37 G38 NODG01 NODG02	Volumetric flow rate	L/hr m^3/day	Quarterly	Assessment and management of contaminated sites guidelines
	Methane	%v/v		
	Carbon Dioxide	%v/v		
	Oxygen	%v/v		
	Hydrogen sulphide	%v/v		

Monitoring locations

The wells for groundwater and landfill gas are shown in the map below.



Attachment 1 - Asbestos Risk Classification Procedure

To determine the risk of an incoming load containing Asbestos, the Gatehouse operator must establish:

- The source of the load including the site location and if possible, the age of any building or structure from which the Waste originated;
- The content/Waste types within the load; and
- The type of load.

Where the source of the load can clearly be determined to be a building or structure constructed after 1990 then the load can be considered to represent a low risk of Asbestos contamination. Where the Waste originates from a building constructed before 1990 or there is uncertainty over this issue, the risks associated with Asbestos in the load must be established in line with the Risk Classification Matrix below.

Risk Classification Matrix			
	Type of load		
Material Type	Commercial	Public, utes, cars and trailers*	Skip bins
Clean Concrete (without formwork)	Low	High	High
Clean Brick	Low	High	High
Clean Bitumen / Asphalt	Low	High	High
Mixed Construction waste	High	High	High
Mixed Demolition waste	High	High	High

* if it is possible to view the entire load of incoming C & D material (eg a small trailer with a shallow load, then consideration may be given to classifying these loads as low risk

(Risk Matrix Classification *adapted from WorkSafe Victoria 2006 and WMAA 2009*)

(Derived from Section 3.3 of the DER Asbestos Guidelines, pages 10 – 11)

Attachment 2 – High Risk Load Procedure

- High Risk Loads must be unloaded and spread over a sufficiently large area to enable a comprehensive visual inspection of all sides of the material to be undertaken.
- If Asbestos is suspected or detected, the load must be isolated, kept wet and once appropriately contained in accordance with the Environmental Protection (Controlled Waste) Regulations 2004, and redirected to an appropriately authorised disposal facility.
- Where suspect ACM is identified within a load and is not capable of being easily removed by hand, the load must be rejected and must be isolated, kept wet and once appropriately contained in accordance with the Asbestos Factsheet in Attachment 4, and redirected to an appropriately authorised disposal facility.
- Where suspected ACM fragments capable of being easily removed by hand are identified in a load, the suspect ACM must be removed from the load and either:
    1. Appropriately isolated and covered for asbestos testing. If testing of representative samples confirms the material is ACM it must be redirected to an appropriately authorised disposal facility. If testing confirms the material is not ACM the Waste can be added to the stockpile awaiting further processing; or
    2. Assumed to be ACM and redirected to an appropriately authorised disposal facility.
- All suspected or assumed ACM must be segregated. Material must be clearly labelled, kept secure and sufficiently contained to prevent the release of Asbestos including wind-blown fibres.
- Once all suspected or assumed ACM has been removed from a load in line with the above procedure, the residual Waste can be added to the stockpile waiting further processing.
- Records must be kept to ensure that the process from receipt of C&D material to the completion of the unloading procedure is auditable and that any loads found to contain suspect Asbestos will be traced back to the customer and originating site.

(Derived from Section 4.3 of the DER Asbestos Guidelines, page 12)

Attachment 3 – Asbestos Monitoring and Testing

Product testing and supply

The testing procedures detailed in this attachment have application to the three main recycled Products:

1. Recycled drainage rock 20-27mm;
2. Recycled sand, screened to <10mm; and
3. Recycled road-base, <19mm.

Stockpile inspection and sampling

- No sampling is required for recycled drainage rock, other than to determine by laboratory analysis whether a suspect fragment is Asbestos.
- For recycled road-base and screened sand, sampling is necessary and must be spread evenly over the whole stockpile surface or samples may be taken at regular intervals (as per conveyor sampling) during construction of the stockpile. Suspect ACM or areas must be targeted for sampling.
- Sampling of road base and screened sand Products must occur at a minimum rate of 40 locations per 4000 tonnes or 14 samples per 1000m^3 of Product.

Conveyor sampling

- Sampling of road base and screened sand Products must occur at a minimum rate of 1 sample per 70m^3 of a Product output. Suspect ACM or areas must be targeted for sampling.

Reduced sampling criteria

Once premises have demonstrated that their procedures are able to consistently produce recycled product that meets the product specification and undertake their activities to a high standard, DER may authorise a reduced product testing rate including down to 5 locations per 4000 tonnes (1 sample per 600m^3) of product.

Sample treatment

- Each sample collected must be at least 10 litres in volume and then be divided into 2 size fractions (>7mm and <7mm) in the field by sieving through a 7mm screen or spread out for inspection on a contrasting colour fabric. The >7mm fraction should be examined for any suspect ACM and this be retained to calculate the level of contamination.
- The <7mm fraction will need to be a minimum 500 ml, be wetted, and submitted for laboratory analysis. This sample size is considered necessary to improve the limit of detection for Asbestos in the analysis procedure.

Sample analysis method

- **>7mm sample fractions –**
  - Asbestos concentrations (ACM and Asbestos) should be calculated in accordance with the methods detailed in section 4.1.7 of Department of Health (DoH), 2009, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia. Averaging Asbestos levels across the stockpile is not appropriate and Asbestos levels within each sample should be reported.
- **<7mm sample fractions**
  - Each <7mm sample fraction must be analysed for Asbestos and ACM.
  - Asbestos analysis must be undertaken by an independent NATA certified laboratory and comply with *Australian Standard Method for the Qualitative Identification of asbestos in bulk samples* (AS4964-2004) or be demonstrated to be able to achieve the equivalent level of results to this Australian Standard.

AS4964-2004 is currently the only method in Australia that has NATA certification; however the practicable level of detection for this standard polarized light microscopy method (PLM) and dispersion staining (DS) is 0.01%w/w. It is possible however, to measure Asbestos contamination at or lower than 0.001% w/w where an increased sample size is used, however DER recognises that any reporting of concentrations below 0.01%w/w will be outside the conditions set by NATA.

Therefore, to determine whether recycled Products meet the product specifications for Asbestos content, samples must be a minimum of 500mL in size. Proponents must adopt one of the following analytical approaches:

1. Detected/non-detected – where any quantity of Asbestos is detected by the PLM method it must be assumed, without further analysis, to be in concentrations above the product specification limit of 0.001%w/w. A weight of evidence approach may be adopted i.e. the frequency and occurrence of other positive results in the stockpile can be taken into account to determine whether the stockpile being assessed is considered to meet the product specification or not; or
2. Where any quantity of Asbestos is detected by the PLM method, the sample is subject to further testing in the form of a semi-quantitative method with a lower level of detection for Asbestos. Either of the following methods are considered acceptable by DER:
   - The extraction and weighing of fibre bundles or fibre cement material from the total sample; and
   - Measuring the width and length (i.e. volume) of individual fibre by Phase Contrast Microscopy (PCM) and calculating the weight of fibres in the extracted sub-sample.

Interpreting inspection and sampling results

- If the visual inspection, sieve sample or analytical results identify Asbestos above or possible above the 0.001%w/w criteria, then that stockpile or product process should be deemed potentially contaminated and considered for off-site disposal as Asbestos Waste, or subject to further actions to remediate it or to demonstrate its acceptability by further assessment. A record should be made of the decision-making and action taken (e.g. off-site disposal, further assessment undertaken etc.) in relation to that stockpile.
- In addition to the above, where Asbestos is identified above or possibly above the 0.001%w/w criteria, an investigation into the likely cause for the presence of Asbestos in the product should be undertaken and measures implemented to prevent a reoccurrence. A record of the investigation and its findings together with the details of any preventative measures implemented at the site should be made.

(Derived from Section 4.3 of the DER Asbestos Guidelines, pages 15 - 20)

Attachment 4 – Asbestos Factsheet

Appendix A: Asbestos Factsheet

TRANSPORTATION AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

The transportation and disposal of asbestos-containing material from commercial, industrial and other activities is regulated by the Environmental Protection (Controlled Waste) Regulations 2004 (Regulations). The Regulations apply obligations on the waste transporter to ensure the waste is safely transported to an approved location.

The Regulations define what is considered to be asbestos containing material for the purposes of the Regulations. This definition includes material which contains 0.001% or more of asbestos fibres weight/weight.

Please note that removal, handling, signage, security and onsite packaging of asbestos contaminated material must be carried out in accordance with the Local Government Authority, Department of Health and WorkSafe requirements. Contact the relevant authority for further information (refer to the end of this factsheet).

TRANSPORTATION OF ASBESTOS-CONTAINING MATERIAL (ACM)

The Regulations require asbestos containing material to be:

1. Separated from other material for disposal where that is reasonably practicable;
2. Wrapped and contained in a manner that prevents asbestos fibres entering the atmosphere during transportation on a road; and
3. Labelled or marked with the words "CAUTION ASBESTOS" in letters no less than 50 millimetres high on the individual packages and the transport container.

Further guidance on the transportation of asbestos containing materials is set out in the Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002(2005)] and the *Health (Asbestos) Regulations (1992 or as amended)*. This Code of Practice recommends that:

- ACM is sealed in heavy duty 200 μm (minimum thickness) polythene plastic and clearly labelled with the appropriate signage warning.
- All drums or bins used to store and dispose of ACM should be in good condition, with lids and rims in good working order. The drums or bins should be lined with polythene plastic (200 μm minimum thickness) and be clearly labelled.
- If a waste skip bin, vehicle tray or similar container is used, the ACM should be double bagged before being placed in to the container or sealed in double-lined, polythene plastic (200 μm minimum thickness), and be clearly labelled. In the case of bulk loads such as contaminated soil an alternative is to double line the vehicle tray with the polythene and completely cover the load with a close fitting durable material such as the double layered polythene or a tarpaulin.

- In the case of ACM in the form of contaminated soil, it needs to be wetted down prior to removal and loading onto vehicle or bin.

DISPOSAL OF MATERIAL CONTAINING ASBESTOS

All material containing asbestos must be disposed at a disposal site appropriately licensed or registered under *Part V* of the *Environmental Protection Act 1986* to accept asbestos waste.

A person who disposes of material containing asbestos other than at a licensed disposal site commits an offence.

Receipts for the disposal of ACM should be retained or passed on to the disposal client to assist any subsequent regulatory investigation.

DUTY TO NOTIFY OTHERS OF THE PRESENCE OF ASBESTOS

A person who takes material containing asbestos to a disposal site **MUST** inform the operator of the facility that the material is, or contains asbestos waste. This notification should be provided in a written form however where notification is verbally provided the disposal site should make a written record of the notification.

PENALTIES FOR NON-COMPLIANCE

Penalties apply for offences committed under the *Environmental Protection Act 1986* and the Environmental Protection (Controlled Waste) Regulations 2004.

DISPOSAL SITES FOR MATERIAL CONTAINING ASBESTOS

For a map of landfills within the Metropolitan area visit the WA Waste Authority website at: www.zerowastewa.com.au/disposal/community/perthlandfills

Please contact the Local Government Authority or the facility on the number provided for more information before visiting the disposal site. In Regional areas contact the Local Government Authority for disposal site locations. Please note this list is subject to change and is only intended as a guide.

COUNCIL OR COMPANY	ADDRESS	SUBURB	POST CODE	PHONE NUMBER	LANDFILL CLASS
Buller Road Refuse Disposal Site	Lot 1701 Buller Rd	Waroona	6215	9733 1277	II
City of Armadale	Hopkinson Rd	Forrestdale	6112	9399 3935	II
City of Canning	Ranford Rd	Canning Vale	6155	9321 0606	II & III
City of Cockburn	Rockingham Rd	Henderson	6166	9411 3444	II
City of Rockingham	Millar Rd	Baldivis	6171	9524 2053	III
City of Stirling	238 Balcatta Rd	Balcatta	6021	9345 8555	Transfer station
Eastern Metro Regional Council	Toodyay Rd (Red Hill)	Gidgegannup	6083	9574 6235	III & IV
Eclipse Resources	Lot 180 Abercrombie Rd	Postans	6167	9381 5600	I
Mindarie Regional Council	1700 Marmion Ave	Mindarie	6030	9306 6300	II
RCG Pty Ltd	Lot 70/717 Hester Ave	Neerabup	6031	9407 5069	I
Shire of Gingin	Lot 10 Cockram Rd	Gingin	6503	9575 2211	II
South Perth Waste Transfer Station	Cnr Hayman Rd Thelma St	Como	6152	9367 2492	Transfer station
Wastestream Management	Ratcliffe Rd	Kwinana	6167	9439 1300	I
West Australian Landfill Services	Lot 200 and Lot 201 Shale Rd	South Cardup	6201	9525 5355	II
Western Metropolitan Regional Council	Cnr Lemnos & Brockway Rd	Shenton	6008	9384 2544	Transfer station

FURTHER INFORMATION AND CONTACTS

Local Government Authority
For information on demolition licence requirements and household queries contact an Environmental Health Officer at your Local Government Authority.

Department of Health
For information on asbestos cement products in your home, asbestos contaminated sites and frequently asked questions on asbestos, visit the Department of Health website at: www.public.health.wa.gov.au/2/867/2/asbestos.pm or Tel: 9388 4999.

Department of Consumer and Employment Protection – Worksafe
For information about asbestos in the workplace, licensed asbestos removalists and appropriate handling of asbestos including safety wear, visit the Worksafe website at:

www.commerce.wa.gov.au/WorkSafe/Content/Safety_Topics/Asbestos/ or Tel: 1300 307 877.

APPENDIX D

NOTIFICATION OF CEASE OF WASTE RECEIVAL

Non Organic Disposals

Cell 6 Pty Ltd atf **Cell 6 Unit Trust**
ABN: 68 174 798 125
115 Driver Road
DARCH, Western Australia
6065

DWER Licencing & Compliance
Via email.

November 12th 2017

Dear Sir / Madam

Re : NonOrganic Disposals – Licence : L6832/1997/13

Non Organic Disposals will cease to receive waste as of :

4:00 pm, Wednesday 15th Novemeber 2017.

This action is being taken to allow the commencement of site improvement activites, including the processing of remaining waste and disposal of residual waste.

This work is in preparation of carrying out a MA to facilitate the sale of the site.

Contact details remain unchanged.

Further information will be provided before further works commence in accordance with the relevant Act(s) and Regulations.

Yours Sincerely,

Peter Margetic
General Manager

APPENDIX E

ACE ENVIRONMENTAL LANDFILL GAS AND GROUNDWATER MONITORING DATA

GROUNDWATER AND GAS METHODOLOGY – 115 FURNISS ROAD, DARCH

Groundwater Methodology

Field activities conducted as part of the groundwater assessment program were undertaken on the 22 to 25 June 2020 (installation of bores) and 21 and 23 July 2020 (GW sampling). Field activities are summarised in **Table 1.0**.

Table 1.0 Summary of Groundwater Assessment

Activity	Location	Details
Well construction and installation	GW1, GW2 and GW3	GW wells were constructed with 50 mm, class 18, uPVC threaded screen casing in accordance with the DWER's well construction procedures. South Western Drilling were the drilling contractor for installation of the bores and a hollow stem auger was used.
Well development	GW1, GW2 and GW3	Purging and sampling was conducted according to AS/NZS 5667.1-1998 "Water quality sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples. Wells were purged of 5 well volumes or until pumped dry upon completion of construction and samples were obtained once the parameters had stabilised.
Well gauging	GW1, GW2 and GW3	Field measurements of pH, temperature, dissolved oxygen and EC were taken every 10 to 12 L or until the parameters stabilized.
Sampling method	GW1, GW2 and GW3	A low flow pump was used to collect the groundwater samples with new tubing used for each well.
Decontamination procedure	GW1, GW2 and GW3	New tubing was used for each well to avoid the risk of cross contamination.
Sample preservation	GW1, GW2 and GW3	Samples were collected in laboratory supplied bottles prepared according to AS/NZS 5667.1-1998 and immediately stored in an insulated esky chilled with ice bricks upon sampling until transit to the laboratory
Laboratory Analyses (21-07-2020)	GW1, GW2 and GW3	Collection of 6 groundwater samples (including 1 field duplicate, 1 triplicate sample and 1 transport blank) and a rinsate was also collected to ensure the water quality meter probe was cleaned effectively. Laboratory analysis for ultra-trace pesticides (OC/OPs), dissolved metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg, Mn, B, Ba, Be, Co, Se and V), TPH/TRH, BTEX, PAH, nitrate as N, nitrite as N, TKN, total nitrogen, total phosphorus, reactive phosphorus, ammonia, chloride, sulphate, potassium and calcium carbonate.
Laboratory Analyses (23-07-2020)	GW1, GW2 and GW3	Collection of 5 groundwater samples (including 1 field duplicate and 1 transport blank). Laboratory analysis for PFAS.

GW1, GW2 and GW3 were constructed based on the bore construction details outlined in NEPC, 2013 with a slight variation in regards to the screen. Typically a 3 m screen is used for groundwater bores, but since these bores were also being used for gas bores, the screens varied across the three bores. All were gravel packed, sealed with bentonite and then backfilled and concreted in place.

Gas Methodology

Field activities conducted as part of the ground gas assessment program were undertaken on the 22 to 25 June (installation of the gas wells) and the 14 July, 19 August, 12 September and 9 October 2020 (gas sampling).

Field activities are summarised below:

Development of the methodology was undertaken in accordance with the CIRIA 2007, UK guidelines: *Assessing risks posed by hazardous ground gases to buildings.*

A total of 14 gas boreholes were installed around the site in locations approved by the Auditor.

The gas boreholes were installed in the soil only with the exception of GW1, GW2 and GW3 and in most cases did not intercept the groundwater beneath the site. The bores were finished with 0.5 m of pipe sitting above the ground and a well plug (50 mm ExCap Air Sampling with 12 inch Teflon tubing) placed on the wells to seal any gas within the system prior to sampling.

The Gas boreholes were left to reach equilibrium over a minimum of 14 days to ensure that the air in the bores had reached equilibrium. Generally, the type of soil strata encountered at the site would reach equilibrium within 24 hours, but the CIRIA guidelines suggested that some could take up to 7 days and hence Ace decided to wait for longer than 14 days prior to commencing the gas monitoring to be certain that the gas wells had reached equilibrium.

The barometric pressure, temperature and time were recorded at the site on the day of the sampling prior to any sampling and/or monitoring being undertaken.

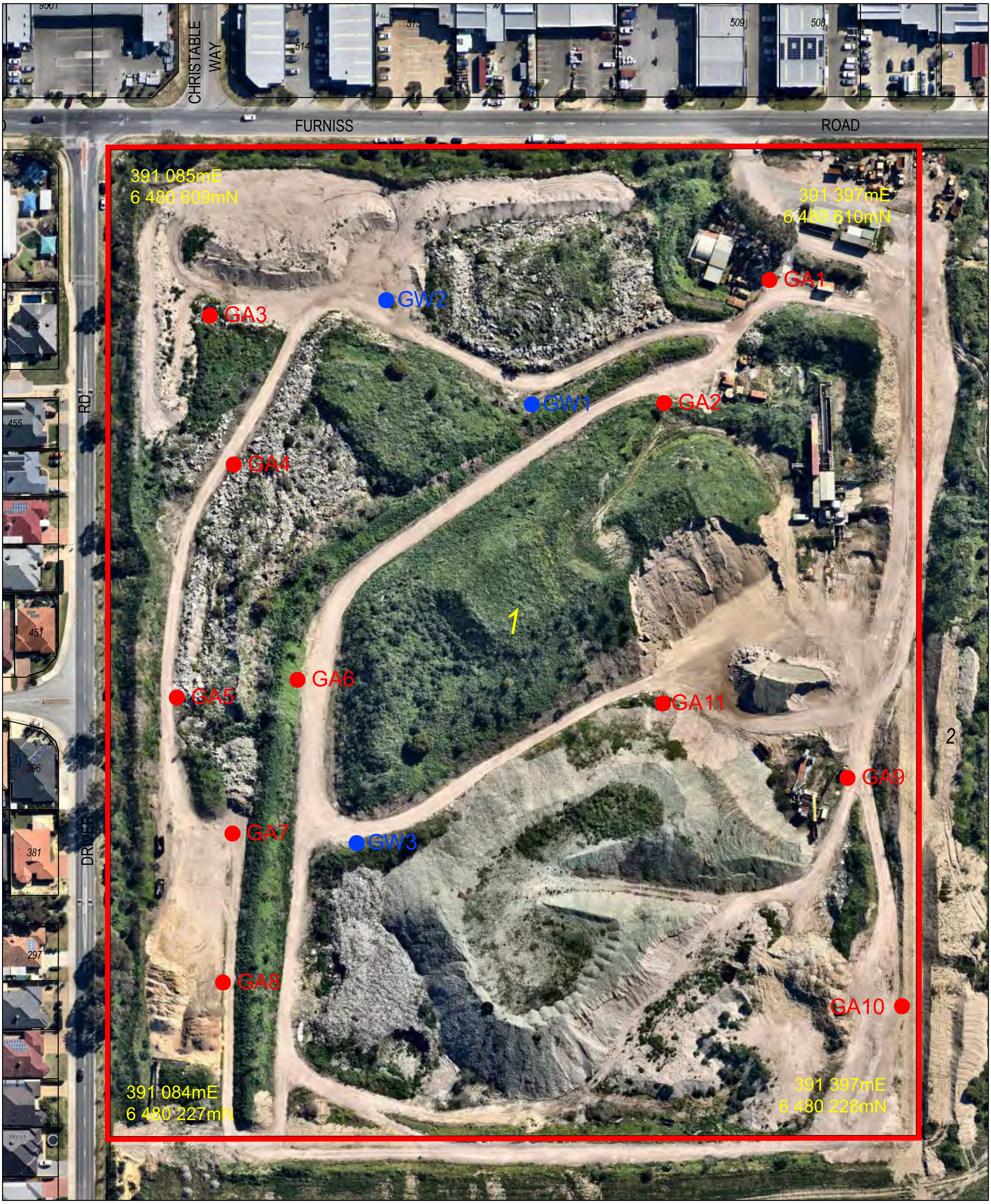
Ace conducted four monitoring events over a four month period. The instrument used for analyzing ground gas contamination was calibrated by Eco Environmental and the calibration certificates provided.

Ace carried out ground gas monitoring of the gas boreholes across the site using a GFM 435 Landfill Gas Analyser. The GFM 435 Landfill Gas Analyser measured methane, carbon dioxide, carbon monoxide, hydrogen sulphide and oxygen and provided the barometric pressure reading for the site.

The sampling procedure for undertaking the gas monitoring using the GFM 435 Landfill Gas Analyser was as follows:

- Clean air was run through the machine and methane zeroed prior to attaching the tube to the gas well plug fitting. This was done about 10 metres away from the Gas Boreholes to ensure that the air entering the machine was clean.
- The GFM 435 Landfill Gas Analyser tubing was attached to the gas well plug fitting and the pump switched on and the measurements recorded. The machine was run for approximately 2 minutes at each borehole location. This was longer than the recommended time for measuring methane and in particular hydrogen sulphide in the field using this equipment.

The GFM 435 Landfill Gas Analyser was hired from Eco Environmental and calibration certificates obtained each time confirming that the machine had been calibrated to the standard required. The Gas Analyser was purged in between measurement of each gas borehole.



Ace Environmental

Shop 17/2 South Western Highway
Armadale, Western Australia 6112
Tel: (08) 9497 5000
Fax: (08) 9497 5000

NORTH

0 20 40 60 80 100m

SCALE 1:2000
DATE: 02.11.2020
ORIGINAL PLAN SIZE: A4
JOB No. J020-003

GAS AND GROUNDWATER BORE LOCATIONS

LOT 1 (No. 115) FURNISS ROAD
DARCH
for Newsquare Nominees
ATF The Driver Road Trust

Sample ID Number	% Gas											
	CH_4 14-07	CH_4 19-08	CH_4 12-09	CH_4 09-10	CO_2 14-07	CO_2 19-08	CO_2 12-09	CO_2 09-10	O_2 14-07	O_2 19-08	O_2 12-09	O_2 09-10
GA1	0	0	0	0	1.0	1.8	0.1	4.0	19.1	7.0	20.5	11.8
GA2	0	11.5	0	0	1.3	5.6	4.2	0.6	17.1	5.8	15.5	18.6
GA3	2.3	3.3	0.4	0	1.4	4.2	2.6	0	16.7	4.7	13.1	19.8
GA4	2.4	7.1	1.2	0.4	0.8	2.8	3.1	0.6	15.2	3.6	11.9	17.5
GA5	0.7	0.8	0	0	0.8	4.6	0.2	2.0	17.7	6.2	20.2	14.6
GA6	0	0	0	0	0.5	4.6	3.5	4.1	19.5	13.1	15.7	14.9
GA7	1.8	0.9	0	0	1.7	4.4	1.4	4.0	12.8	7.7	17.3	13.1
GA8	1.2	0	0	0	1.5	5.4	4.4	4.4	14.0	10.5	13.6	12.7
GA9	0	0	0	0	1.7	6.0	0.6	0.6	13.1	5.9	13.2	4.8
GA10	0	0	0	0	1.4	3.1	1.8	3.3	14.6	15.7	14.3	15.8
GA11	0	0	0	0	0.1	0.2	0.5	0.8	17.1	6.8	10.7	11.0
GW1	1.3	0.9	4.0	0	1.9	2.6	8.0	0.1	13.5	9.3	0	13.4
GW2	3.1	19.0	15.6	0	0.7	0.8	2.8	0	12.9	0.2	5.9	19.7
GW3	0	0	0	0	2.1	2.3	2.2	2.1	16.6	16.8	17.8	17.2

NB: CH_4 = methane; CO_2 = carbon dioxide; O_2 = oxygen; CO = carbon monoxide; H_2S = hydrogen sulphide

Sample ID Number	% Gas											
	CO 14-07	CO 19-08	CO 12-09	CO 09-10	H_2S 14-07	H_2S 19-08	H_2S 12-09	H_2S 09-10	Flow Rate 14-07	Flow Rate 19-08	Flow Rate 12-09	Flow Rate 09-10
GA1	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GA2	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GA3	-1	0	1	1	0	0	0	0	0.0	0.0	0.0	0.0
GA4	0	0	0	1	0	0	0	0	0.0	0.0	0.0	0.0
GA5	0	-1	-1	1	0	0	0	0	0.0	0.0	0.0	0.0
GA6	0	0	1	0	0	0	0	0	0.0	0.0	0.0	0.0
GA7	0	-1	0	1	0	0	0	0	0.0	0.0	0.0	0.0
GA8	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GA9	0	-1	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GA10	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GA11	-1	0	-1	0	0	0	0	0	0.0	0.0	0.0	0.0
GW1	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
GW2	0	-1	0	1	0	0	0	0	0.0	0.0	0.0	0.0
GW3	0	-1	-1	0	0	0	0	0	0.0	0.0	0.0	0.0

Sampling 1 (14-07-2020): Barometric Pressure = 1009 mb or 1013 h Pa; temperature = 14°C

Sampling 2 (19-08-2020): Barometric Pressure = 1018 mb or 1021 hPa; temperature = 9°C

Sampling 3 (12-09-2020): Barometric Pressure = 1028 hPa; temperature = 10°C

Sampling 4 (09-10-2020): Barometric Pressure = 1018 hPa; temperature = 14°C

Background and guideline is <1%; methane is considered explosive between 5.0 and 15%; CO_2 is fatal at >22% and causes headaches and shortness of breath at 3%

Table 1– Groundwater Analytical Results: Dissolved Metals

Sample Identification Number	Sample Date	Units	Metals							
			Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
Assessment Criteria										
Drinking Water			**0.01**	**0.002**	**-**	**2.0**	**0.01**	**0.02**	**-**	**0.001**
Freshwater			**0.024**	**0.0002**	**-**	**0.0014**	**0.0034**	**0.011**	**0.008**	**0.00006**
DoH Potable Use			**0.1**	**0.02**	**-**	**20**	**0.1**	**0.2**	**3**	**0.01**
GW1	21/07/20	mg/L	0.012	<0.0001	<0.001	<0.001	<0.001	0.003	<0.005	<0.0001
GW2	21/07/20	mg/L	0.014	<0.0001	0.003	<0.001	<0.001	0.001	<0.005	<0.0001
GW3	21/07/20	mg/L	0.002	<0.0001	<0.001	<0.001	<0.001	0.001	<0.005	<0.0001
GWQA1	21/07/20	mg/L	0.012	<0.0001	<0.001	<0.001	<0.001	0.003	<0.005	<0.0001
GWQA2	21/07/20	mg/L	0.014	<0.0001	<0.001	<0.001	<0.001	0.002	<0.001	<0.0005
Blank	21/07/20	mg/L	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.0001
Rinsate	21/07/20	mg/L	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.0001

Table 2 – Groundwater Analytical Results: Additional Metals

Sample Identification Number	Sample Date	Units	Boron	Barium	Manganese	Beryllium	Cobalt	Selenium	Vanadium
Drinking Water			**4**	**2**	**0.5**	**0.06**	**-**	**0.01**	**-**
Freshwater			**0.37**	**-**	**1.9**	**-**	**-**	**0.005**	**-**
GW1	21/07/20	mg/L	0.15	0.061	0.297	<0.001	0.003	<0.01	<0.01
GW2	21/07/20	mg/L	0.42	0.025	0.001	<0.001	<0.001	<0.01	<0.01
GW3	21/07/20	mg/L	0.44	0.085	0.001	<0.001	0.002	<0.01	<0.01
GWQA1	21/07/20	mg/L	0.16	0.060	0.003	<0.001	0.003	<0.01	<0.01
GWQA2	21/07/20	mg/L	0.2	0.052	0.20	<0.0005	0.003	<0.001	0.002
Blank	21/07/20	mg/L	<0.05	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01
Rinsate	21/07/20	mg/L	<0.05	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01

Table 3 – Groundwater Analytical Results: Nitrates and Phosphorus

	Drinking Water	Fresh water	Sample Name					
			GW1	GW2	GW3	GWQA1	GWQA2	Blank
			Units – mg/L					
			21/07/20	21/07/20	21/07/20	21/07/20	21/07/20	21/07/20
Nitrite as N	**0.9**	**3.0**	<0.01	0.02	<0.01	<0.01	<0.005	<0.01
Nitrate as N	**11.3**	**0.7**	<0.01	0.63	<0.01	0.03	0.005	<0.01
NOX as N	-	-	<0.01	0.65	<0.01	0.03	0.009	<0.01
TKN	-	-	4.6	4.4	12.2	5.6	8.4	<0.1
Total Nitrogen	-	-	4.6	5.0	12.2	5.6	8.4	<0.1
Total P	-	-	1.08	0.43	0.83	1.16	1.3	<0.01
Reactive P	-	-	<0.01	0.08	0.08	<0.01	<0.005	<0.01
Ammonia as N	-	-	4.37	2.62	7.38	4.85	5.6	<0.01

Table 4 – Groundwater Analytical Results: Total Petroleum Hydrocarbons

Sample Name	Sample Date	Units	C6 - C9 Fraction	C10 – C14 Fraction	C15 – C28 Fraction	C29 – C36 Fraction
Drinking Water			**0.15**	**0.6**	**0.6**	**0.6**
Freshwater			-	-	-	-
GW1	21/07/20	mg/L	<0.02	<0.05	<0.1	<0.05
GW2	21/07/20	mg/L	<0.02	<0.05	<0.1	<0.05
GW3	21/07/20	mg/L	<0.02	<0.05	<0.1	<0.05
GWQA1	21/07/20	mg/L	<0.02	<0.05	<0.1	<0.05
GWQA2	21/07/20	mg/L	<0.001	<0.05	<0.1	<0.1
Blank	21/07/20	mg/L	<0.02	<0.05	<0.1	<0.05

Table 5 – Groundwater Analytical Results: Total Recoverable Hydrocarbons

Sample Name	Sample Date	Units	C6 – C10 Fraction	C10 – C16 Fraction	C16 – C34 Fraction	C34 – C40 Fraction
Drinking Water			-	-	-	-
Freshwater			-	-	-	-
GW1	21/07/20	mg/L	<0.02	<0.1	<0.1	<0.1
GW2	21/07/20	mg/L	<0.02	<0.1	<0.1	<0.1
GW3	21/07/20	mg/L	<0.02	<0.1	<0.1	<0.1
GWQA1	21/07/20	mg/L	<0.02	<0.1	<0.1	<0.1
GWQA2	21/07/20	mg/L	<0.001	<0.05	<0.1	<0.1
Blank	21/07/20	mg/L	<0.02	<0.1	<0.1	<0.1

Table 6 – Groundwater Analytical Results: BTEX

Sample Identification Number	Sample Date	Units	BTEX Hydrocarbons				
			Benzene	Toluene	Ethyl Benzene	meta- & para- Xylene	Ortho- Xylene
Drinking Water			**0.001**	**0.8**	**0.3**	**0.6**	**0.6**
Freshwater			**0.95**	**-**	**-**	**0.2**	**0.2**
GW1	21/07/20	mg/L	<0.001	<0.002	<0.002	<0.002	<0.002
GW2	21/07/20	mg/L	<0.001	<0.002	<0.002	<0.002	<0.002
GW3	21/07/20	mg/L	<0.001	<0.002	<0.002	<0.002	<0.002
GWQA1	21/07/20	mg/L	<0.001	<0.002	<0.002	<0.002	<0.002
GWQA2	21/07/20	mg/L	<0.001	<0.001	<0.001	<0.002	<0.001
Blank	21/07/20	mg/L	<0.001	<0.002	<0.002	<0.002	<0.002

Table 7 – Groundwater Analytical Results: Polynuclear Aromatic Hydrocarbons

	Drinking Water	Fresh water	GW1	GW2	GW3	GWQA1	GWQA2	Blank
			21/07/20	21/07/20	21/07/20	21/07/20	21/07/20	21/07/20
Naphthalene	-	16	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Acenaphthylene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Acenaphthene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Fluorene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Phenanthrene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Anthracene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Fluoranthene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Pyrene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Benz(a)anthracene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Chrysene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Benzo(b)fluoranthene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0002	<0.001
Benzo(k)fluoranthene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Benzo(a)pyrene	0.00001	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005
Indeno(1.2.3.cd)pyren e	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Dibenz(a.h)anthracen e	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001
Benzo(g.h.i)perylene	-	-	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001

Table 8 – Groundwater Analytical Results: Organophosphorus Pesticides

	Drinking Water	Freshwater	GW1	GW2	GW3	GWQA1	GWQA2	Blank
			Sample Name					
			21/07/20	21/07/20	21/07/20	21/07/20	21/07/20	21/07/20
Bromophos-ethyl	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.000002	<0.0001
Carbophenothion	-	-	<0.00002	<0.00002	<0.00002	<0.00002	-	<0.00002
Chlorfenvinphos	-	-	<0.00002	<0.00002	<0.00002	<0.00002	-	<0.00002
Chlorpyrifos	0.03	0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.000001	<0.00002
Demeton-S-methyl	-	-	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001
Diazinon	0.004	0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.000001	<0.00002
Dichlorvos	0.005	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.000002	<0.0002
Dimethoate	0.007	0.0015	<0.00002	<0.00002	<0.00002	<0.00002	<0.00015	<0.00002
Ethion	0.004	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.000002	<0.00002
Fenamiphos	0.0005	-	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001
Fenthion	0.007	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.000002	<0.00005
Malathion	0.07	0.00005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00005	<0.00002
Azinphos Methyl	0.03	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.000002	<0.00002
Monocrotophos	-	-	<0.00002	<0.00002	<0.00002	<0.00002	-	<0.00002
Parathion	0.02	0.000004	<0.0002	<0.0002	<0.0002	<0.0002	<0.000001	<0.0002
Parathion-methyl	0.09	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001
Pirimphos-ethyl	-	-	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001
Prothiofos	-	-	,<0.0001	,<0.0001	,<0.0001	,<0.0001	-	,<0.0001

Table 9 – Groundwater Analytical Results: Organochlorine Pesticides

	Drinking Water	Freshwater	GW1	GW2	GW3	GWQA1	GWQA2	Blank
			Sample Name					
			21/07/20	21/07/20	21/07/20	21/07/20	21/07/20	21/07/20
Aldrin	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001
alpha-BHC	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
beta-BHC	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
DDT (total)	0.009	0.000006	<0.00001	<0.00001	<0.00001	<0.00001	<0.000006	<0.00001
Dieldrin	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001
alpha-Endosulfan	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	<0.00001
beta-Endosulfan	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	<0.00001
Endosulfan sulfate	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	<0.00001
Endosulfan	0.02	0.00003	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	<0.00001
Endrin	-	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001
Endrin aldehyde	-	-	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001
Endrin ketone	-	-	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001
Heptachlor	-	0.00001	<0.000005	<0.000005	<0.000005	<0.000005	<0.000001	<0.000005
Heptachlor epoxide	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001
Hexachlorobenzene	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001
gamma-BHC	0.01	0.0002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Methoxychlor	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	<0.00001
Chlordane	0.002	0.00003	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.00001

Table 10 – Groundwater Analytical Results: PFAS

	Drinking Water	Fresh Water 99%	Fresh water 95%	GW1	GW2	GW3	GWQA1	Blank
				Sample Name				
				Units – mg/L				
				23/07/20	23/07/20	23/07/20	23/07/20	23/07/20
PFOS	**0.00007**	**0.00000023**	**0.00013**	0.000052	0.000073	0.000052	0.000055	<0.000002
PFOA	**0.00056**	**0.019**	**0.22**	0.000143	0.000014	0.000087	0.000144	<0.000002

NB: 99% = 99% species protection; 95% = 95% species protection

NB: 95% species protection can be achieved based on the results for freshwater guidelines; the drinking water guidelines are exceeded in GW2

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214 Lord St Perth WA 6000

EQUIPMENT INFORMATION

Instrument: GFM435-2P Landfill Gas Analyser

Serial Number: 11856

Equipment Check	Enclosed	Comment
GFM435 Gas Analyser	✔	
• 2 x Connector Caps on Body	✔	
• Neck strap	✔	
• Leather boot	✔	
Charger	✔	
Download Cable	✔	
USB Thumb	✔	User Manual, software & data sheet
Spare Tygon Tubing	✔	
Tygon Tubing with Accessories	✔	M connector, F connector, inline filter, 2 x luer filter adaptors
GFM series Spare Kit	✔	
Allen Key	✔	
Calibration Certificate	✔	
Quick Reference	✔	
Plastic Carry Case	✔	

Fresh Air Test							
Sensor	CH4%	CO2%	O2% 1% +/-	LEL%	H2Sppm	COppm	Hex%
Expected	2.5	0	18	0	25	100	0
Measured	0	0	20.9	0	23	94	0.48

Inspection Details	Pass	Comment
Inspection for faults, corrosion, damage	✔	
Delete all previously logged data	✔	

ECO Standard Rental Terms and Conditions apply to all equipment calibrations.

Regards

H.Petersen

Equipment Specialist
ECO Environmental

Date: 13.7.2020

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EQUIPMENT INFORMATION

Instrument: GFM435-2P Landfill Gas Analyser

Serial Number: 11856

Equipment Check	**Enclosed**	**Comment**
GFM435 Gas Analyser	☑	
• 2 x Connector Caps on Body	☑	
• Neck strap	☑	
• Leather boot	☑	
Charger	☑	
Download Cable	☑	
USB Thumb	☑	User Manual, software & data sheet
Spare Tygon Tubing	☑	
Tygon Tubing with Accessories	☑	M connector, F connector, inline filter, 2 x luer filter adaptors
GFM series Spare Kit	☑	
Allen Key	☑	
Calibration Certificate	☑	
Quick Reference	☑	
Plastic Carry Case	☑	

Fresh Air Test

Sensor	CH4%	CO2%	O2% 1% +/-	LEL%	H2Sppm	COppm	Hex%
Expected	2.5	0	18	0	25	100	0
Measured	0	0	20.9	0	23	94	0.48

Inspection Details	**Pass**	**Comment**
Inspection for faults, corrosion, damage	☑	
Delete all previously logged data	☑	

ECO Standard Rental Terms and Conditions apply to all equipment calibrations.

Regards

H.Petersen

Equipment Specialist
ECO Environmental

Date: 18.08.2020

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EQUIPMENT INFORMATION

Instrument: GFM435-1P Landfill Gas Analyser

Serial Number: 10688

Equipment Check	Enclosed	Comment
GFM435 Gas Analyser	☑	
• 2 x Connector Caps on Body	☑	
• Neck strap	☑	
• Leather boot	☐	
Charger	☑	
Download Cable	☑	
USB Thumb	☑	User Manual, software & data sheet
Spare Tygon Tubing	☑	
Tygon Tubing with Accessories	☑	M connector, F connector, inline filter, 2 x luer filter adaptors
GFM Series Spare Kit	☑	
Allen Key	☑	
Calibration Certificate	☑	
Quick Reference	☑	
Plastic Carry Case	☑	

Sensor	CH4% ±0.3%	CO2% ±0.3%	O2% ± 0.5%	LEL ± 5%	H2Sppm ±100ppm	COppm ±100ppm	CH4 ±3%
Fresh Air	0	0	20.9	0	0	0	0
Measured	0.0	0.0	20.7	0.0	0	0	0
Span	2.5	40%	18	70%	25	100	60%
Measured	2.7	40.2	17.5	68.3	20	108	59.8

Inspection Details	Pass	Comment
Inspection for faults, corrosion, damage	☑	
Delete all previously logged data	☑	

ECO Standard Rental Terms and Conditions apply to all equipment calibrations.

Regards

Paul Goodgame

Equipment Specialist
ECO Environmental

Date: 10/9/20

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EQUIPMENT INFORMATION

Instrument: GFM435-1 Landfill Gas Analyser

Serial Number: 10688
100877 - Unit Number

Equipment Check	**Enclosed**	**Comment**
GFM435 Gas Analyser	✓	
• 2 x Connector Caps on Body	✓	
• Neck strap	✓	
• Leather boot	✓	
Charger	✓	
Download Cable	✓	
USB Thumb	✓	User Manual, software & data sheet
Spare Tygon Tubing	✓	
Tygon Tubing with Accessories	✓	M connector, F connector, inline filter, 2 x luer filter adaptors
GFM Series Spare Kit	✓	
Allen Key	✓	
Calibration Certificate	✓	
Quick Reference	✓	
Plastic Carry Case	✓	

Fresh Air Test

Sensor	CH4%	CO2%	O2% 1% +/-	LEL%	H2Sppm	COppm	Hex%
Expected	2.5	0	18	0	25	100	0
Measured	2.4	0	17.6		20	97	.148

Inspection Details	**Pass**	**Comment**
Inspection for faults, corrosion, damage	✓	
Delete all previously logged data	✓	

ECO Standard Rental Terms and Conditions apply to all equipment calibrations.

Regards

P.Goodgame

Equipment Specialist
ECO Environmental

Date: 06.10.2020

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214 Lord St Perth WA 6000

EQUIPMENT INFORMATION

Instrument: YSIPP1

Serial Number: 11J100668 (Display)

Lot Number: 20D100247 (Sonde)

EQUIPMENT CHECK	Enclosed	Comment
YSI Pro Plus Display	✓	
YSI Quatro Sonde	✓	
Flow Cell	✓	
Probe Guard	✓	
Rubber Storage/Calibration	✓	
Sleeve Calibration Cup + Cap	✓	
YSI Pro Series ProComm II Kit	✓	
Instruction Manual & Field Sheets	✓	
Spare Batteries (x 2)	✓	

SENSOR CALIBRATION DETAILS

		Calibration Undertaken	Accuracy	Pass	Fail
Temperature		Factory Calibrated	±0.2°C	✓	☐
Dissolved Oxygen	✓	100% Saturation	±2%	✓	☐
		Pressure Compensation	1027 hPa	✓	☐
Conductivity	✓	1288mS/cm	±0.5%	✓	☐
	✓	Check linearity at 1.4mS/cm	±0.5%	✓	☐
Salinity		Auto Calibrated	±1%	✓	☐
pH	✓	pH 7.00	± 0.2	✓	☐
	✓	pH 4.00	± 0.2	✓	☐
ORP	✓	244 mV at 18 °C	±20mV	✓	☐

This is to certify that where possible, this instrument has been calibrated in accordance with the manufacturer's calibration procedure as recommended in the instrument service manual.

ECO Standard Rental Terms & Conditions apply to all equipment calibrations.

Regards,

Paul Goodgame

ECO Environmental Equipment Specialist

Date: 20.07.2020

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2007588**	Page	: 1 of 10
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Customer Services EP
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA, AUSTRALIA 6112	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 21-Jul-2020 10:20
Order number	: ----	Date Analysis Commenced	: 21-Jul-2020
C-O-C number	: ----	Issue Date	: 05-Aug-2020 10:31
Sampler	: GINA PEMBERTON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Ultra-trace OC/OPs conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP131A: Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- Ionic balances were calculated using: major anions - chloride, alkalinity and sulfate; and major cations - calcium, magnesium, potassium and sodium.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**229**	**122**	**421**	**233**	<1
Total Alkalinity as CaCO3	----	1	mg/L	**229**	**122**	**421**	**233**	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**70**	**69**	**42**	**67**	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**72**	**40**	**63**	**72**	<1
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**71**	**55**	**103**	**71**	<1
Magnesium	7439-95-4	1	mg/L	**9**	**3**	**20**	**9**	<1
Sodium	7440-23-5	1	mg/L	**67**	**34**	**72**	**66**	<1
Potassium	7440-09-7	1	mg/L	**18**	**10**	**23**	**17**	<1
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.012**	**0.014**	**0.002**	**0.012**	<0.001
Boron	7440-42-8	0.05	mg/L	**0.15**	**0.42**	**0.44**	**0.16**	<0.05
Barium	7440-39-3	0.001	mg/L	**0.061**	**0.025**	**0.085**	**0.060**	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt	7440-48-4	0.001	mg/L	**0.003**	<0.001	**0.002**	**0.003**	<0.001
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.003**	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	**0.297**	**0.079**	**0.289**	**0.289**	<0.001
Nickel	7440-02-0	0.001	mg/L	**0.003**	**0.001**	**0.001**	**0.003**	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**4.37**	**2.62**	**7.38**	**4.85**	<0.01
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	**0.02**	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	**0.63**	<0.01	**0.03**	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	**0.65**	<0.01	**0.03**	<0.01
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**4.6**	**4.4**	**12.2**	**5.6**	<0.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**4.6**	**5.0**	**12.2**	**5.6**	<0.1
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**1.08**	**0.43**	**0.83**	**1.16**	<0.01
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	**0.08**	**0.08**	<0.01	<0.01
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**8.06**	**5.00**	**11.1**	**8.08**	<0.01
ø Total Cations	----	0.01	meq/L	**7.66**	**4.73**	**10.5**	**7.59**	<0.01
ø Ionic Balance	----	0.01	%	----	----	----	----	<0.01
ø Ionic Balance	----	0.01	%	**2.58**	**2.84**	**2.58**	**3.14**	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	**60**	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	**60**	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	**120**	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	**120**	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4`-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4`-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4`-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Dieldrin	60-57-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin	72-20-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin ketone	53494-70-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-BHC	58-89-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	72-43-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Total Chlordane (sum)	----	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Oxychlordane	27304-13-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
EP234A: OP Pesticides								
Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Dichlorvos	62-73-7	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	<10	<10	<10
Fenitrothion	122-14-5	2	µg/L	<2	<2	<2	<2	<2
Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Formothion	2540-82-1	20	µg/L	<20	<20	<20	<20	<20
Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	<10	<10	<10
Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Naftalofos	1491-41-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00	21-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007588-001	EP2007588-002	EP2007588-003	EP2007588-004	EP2007588-005
				Result	Result	Result	Result	Result
EP234A: OP Pesticides - Continued								
Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	21.5	19.2	15.0	23.6	19.0
2-Chlorophenol-D4	93951-73-6	1.0	%	53.4	46.1	36.3	55.9	41.8
2.4.6-Tribromophenol	118-79-6	1.0	%	63.4	47.6	64.9	75.4	30.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	65.4	51.9	49.6	68.9	47.2
Anthracene-d10	1719-06-8	1.0	%	73.9	60.6	70.0	78.1	54.5
4-Terphenyl-d14	1718-51-0	1.0	%	83.6	71.3	83.6	87.3	64.0
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	93.5	93.3	90.2	86.7	83.9
Toluene-D8	2037-26-5	2	%	104	104	102	105	105
4-Bromofluorobenzene	460-00-4	2	%	101	101	102	102	98.6
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.010	%	108	119	94.7	97.9	98.7

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	rinsate	----	----	----	----
			Client sampling date / time	21-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EP2007588-006	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	67
2-Chlorophenol-D4	93951-73-6	29	120
2.4.6-Tribromophenol	118-79-6	10	131
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	131
Anthracene-d10	1719-06-8	43	126
4-Terphenyl-d14	1718-51-0	41	142
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	14	166

QUALITY CONTROL REPORT

Work Order	: **EP2007588**		
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Customer Services EP
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA, AUSTRALIA 6112	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 21-Jul-2020
Order number	: ----	Date Analysis Commenced	: 21-Jul-2020
C-O-C number	: ----	Issue Date	: 05-Aug-2020
Sampler	: GINA PEMBERTON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 6		
No. of samples analysed	: 6		

NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Efua Wilson	Metals Chemist	Perth Inorganics, Wangara, WA
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Vanessa Nguyen	Organic Chemist	Perth Organics, Wangara, WA

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
ED037P: Alkalinity by PC Titrator (QC Lot: 3163266)									
EP2007594-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	400	400	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	400	400	0.00	0% - 20%
EP2007595-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	123	122	1.21	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	123	122	1.21	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3152415)									
EP2007584-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	53	54	0.00	0% - 20%
EP2007527-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	76	76	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3152414)									
EP2007584-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	180	181	0.630	0% - 20%
EP2007527-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	143	142	0.778	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 3153778)									
EP2007566-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	25	26	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	7	7	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	56	57	1.78	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
EP2007591-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	39	38	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	28	28	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	27	26	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3153777)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3153777) - continued									
EP2007566-001	Anonymous	EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EP2007566-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.019	0.020	0.00	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.012	0.011	0.00	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.05	<0.05	0.00	No Limit
EP2007591-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.034	0.033	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.242	0.243	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.010	0.009	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.17	0.18	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3153780)									
EP2007588-002	GW2	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP2007592-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 3152461)									
EP2007590-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.01	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3152416)									
EP2007584-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP2007527-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3152460)									
EP2007590-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.10	2.18	3.79	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3173268)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3173268) - continued									
EP2007588-005	Blank	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP2007848-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.2	4.8	6.92	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3173267)									
EP2007588-005	Blank	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP2007848-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.05	0.08	50.7	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3152417)									
EP2007584-002	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EP2007527-002	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172577)									
EP2007588-001	GW1	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP2007836-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3172577)									
EP2007588-001	GW1	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP2007836-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<0.02 mg/L	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 3172577)									
EP2007588-001	GW1	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP2007836-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<0.001 mg/L	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<0.002 mg/L	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<0.005 mg/L	<5	0.00	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 3153858)									
EP2007588-001	GW1	EP131A: Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP131A: Aldrin	309-00-2	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: alpha-BHC	319-84-6	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: beta-BHC	319-85-7	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: delta-BHC	319-86-8	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Dieldrin	60-57-1	0.01	µg/L	<0.010	<0.010	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP131A: Organochlorine Pesticides (QC Lot: 3153858) - continued									
EP2007588-001	GW1	EP131A: alpha-Endosulfan	959-98-8	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Endrin	72-20-8	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Endrin ketone	53494-70-5	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: gamma-BHC	58-89-9	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Methoxychlor	72-43-5	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Total Chlordane (sum)	----	0.01	µg/L	<0.010	<0.010	0.00	No Limit
		EP131A: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.01	µg/L	<0.010	<0.010	0.00	No Limit
EP234A: OP Pesticides (QC Lot: 3155594)									
EB2019056-001	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP234A: OP Pesticides (QC Lot: 3155594) - continued									
EB2019056-001	Anonymous	EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.00	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.00	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.00	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.00	No Limit
ES2025076-009	Anonymous	EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP234A: OP Pesticides (QC Lot: 3155594) - continued									
ES2025076-009	Anonymous	EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	<0.10	0.00	No Limit
		EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	<0.20	0.00	No Limit
		EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	<10	0.00	No Limit
		EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	<2	0.00	No Limit
EP234A: OP Pesticides (QC Lot: 3155595)									
EB2019056-001	Anonymous	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.00	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.00	No Limit
ES2025076-009	Anonymous	EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	<1.0	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP234A: OP Pesticides (QC Lot: 3155595) - continued									
ES2025076-009	Anonymous	EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	<10	0.00	No Limit
		EP234-1x: Formothion	2540-82-1	20	µg/L	<20	<20	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED037P: Alkalinity by PC Titrator (QCLot: 3163266)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	107	81.2	126
				<1	200 mg/L	106	90.0	110
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3152415)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	87.7	113
				<1	100 mg/L	95.1	87.7	113
ED045G: Chloride by Discrete Analyser (QCLot: 3152414)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	105	87.9	114
				<1	1000 mg/L	100	87.9	114
ED093F: Dissolved Major Cations (QCLot: 3153778)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	104	85.9	113
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	99.4	88.0	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	93.2	87.3	118
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.7	89.7	108
EG020F: Dissolved Metals by ICP-MS (QCLot: 3153777)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	84.0	120
EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	100	81.0	120
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	98.1	85.0	120
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.6	86.0	120
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.6	85.0	120
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	98.0	84.0	120
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.4	84.0	120
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.5	85.0	120
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.6	85.0	120
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	84.0	120
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	90.0	88.0	120
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	95.6	85.0	120
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	89.0	120
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	99.2	79.0	120
EG035F: Dissolved Mercury by FIMS (QCLot: 3153780)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	103	92.0	116

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3152461)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	86.2	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3152416)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	93.7	108
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3152460)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	90.5	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3173268)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	94.5	75.8	100
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3173267)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	90.2	70.0	110
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3152417)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	89.4	109
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3153458)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	10 µg/L	63.5	41.9	99.1
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	10 µg/L	76.5	36.1	113
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	10 µg/L	70.9	35.8	102
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	10 µg/L	77.0	33.5	113
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	10 µg/L	79.7	36.5	115
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	10 µg/L	73.8	46.4	109
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	10 µg/L	85.5	40.4	124
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	10 µg/L	86.2	40.2	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	10 µg/L	86.1	40.2	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	10 µg/L	84.0	45.6	121
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	10 µg/L	85.0	43.2	123
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	10 µg/L	75.4	47.3	121
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	10 µg/L	80.4	44.8	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	10 µg/L	83.5	38.8	120
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	10 µg/L	60.2	39.4	119
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	10 µg/L	64.8	40.1	123
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3153457)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	385 µg/L	72.5	39.3	103
EP071: C15 - C28 Fraction	----	100	µg/L	<100	385 µg/L	79.8	47.2	122
EP071: C29 - C36 Fraction	----	50	µg/L	<50	380 µg/L	58.6	42.5	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172577)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	93.3	73.6	113
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3153457)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3153457) - continued								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	398 µg/L	73.1	42.0	104
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	597 µg/L	69.0	46.2	116
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	168 µg/L	38.6	24.7	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172577)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	370 µg/L	94.4	73.9	115
EP080: BTEXN (QCLot: 3172577)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	105	84.1	114
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	105	81.0	115
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	106	84.4	113
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	110	84.3	114
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	107	86.5	111
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	105	77.0	118
EP131A: Organochlorine Pesticides (QCLot: 3153858)								
EP131A: Aldrin	309-00-2	0.01	µg/L	<0.010	1.1 µg/L	90.9	34.0	145
EP131A: alpha-BHC	319-84-6	0.01	µg/L	<0.010	1.1 µg/L	111	27.2	131
EP131A: beta-BHC	319-85-7	0.01	µg/L	<0.010	1.1 µg/L	92.0	28.6	133
EP131A: delta-BHC	319-86-8	0.01	µg/L	<0.010	1.1 µg/L	109	36.0	131
EP131A: 4.4`-DDD	72-54-8	0.01	µg/L	<0.010	1.1 µg/L	76.3	36.0	142
EP131A: 4.4`-DDE	72-55-9	0.01	µg/L	<0.010	1.1 µg/L	91.5	30.4	112
EP131A: 4.4`-DDT	50-29-3	0.01	µg/L	<0.010	1.1 µg/L	85.9	29.5	142
EP131A: Dieldrin	60-57-1	0.01	µg/L	<0.010	1.1 µg/L	103	28.1	122
EP131A: alpha-Endosulfan	959-98-8	0.01	µg/L	<0.010	1.1 µg/L	118	34.0	119
EP131A: beta-Endosulfan	33213-65-9	0.01	µg/L	<0.010	1.1 µg/L	104	31.6	128
EP131A: Endosulfan sulfate	1031-07-8	0.01	µg/L	<0.010	1.1 µg/L	94.9	35.0	159
EP131A: Endrin	72-20-8	0.01	µg/L	<0.010	1.1 µg/L	113	21.5	165
EP131A: Endosulfan (sum)	115-29-7	0.01	µg/L	<0.010	----	----	----	----
EP131A: Endrin aldehyde	7421-93-4	0.01	µg/L	<0.010	1.1 µg/L	110	22.7	123
EP131A: Endrin ketone	53494-70-5	0.01	µg/L	<0.010	1.1 µg/L	108	16.3	144
EP131A: Heptachlor	76-44-8	0.005	µg/L	<0.005	1.1 µg/L	90.7	33.0	160
EP131A: Heptachlor epoxide	1024-57-3	0.01	µg/L	<0.010	1.1 µg/L	95.8	33.0	117
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.01	µg/L	<0.010	1.1 µg/L	83.7	23.6	126
EP131A: gamma-BHC	58-89-9	0.01	µg/L	<0.010	1.1 µg/L	92.5	28.7	134
EP131A: Methoxychlor	72-43-5	0.01	µg/L	<0.010	1.1 µg/L	102	29.5	150
EP131A: cis-Chlordane	5103-71-9	0.01	µg/L	<0.010	1.1 µg/L	103	27.0	116
EP131A: trans-Chlordane	5103-74-2	0.01	µg/L	<0.010	1.1 µg/L	89.9	31.2	119
EP131A: Total Chlordane (sum)	----	0.01	µg/L	<0.010	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 3153858) - continued								
EP131A: Sum of DDD + DDE + DDT	72-54-8/72-5 5-9/50-2	0.01	µg/L	<0.010	----	----	----	----
EP234A: OP Pesticides (QCLot: 3155594)								
EP234-1: Azinphos-methyl	86-50-0	0.02	µg/L	<0.02	0.2 µg/L	90.5	77.0	129
EP234-1: Azinphos-ethyl	2642-71-9	0.02	µg/L	<0.02	0.2 µg/L	87.5	75.0	135
EP234-1: Bromophos-ethyl	4824-78-6	0.1	µg/L	<0.10	1 µg/L	111	70.0	130
EP234-1: Carbofenothion	786-19-6	0.02	µg/L	<0.02	0.2 µg/L	83.0	70.0	130
EP234-1: Chlorfenvinphos	470-90-6	0.02	µg/L	<0.02	0.4 µg/L	85.0	74.0	134
EP234-1: Chlorpyrifos	2921-88-2	0.02	µg/L	<0.02	0.2 µg/L	118	70.0	130
EP234-1: Chlorpyrifos-methyl	5598-13-0	0.2	µg/L	<0.2	2 µg/L	98.4	70.0	130
EP234-1: Coumaphos	56-72-4	0.01	µg/L	<0.01	0.1 µg/L	114	70.0	130
EP234-1: Demeton-O	298-03-3	0.02	µg/L	<0.02	0.1 µg/L	109	64.0	134
EP234-1: Demeton-O & Demeton-S	298-03-3/12 6-75-0	0.02	µg/L	<0.02	0.2 µg/L	112	79.0	127
EP234-1: Demeton-S	126-75-0	0.02	µg/L	<0.02	0.1 µg/L	114	63.0	135
EP234-1: Demeton-S-methyl	919-86-8	0.02	µg/L	<0.02	0.2 µg/L	102	70.0	128
EP234-1: Diazinon	333-41-5	0.01	µg/L	<0.01	0.1 µg/L	105	68.0	138
EP234-1: Dichlorvos	62-73-7	0.2	µg/L	<0.20	2 µg/L	104	76.0	128
EP234-1: Dimethoate	60-51-5	0.02	µg/L	<0.02	0.2 µg/L	112	75.0	127
EP234-1: Disulfoton	298-04-4	0.05	µg/L	<0.05	0.5 µg/L	118	72.0	134
EP234-1: EPN	2104-64-5	0.05	µg/L	<0.05	0.5 µg/L	114	70.0	130
EP234-1: Ethion	563-12-2	0.02	µg/L	<0.02	0.2 µg/L	113	70.0	130
EP234-1: Ethoprophos	13194-48-4	0.01	µg/L	<0.01	0.1 µg/L	103	78.0	128
EP234-1: Fenamiphos	22224-92-6	0.01	µg/L	<0.01	0.1 µg/L	79.0	71.0	135
EP234-1: Fenchlorphos (Ronnel)	299-84-3	10	µg/L	<10	100 µg/L	105	70.0	130
EP234-1: Fenitrothion	122-14-5	2	µg/L	<2	20 µg/L	111	64.0	136
EP234-1: Fensulfothion	115-90-2	0.01	µg/L	<0.01	0.1 µg/L	114	79.0	125
EP234-1: Fenthion	55-38-9	0.05	µg/L	<0.05	0.5 µg/L	98.4	70.0	130
EP234-1: Malathion	121-75-5	0.02	µg/L	<0.02	0.2 µg/L	93.0	70.0	130
EP234-1: Mevinphos	7786-34-7	0.02	µg/L	<0.02	0.4 µg/L	113	77.0	123
EP234-1: Monocrotophos	6923-22-4	0.02	µg/L	<0.02	0.2 µg/L	122	75.0	129
EP234-1: Omethoate	1113-02-6	0.01	µg/L	<0.01	0.1 µg/L	114	74.0	130
EP234-1: Parathion	56-38-2	0.2	µg/L	<0.2	2 µg/L	104	69.0	139
EP234-1: Parathion-methyl	298-00-0	0.5	µg/L	<0.5	20 µg/L	77.7	66.0	140
EP234-1: Phorate	298-02-2	0.1	µg/L	<0.1	1 µg/L	85.5	68.0	136
EP234-1: Pirimiphos-ethyl	23505-41-1	0.01	µg/L	<0.01	0.1 µg/L	117	70.0	130
EP234-1: Pirimiphos-methyl	29232-93-7	0.01	µg/L	<0.01	0.1 µg/L	82.0	71.0	137
EP234-1: Profenofos	41198-08-7	0.01	µg/L	<0.01	0.1 µg/L	84.0	70.0	130
EP234-1: Prothiofos	34643-46-4	0.1	µg/L	<0.1	1 µg/L	126	70.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EP234A: OP Pesticides (QCLot: 3155594) - continued								
EP234-1: Sulfotep	3689-24-5	0.005	µg/L	<0.005	0.05 µg/L	90.0	71.0	137
EP234-1: Sulprofos	35400-43-2	0.05	µg/L	<0.05	0.5 µg/L	119	70.0	130
EP234-1: Temephos	3383-96-8	0.02	µg/L	<0.02	0.2 µg/L	89.0	70.0	130
EP234-1: Terbufos	13071-79-9	0.01	µg/L	<0.01	0.1 µg/L	98.0	70.0	130
EP234-1: Tetrachlorvinphos	22248-79-9	0.01	µg/L	<0.01	0.1 µg/L	79.0	74.0	128
EP234-1: Triazophos	24017-47-8	0.005	µg/L	<0.005	0.05 µg/L	102	77.0	131
EP234-1: Trichlorfon	52-68-6	0.02	µg/L	<0.02	0.2 µg/L	114	70.0	130
EP234-1: Trichloronate	327-98-0	0.5	µg/L	<0.5	5 µg/L	114	63.0	139
EP234A: OP Pesticides (QCLot: 3155595)								
EP234-1x: Acephate	30560-19-1	0.5	µg/L	<0.5	5 µg/L	91.6	70.0	130
EP234-1x: Bensulide	741-58-2	0.1	µg/L	<0.1	5 µg/L	105	70.0	130
EP234-1x: Formothion	2540-82-1	20	µg/L	<20	5 µg/L	70.8	70.0	130
EP234-1x: Fosetyl Aluminium	39148-24-8	10	µg/L	<10	5 µg/L	76.9	70.0	130
EP234-1x: Methidathion	950-37-8	0.1	µg/L	<0.1	5 µg/L	119	70.0	130
EP234-1x: Naftalofos	1491-41-4	1	µg/L	<1.0	5 µg/L	111	70.0	130
EP234-1x: Pyrazophos	13457-18-6	0.1	µg/L	<0.1	5 µg/L	96.7	70.0	130
EP234-1x: Thiometon	640-15-3	0.5	µg/L	<0.5	5 µg/L	123	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3152415)							
EP2007527-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	86.3	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3152414)							
EP2007527-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	98.8	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 3153777)							
EP2007566-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	105	70.0	130
		EG020A-F: Beryllium	7440-41-7	0.2 mg/L	110	70.0	130
		EG020A-F: Barium	7440-39-3	0.2 mg/L	108	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	105	70.0	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	107	70.0	130
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	107	70.0	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	105	70.0	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	103	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3153777) - continued							
EP2007566-002	Anonymous	EG020A-F: Manganese	7439-96-5	0.2 mg/L	104	70.0	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.8	70.0	130
		EG020A-F: Vanadium	7440-62-2	0.2 mg/L	105	70.0	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	98.8	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3153780)							
EP2007588-001	GW1	EG035F: Mercury	7439-97-6	0.01 mg/L	93.8	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 3152461)							
EP2007590-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	108	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3152416)							
EP2007527-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	92.1	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3152460)							
EP2007590-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3173268)							
EP2007588-005	Blank	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.0	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3173267)							
EP2007588-005	Blank	EK067G: Total Phosphorus as P	----	1 mg/L	93.9	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3152417)							
EP2007527-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	104	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172577)							
EP2007588-002	GW2	EP080: C6 - C9 Fraction	----	240 µg/L	83.4	77.0	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172577)							
EP2007588-002	GW2	EP080: C6 - C10 Fraction	C6_C10	290 µg/L	80.2	77.0	137
EP080: BTEXN (QCLot: 3172577)							
EP2007588-002	GW2	EP080: Benzene	71-43-2	20 µg/L	92.8	77.0	122
		EP080: Toluene	108-88-3	20 µg/L	92.0	73.5	126
EP131A: Organochlorine Pesticides (QCLot: 3153858)							
EP2007588-002	GW2	EP131A: Aldrin	309-00-2	1.1 µg/L	95.5	35.8	139
		EP131A: alpha-BHC	319-84-6	1.1 µg/L	109	19.7	153
		EP131A: beta-BHC	319-85-7	1.1 µg/L	98.9	43.8	136
		EP131A: delta-BHC	319-86-8	1.1 µg/L	78.8	37.4	144
		EP131A: 4.4`-DDD	72-54-8	1.1 µg/L	101	37.5	145
		EP131A: 4.4`-DDE	72-55-9	1.1 µg/L	93.5	30.5	146
		EP131A: 4.4`-DDT	50-29-3	1.1 µg/L	95.4	31.0	151
		EP131A: Dieldrin	60-57-1	1.1 µg/L	106	34.4	145

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP131A: Organochlorine Pesticides (QCLot: 3153858) - continued							
EP2007588-002	GW2	EP131A: alpha-Endosulfan	959-98-8	1.1 µg/L	84.2	30.2	141
		EP131A: beta-Endosulfan	33213-65-9	1.1 µg/L	110	30.3	148
		EP131A: Endosulfan sulfate	1031-07-8	1.1 µg/L	102	19.1	150
		EP131A: Endrin	72-20-8	1.1 µg/L	113	13.0	165
		EP131A: Endrin aldehyde	7421-93-4	1.1 µg/L	108	28.3	134
		EP131A: Endrin ketone	53494-70-5	1.1 µg/L	112	15.1	146
		EP131A: Heptachlor	76-44-8	1.1 µg/L	94.2	33.2	148
		EP131A: Heptachlor epoxide	1024-57-3	1.1 µg/L	100	36.0	143
		EP131A: Hexachlorobenzene (HCB)	118-74-1	1.1 µg/L	88.9	14.0	146
		EP131A: gamma-BHC	58-89-9	1.1 µg/L	98.7	27.2	147
		EP131A: Methoxychlor	72-43-5	1.1 µg/L	101	34.4	150
		EP131A: cis-Chlordane	5103-71-9	1.1 µg/L	108	15.4	152
		EP131A: trans-Chlordane	5103-74-2	1.1 µg/L	84.6	45.1	140
EP234A: OP Pesticides (QCLot: 3155594)							
EB2019056-001	Anonymous	EP234-1: Azinphos-methyl	86-50-0	0.2 µg/L	79.5	70.0	130
		EP234-1: Azinphos-ethyl	2642-71-9	0.2 µg/L	87.0	70.0	130
		EP234-1: Bromophos-ethyl	4824-78-6	1 µg/L	121	70.0	130
		EP234-1: Carbofenothion	786-19-6	0.2 µg/L	85.5	70.0	130
		EP234-1: Chlorfenvinphos	470-90-6	0.4 µg/L	83.8	70.0	130
		EP234-1: Chlorpyrifos	2921-88-2	0.2 µg/L	97.0	70.0	130
		EP234-1: Chlorpyrifos-methyl	5598-13-0	2 µg/L	84.8	58.0	136
		EP234-1: Coumaphos	56-72-4	0.1 µg/L	125	70.0	130
		EP234-1: Demeton-O	298-03-3	0.1 µg/L	72.0	70.0	130
		EP234-1: Demeton-O & Demeton-S	298-03-3/126-75-0	0.2 µg/L	84.5	69.0	129
		EP234-1: Demeton-S	126-75-0	0.1 µg/L	97.0	70.0	130
		EP234-1: Demeton-S-methyl	919-86-8	0.2 µg/L	80.5	70.0	130
		EP234-1: Diazinon	333-41-5	0.1 µg/L	111	70.0	130
		EP234-1: Dichlorvos	62-73-7	2 µg/L	111	70.0	130
		EP234-1: Dimethoate	60-51-5	0.2 µg/L	87.5	69.0	131
		EP234-1: Disulfoton	298-04-4	0.5 µg/L	104	70.0	130
		EP234-1: EPN	2104-64-5	0.5 µg/L	125	70.0	130
		EP234-1: Ethion	563-12-2	0.2 µg/L	# 56.5	70.0	130
		EP234-1: Ethoprophos	13194-48-4	0.1 µg/L	90.0	70.0	132
		EP234-1: Fenamiphos	22224-92-6	0.1 µg/L	123	70.0	130
		EP234-1: Fenchlorphos (Ronnel)	299-84-3	100 µg/L	# 57.4	71.0	133
		EP234-1: Fenitrothion	122-14-5	20 µg/L	118	64.0	136
		EP234-1: Fensulfothion	115-90-2	0.1 µg/L	104	83.0	123
		EP234-1: Fenthion	55-38-9	0.5 µg/L	92.8	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP234A: OP Pesticides (QCLot: 3155594) - continued							
EB2019056-001	Anonymous	EP234-1: Malathion	121-75-5	0.2 µg/L	85.0	70.0	130
		EP234-1: Mevinphos	7786-34-7	0.4 µg/L	86.8	69.0	125
		EP234-1: Monocrotophos	6923-22-4	0.2 µg/L	97.5	70.0	128
		EP234-1: Omethoate	1113-02-6	0.1 µg/L	105	70.0	130
		EP234-1: Parathion	56-38-2	2 µg/L	84.2	70.0	130
		EP234-1: Parathion-methyl	298-00-0	20 µg/L	# 57.7	70.0	140
		EP234-1: Phorate	298-02-2	1 µg/L	81.9	70.0	130
		EP234-1: Pirimiphos-ethyl	23505-41-1	0.1 µg/L	70.0	70.0	130
		EP234-1: Pirimiphos-methyl	29232-93-7	0.1 µg/L	85.0	70.0	130
		EP234-1: Profenofos	41198-08-7	0.1 µg/L	118	70.0	130
		EP234-1: Prothiofos	34643-46-4	1 µg/L	122	70.0	130
		EP234-1: Sulfotep	3689-24-5	0.05 µg/L	86.0	63.0	135
		EP234-1: Sulprofos	35400-43-2	0.5 µg/L	119	70.0	130
		EP234-1: Temephos	3383-96-8	0.2 µg/L	82.0	70.0	130
		EP234-1: Terbufos	13071-79-9	0.1 µg/L	81.0	70.0	130
		EP234-1: Tetrachlorvinphos	22248-79-9	0.1 µg/L	116	77.0	125
		EP234-1: Triazophos	24017-47-8	0.05 µg/L	82.0	74.0	132
		EP234-1: Trichlorfon	52-68-6	0.2 µg/L	86.5	70.0	130
		EP234-1: Trichloronate	327-98-0	5 µg/L	110	63.0	139
EP234A: OP Pesticides (QCLot: 3155595)							
EB2019056-001	Anonymous	EP234-1x: Acephate	30560-19-1	5 µg/L	83.2	70.0	130
		EP234-1x: Bensulide	741-58-2	5 µg/L	118	70.0	130
		EP234-1x: Formothion	2540-82-1	5 µg/L	105	70.0	130
		EP234-1x: Fosetyl Aluminium	39148-24-8	5 µg/L	# 0.120	70.0	130
		EP234-1x: Methidathion	950-37-8	5 µg/L	115	70.0	130
		EP234-1x: Naftalofos	1491-41-4	5 µg/L	114	70.0	130
		EP234-1x: Pyrazophos	13457-18-6	5 µg/L	99.7	70.0	130
		EP234-1x: Thiometon	640-15-3	5 µg/L	109	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2007588**	Page	: 1 of 10
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 21-Jul-2020
Site	: ----	Issue Date	: 05-Aug-2020
Sampler	: GINA PEMBERTON	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP2007590--001	Anonymous	**Nitrite + Nitrate as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP234A: OP Pesticides	EB2019056--001	Anonymous	**Ethion**	563-12-2	56.5 %	70.0-130%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2019056--001	Anonymous	**Fenchlorphos (Ronnel)**	299-84-3	57.4 %	71.0-133%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2019056--001	Anonymous	**Parathion-methyl**	298-00-0	57.7 %	70.0-140%	**Recovery less than lower data quality objective**
EP234A: OP Pesticides	EB2019056--001	Anonymous	**Fosetyl Aluminium**	39148-24-8	0.120 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) GW1, GW2, GW3, GWQA1, Blank	**21-Jul-2020**	----	----	----	**27-Jul-2020**	04-Aug-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	18-Aug-2020	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	18-Aug-2020	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**22-Jul-2020**	18-Aug-2020	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)								
GW1, GW3, Blank,	GW2, GWQA1, rinsate	**21-Jul-2020**	**----**	----	----	**22-Jul-2020**	17-Jan-2021	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)								
GW1, GW3, Blank,	GW2, GWQA1, rinsate	**21-Jul-2020**	**----**	----	----	**22-Jul-2020**	18-Aug-2020	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	18-Aug-2020	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	23-Jul-2020	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	18-Aug-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**03-Aug-2020**	18-Aug-2020	✓	**03-Aug-2020**	18-Aug-2020	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**03-Aug-2020**	18-Aug-2020	✓	**03-Aug-2020**	18-Aug-2020	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**21-Jul-2020**	23-Jul-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**28-Jul-2020**	28-Jul-2020	✓	**31-Jul-2020**	06-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**28-Jul-2020**	28-Jul-2020	✓	**31-Jul-2020**	06-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**31-Jul-2020**	04-Aug-2020	✓	**31-Jul-2020**	04-Aug-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**28-Jul-2020**	28-Jul-2020	✓	**31-Jul-2020**	06-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**31-Jul-2020**	04-Aug-2020	✓	**31-Jul-2020**	04-Aug-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**31-Jul-2020**	04-Aug-2020	✓	**31-Jul-2020**	04-Aug-2020	✓
EP131A: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP131A)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**24-Jul-2020**	28-Jul-2020	✓	**24-Jul-2020**	02-Sep-2020	✓
EP234A: OP Pesticides								
Amber Glass Bottle - Unpreserved (EP234-1x)								
GW1, GW3, Blank	GW2, GWQA1,	**21-Jul-2020**	**----**	----	----	**24-Jul-2020**	28-Jul-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	19	**15.79**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type / *Analytical Methods*	*Method*	*Count* QC	Regular	*Rate (%)* **Actual**	**Expected**	*Evaluation*	*Quality Control Specification*
Laboratory Control Samples (LCS) - Continued							
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organochlorine Pesticides (Ultra-trace)	EP131A	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA seal method 2 017-1-L
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Organochlorine Pesticides (Ultra-trace)	EP131A	WATER	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/µECD/uECD). This method is compliant with NEPM Schedule B(3)
Pesticides by LCMSMS (Positive Ion Mode)	EP234-1	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.
Pesticides by LCMSMS (Positive Ion Mode) - extended	EP234-1x	WATER	In house: LC-MSMS, direct injection. A sample is filtered and injected directly onto the LC-MSMS. Analysis is by LC/MSMS, ESI Positive Mode.

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	In house: Referenced to USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an apporpriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.

Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY DOCUMENTATION

ALS
Australian Laboratory Services Pty Ltd

CLIENT	Ace Environmental P/L	SAMPLER	G. Pemberton
ADDRESS / OFFICE	Shop 17/2 South West Highway, Armadale.	MOBILE	0439 918 545
PROJECT MANAGER (PM)	Gina Pemberton	PHONE	(08) 9497 5000
PROJECT ID	J020-003	EMAIL REPORT TO	gina @ aceenvironmental . com . au .
SITE	P O NO EP/222/18	EMAIL INVOICE TO (if different to report)	same as above.
RESULTS REQUIRED (Date) 7 days	QUOTE NO [redacted]	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

Notes e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	OC/OPS ultra trace	W-3	W-7	NT-1	NT-2	NT-8A							Notes
1	GW1	W	21/7		bottles	6	✓	✓	✓	✓	✓	✓							OC/OPS ultratrace
2	GW2	↓	↓		↓	↓	✓	✓	✓	✓	✓	✓							= UTO-2W
3	GW3	↓	↓		↓	↓	✓	✓	✓	✓	✓	✓							
4	GWQA1	↓	↓		↓	↓	✓	✓	✓	✓	✓	✓							
5	Blank	↓	↓		↓	↓	✓	✓	✓	✓	✓	✓							
6	rinsate	↓	↓		↓	↓		✓											

Environmental Division
Perth
Work Order Reference
EP2007588

Telephone : + 61-8-9406 1301

RELINQUISHED BY		RECEIVED BY	
Name: G. Pemberton	Date: 21/7/2020	Name: ND	Date: 21/7/2020
Of: ACE	Time: 10:35am	Of: als	Time: 1020.
Name:	Date:	Name:	Date:
Of:	Time:	Of:	Time:

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved, V = VOA Vial HCl Preserved, VS = VOA Vial Sulphuric Preserved, SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass. Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag

AUSTRALIAN LABORATORY SERVICES P/L

NB: 2x vials for BTEX counted as 1 bottle

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph 08 9317 2505 fax 08 9317 4163
lab@mpl.com.au
www.mpl.com.au

CERTIFICATE OF ANALYSIS 247452

Client Details

Client	ACE Environmental
Attention	Gina Pemberton
Address	Shop 17/ 2 South Western Highway, ARMADALE, WA, 6992

Sample Details

Your Reference	**J020-003**
Number of Samples	1 Water
Date samples received	21/07/2020
Date completed instructions received	21/07/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	29/07/2020
Date of Issue	27/07/2020

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Heram Halim, Operations Manager
Huong Tran, Chemist
Michael Kubiak, Laboratory Manager
Travis Carey, Chemist

Authorised By

Michael Kubiak, Laboratory Manager

Miscellaneous Inorganics			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date prepared	-		21/07/2020
Date analysed	-		21/07/2020
Chloride	mg/L	1	67
Sulphate	mg/L	1	58

Nutrients in Water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date prepared	-		21/07/2020
Date analysed	-		21/07/2020
Total Nitrogen	mg/L	0.1	8.4
Total Phosphorus	mg/L	0.05	1.3
Phosphate as P	mg/L	0.005	<0.005
Total Kjeldahl Nitrogen	mg/L	0.1	8.4
NOx as N	mg/L	0.005	0.009
Nitrate as N	mg/L	0.005	0.005
Nitrite as N	mg/L	0.005	<0.005
Ammonia as N	mg/L	0.005	5.6

Cations in water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date prepared	-		27/07/2020
Date analysed	-		27/07/2020
Sodium - Dissolved	mg/L	0.5	65
Potassium - Dissolved	mg/L	0.5	16
Calcium - Dissolved	mg/L	0.5	67
Magnesium - Dissolved	mg/L	0.5	8.8
Hardness as $CaCO_3$	mg/L	3	200

Dissolved Metals in Water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date prepared	-		23/07/2020
Date analysed	-		23/07/2020
Arsenic-Dissolved	mg/L	0.001	0.014
Boron-Dissolved	mg/L	0.02	0.2
Barium-Dissolved	mg/L	0.001	0.052
Beryllium-Dissolved	mg/L	0.0005	<0.0005
Cadmium-Dissolved	mg/L	0.0001	<0.0001
Chromium-Dissolved	mg/L	0.001	<0.001
Cobalt-Dissolved	mg/L	0.001	0.003
Copper-Dissolved	mg/L	0.001	<0.001
Manganese-Dissolved	mg/L	0.005	0.20
Nickel-Dissolved	mg/L	0.001	0.002
Lead-Dissolved	mg/L	0.001	<0.001
Selenium-Dissolved	mg/L	0.001	<0.001
Vanadium-Dissolved	mg/L	0.001	0.002
Zinc-Dissolved	mg/L	0.001	<0.001
Mercury-Dissolved	mg/L	0.00005	<0.00005

vTRH(C6-C10)/MBTEXN in water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date analysed	-		22/07/2020
TRH C_6 - C_9	µg/L	10	<10
TRH C_6 - C_{10}	µg/L	10	<10
TRH C_6-C_{10} less BTEX (F1)	µg/L	10	<10
MTBE	µg/L	1	<1
Benzene	µg/L	1	<1
Toluene	µg/L	1	<1
Ethylbenzene	µg/L	1	<1
m+p-xylene	µg/L	2	<2
o-xylene	µg/L	1	<1
Naphthalene	µg/L	1	<1
Surrogate Dibromofluoromethane	%		104
Surrogate toluene-d8	%		93
Surrogate 4-BFB	%		99

svTRH(C10-C40) in water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date extracted	-		21/07/2020
Date analysed	-		22/07/2020
TRH C_{10} - C_{14}	µg/L	50	<50
TRH C_{15} - C_{28}	µg/L	100	<100
TRH C_{29} - C_{36}	µg/L	100	<100
TRH >C_{10} - C_{16}	µg/L	50	<50
TRH >C_{10}-C_{16} less N (F2)	µg/L	50	<50
TRH >C_{16} - C_{34}	µg/L	100	<100
TRH >C_{34} - C_{40}	µg/L	100	<100
Surrogate o-Terphenyl	%		86

PAHs in Water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date extracted	-		22/07/2020
Date analysed	-		22/07/2020
Naphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.2	<0.2
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1
Surrogate p-Terphenyl-D_{14}	%		82

Low Level OCP in water			
Our Reference	UNITS	PQL	247452-1
Your Reference			GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date extracted	-		22/07/2020
Date analysed	-		22/07/2020
Hexachlorobenzene (HCB)	µg/L	0.01	<0.01
a-BHC	µg/L	0.05	<0.05
Lindane (g-BHC)	µg/L	0.05	<0.05
b-BHC	µg/L	0.05	<0.05
Heptachlor	µg/L	0.01	<0.01
d-BHC	µg/L	0.05	<0.05
Aldrin	µg/L	0.01	<0.01
Heptachlor Epoxide	µg/L	0.01	<0.01
g-Chlordane	µg/L	0.01	<0.01
a-Chlordane	µg/L	0.01	<0.01
a-Endosulfan	µg/L	0.02	<0.02
pp-DDE	µg/L	0.01	<0.01
Dieldrin	µg/L	0.01	<0.01
Endrin	µg/L	0.01	<0.01
pp-DDD	µg/L	0.01	<0.01
b-Endosulfan	µg/L	0.02	<0.02
pp-DDT	µg/L	0.006	<0.006
Endosulfan Sulphate	µg/L	0.02	<0.02
Methoxychlor	µg/L	0.02	<0.02
Surrogate 2-chlorophenol-d4	%		95

Low Level OPP in water			
Our Reference			247452-1
Your Reference	UNITS	PQL	GWQA2
Date Sampled			21/07/2020
Type of sample			Water
Date extracted	-		22/07/2020
Date analysed	-		22/07/2020
Azinphos methyl (Guthion)	µg/L	0.02	<0.02
Bromophos-ethyl	µg/L	0.2	<0.2
Chlorpyrifos (ethyl)	µg/L	0.01	<0.01
Chlorpyriphos-methyl	µg/L	0.2	<0.2
Diazinon (Dimpylate)	µg/L	0.01	<0.01
Dichlorvos	µg/L	0.2	<0.2
Dimethoate	µg/L	0.15	<0.15
Ethion	µg/L	0.2	<0.2
Fenitrothion	µg/L	0.2	<0.2
Malathion (Maldison)	µg/L	0.05	<0.05
Parathion (ethyl)	µg/L	0.01	<0.01
Parathion-methyl	µg/L	0.2	<0.2
Ronnel	µg/L	0.2	<0.2
Surrogate 2-chlorophenol-d4	%		95

Method ID	Methodology Summary
INORG-055	Nitrite - determined colourimetrically. Soils are analysed from a water extract.
INORG-055	Nitrate - determined colourimetrically. Soils are analysed from a water extract.
INORG-055	NOx - determined colourimetrically. Soils are analysed from a water extract.
INORG-057	Ammonia by colourimetric analysis based on APHA latest edition 4500-NH3 F.
INORG-060	Phosphate- determined colourimetrically. Soils are analysed from a water extract.
INORG-062	TKN by calculation from Total Nitrogen and NOx using APHA methodology.
INORG-081	Anions - a range of anions are determined by Ion Chromatography based on APHA latest edition Method 4110-B. Soils and other sample types reported from a water extract unless otherwise specified (standard soil extract ratio 1:5).
INORG-110	Total Nitrogen by high temperature catalytic combustion with chemiluminescence detection. Dissolved/Total Carbon and Dissolved/Total Organic and Inorganic Carbon by high temperature catalytic combustion with NDIR
METALS-008	Hardness calculated from Calcium and Magnesium as per APHA latest edition 2340B.
METALS-020	Determination of various metals by ICP-AES.
METALS-021	Determination of Mercury by Cold Vapour AAS. For urine samples total Mercury is determined, however, mercury in urine is almost entirely in the inorganic form (CDC).
METALS-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM draft B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/07/2020	[NT]	[NT]	[NT]	[NT]	21/07/2020	[NT]
Date analysed	-			21/07/2020	[NT]	[NT]	[NT]	[NT]	21/07/2020	[NT]
Chloride	mg/L	1	INORG-081	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Sulphate	mg/L	1	INORG-081	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: Nutrients in Water					Duplicate					Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/07/2020	[NT]	[NT]	[NT]	[NT]	21/07/2020	[NT]
Date analysed	-			21/07/2020	[NT]	[NT]	[NT]	[NT]	21/07/2020	[NT]
Total Nitrogen	mg/L	0.1	INORG-110	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Total Phosphorus	mg/L	0.05	METALS-020	<0.05	[NT]	[NT]	[NT]	[NT]	116	[NT]
Phosphate as P	mg/L	0.005	INORG-060	<0.005	[NT]	[NT]	[NT]	[NT]	92	[NT]
Total Kjeldahl Nitrogen	mg/L	0.1	INORG-062	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
NOx as N	mg/L	0.005	INORG-055	<0.005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nitrate as N	mg/L	0.005	INORG-055	<0.005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nitrite as N	mg/L	0.005	INORG-055	<0.005	[NT]	[NT]	[NT]	[NT]	119	[NT]
Ammonia as N	mg/L	0.005	INORG-057	<0.005	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Cations in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/07/2020	[NT]	[NT]	[NT]	[NT]	27/07/2020	[NT]
Date analysed	-			27/07/2020	[NT]	[NT]	[NT]	[NT]	27/07/2020	[NT]
Sodium - Dissolved	mg/L	0.5	METALS-020	<0.5	[NT]	[NT]	[NT]	[NT]	99	[NT]
Potassium - Dissolved	mg/L	0.5	METALS-020	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Calcium - Dissolved	mg/L	0.5	METALS-020	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Magnesium - Dissolved	mg/L	0.5	METALS-020	<0.5	[NT]	[NT]	[NT]	[NT]	101	[NT]
Hardness as $CaCO_3$	mg/L	3	METALS-008	<3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: Dissolved Metals in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			23/07/2020	[NT]	[NT]	[NT]	[NT]	23/07/2020	[NT]
Date analysed	-			23/07/2020	[NT]	[NT]	[NT]	[NT]	23/07/2020	[NT]
Arsenic-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Boron-Dissolved	mg/L	0.02	METALS-022	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Barium-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
Beryllium-Dissolved	mg/L	0.0005	METALS-022	<0.0005	[NT]	[NT]	[NT]	[NT]	87	[NT]
Cadmium-Dissolved	mg/L	0.0001	METALS-022	<0.0001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Chromium-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Cobalt-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Copper-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	88	[NT]
Manganese-Dissolved	mg/L	0.005	METALS-022	<0.005	[NT]	[NT]	[NT]	[NT]	88	[NT]
Nickel-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	88	[NT]
Lead-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Selenium-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Vanadium-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc-Dissolved	mg/L	0.001	METALS-022	<0.001	[NT]	[NT]	[NT]	[NT]	87	[NT]
Mercury-Dissolved	mg/L	0.00005	METALS-021	<0.00005	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/MBTEXN in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	88	[NT]
MTBE	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	88	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate toluene-d8	%		Org-023	91	[NT]	[NT]	[NT]	[NT]	95	[NT]
Surrogate 4-BFB	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: svTRH(C10-C40) in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			21/07/2020	[NT]	[NT]	[NT]	[NT]	21/07/2020	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
Surrogate o-Terphenyl	%		Org-020	98	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-D_{14}	%		Org-022/025	95	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Low Level OCP in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Hexachlorobenzene (HCB)	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-BHC	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	80	[NT]
Lindane (g-BHC)	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
b-BHC	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	78	[NT]
Heptachlor	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	81	[NT]
d-BHC	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	85	[NT]
Heptachlor Epoxide	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
g-Chlordane	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chlordane	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Endosulfan	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	80	[NT]
Dieldrin	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	83	[NT]
Endrin	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	79	[NT]
b-Endosulfan	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.006	Org-022/025	<0.006	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	86	[NT]
Methoxychlor	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: Low Level OPP in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Azinphos methyl (Guthion)	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyrifos (ethyl)	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	83	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Diazinon (Dimpylate)	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	0.15	Org-022/025	<0.15	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Malathion (Maldison)	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion (ethyl)	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	88	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

ENVIROLAB GROUP / ENVIROLAB SERVICES / mpl

CHAIN OF CUSTODY FORM - Client

ENVIROLAB GROUP
National phone number 1300 424 344

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Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8967 1201 | darwin@envirolab.com.au

Client: Ace Environmental
Contact Person: Gina Pemberton
Project Mgr: " "
Sampler: " "
Address: PO Box 115, Armadale, WA 6992
Phone: — **Mob:** 0439948545
Email: gina@aceenvironmental.com.au

Client Project Name/Number/Site etc (ie report title): J020-003
PO No.:
Envirolab Quote No. :
Date results required:
Or choose: standard / same day / 1 day / 2 day / 3 day
Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Additional report format: esdat / equis /
Lab Comments:

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	OC/OPS ultratrace	15 Std Metals	TPH/TRH	BTEX	PAH	Ca, Mg	Na, K	Chloride	SO_4^{2-}	total N&P	reactive P	TKN	Nitrate	Nitrite	ammonia, NOx	Comments: Provide as much information about the sample as you can
1	GWQA2	/	21/7/20	water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	15 metals =
																				As, B, Ba, Be,
																				Cd, Cr, Co, Cu,
																				Mn, Ni, Pb,
																				Se, V, Zn, Hg

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

Relinquished by (Company): Ace Environmental	**Received by (Company):** MPL	***Lab Use Only***	
Print Name: Gina Pemberton	**Print Name:** GM	**Job number:** 247452	**Cooling:** Ice / Ice pack / None
Date & Time: 21/7/2020 2pm	**Date & Time:** 21/7/2020 11:50	**Temperature:** 18°	**Security seal:** Intact / Broken / None
Signature: Gina Pemberton	**Signature:** GM	**TAT Req - SAME day / 1 / 2 / 3 / 4 / STD**	

1 of 1

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EP2007759**	Page	: 1 of 5
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Customer Services EP
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA, AUSTRALIA 6112	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 23-Jul-2020 11:30
Order number	: ----	Date Analysis Commenced	: 30-Jul-2020
C-O-C number	: ----	Issue Date	: 03-Aug-2020 14:58
Sampler	: GINA PEMBERTON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		

NATA

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	EP2007759-001	EP2007759-002	EP2007759-003	EP2007759-004	EP2007759-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	**0.013**	**0.004**	**0.023**	**0.013**	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	**0.005**	<0.002	**0.009**	**0.005**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.050**	**0.003**	**0.070**	**0.048**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	**0.003**	<0.002	**0.003**	**0.003**	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.052**	**0.073**	**0.052**	**0.055**	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	**0.08**	**0.01**	**0.07**	**0.08**	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	**0.122**	**0.011**	**0.095**	**0.134**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	**0.169**	**0.014**	**0.117**	**0.187**	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	**0.039**	**0.004**	**0.033**	**0.039**	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	**0.143**	**0.014**	**0.087**	**0.144**	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	**0.009**	**0.005**	**0.004**	**0.010**	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	**0.004**	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	**0.003**	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	GW1	GW2	GW3	GWQA1	Blank
			Client sampling date / time	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00	23-Jul-2020 00:00
				EP2007759-001	EP2007759-002	EP2007759-003	EP2007759-004	EP2007759-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	**0.004**	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	**0.031**	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	**0.008**	<0.005	**0.008**	**0.008**	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.693**	**0.141**	**0.606**	**0.726**	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.102**	**0.072**	**0.122**	**0.103**	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.676**	**0.127**	**0.555**	**0.708**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**85.4**	**98.4**	**88.2**	**87.4**	**91.4**
13C8-PFOA	----	0.002	%	**93.3**	**99.4**	**99.9**	**95.1**	**106**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **EP2007759**	Page	: 1 of 6
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Customer Services EP
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA, AUSTRALIA 6112	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 23-Jul-2020
Order number	: ----	Date Analysis Commenced	: 30-Jul-2020
C-O-C number	: ----	Issue Date	: 03-Aug-2020
Sampler	: GINA PEMBERTON		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 3169406)									
EP2007759-001	GW1	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	0.013	0.013	0.00	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	0.005	0.005	0.00	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.050	0.049	2.63	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.003	0.002	0.00	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.052	0.052	0.00	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3169406)									
EP2007759-001	GW1	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.122	0.119	2.49	0% - 50%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.169	0.165	2.40	0% - 50%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.039	0.036	8.00	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.143	0.141	1.41	0% - 50%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	0.009	0.010	0.00	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 3169406) - continued									
EP2007759-001	GW1	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	0.08	0.08	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 3169406)									
EP2007759-001	GW1	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 3169406)									
EP2007759-001	GW1	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	0.008	0.008	0.00	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.00	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3169406)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	85.6	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	100	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	90.0	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	94.8	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	98.8	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3169406)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	84.5	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	116	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	102	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	106	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	111	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	109	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	98.8	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	110	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	121	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	92.4	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	97.4	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	92.8	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3169406)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	96.4	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	96.8	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	90.4	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	80.5	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	97.1	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	118	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3169406)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	104	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3169406) - continued								
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	114	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	102	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	100	75.2	137

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 3169406)							
EP2007759-002	GW2	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.025 µg/L	74.8	72.0	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.025 µg/L	87.6	71.0	127
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.025 µg/L	72.0	68.0	131
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.025 µg/L	76.0	69.0	134
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.025 µg/L	87.2	65.0	140
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.025 µg/L	67.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 3169406)							
EP2007759-002	GW2	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.125 µg/L	96.5	73.0	129
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.025 µg/L	90.4	72.0	129
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.025 µg/L	95.6	72.0	129
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.025 µg/L	82.4	72.0	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.025 µg/L	84.0	71.0	133
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.025 µg/L	80.8	69.0	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.025 µg/L	87.2	71.0	129
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.025 µg/L	84.0	69.0	133
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.025 µg/L	73.6	72.0	134
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.025 µg/L	69.2	65.0	144
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0625 µg/L	71.4	71.0	132
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.025 µg/L	115	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3169406)							
EP2007759-002	GW2	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.025 µg/L	80.8	67.0	137
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0625 µg/L	78.4	68.0	141
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0625 µg/L	71.7	61.1	139

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 3169406) - continued							
EP2007759-002	GW2	EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0625 µg/L	110	72.3	128
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0625 µg/L	92.0	63.2	134
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.025 µg/L	86.0	65.0	136
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.025 µg/L	68.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 3169406)							
EP2007759-002	GW2	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.025 µg/L	73.2	63.0	143
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.025 µg/L	89.2	64.0	140
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.025 µg/L	83.6	67.0	138
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.025 µg/L	75.6	75.2	137

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2007759**	Page	: 1 of 4
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Telephone	: +61-8-9406 1301
Project	: J020-003	Date Samples Received	: 23-Jul-2020
Site	: ----	Issue Date	: 03-Aug-2020
Sampler	: GINA PEMBERTON	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method		*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)			*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
GW1,	GW2,	**23-Jul-2020**	**30-Jul-2020**	19-Jan-2021	✓	**31-Jul-2020**	19-Jan-2021	✓
GW3,	GWQA1,							
Blank								
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
GW1,	GW2,	**23-Jul-2020**	**30-Jul-2020**	19-Jan-2021	✓	**31-Jul-2020**	19-Jan-2021	✓
GW3,	GWQA1,							
Blank								
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
GW1,	GW2,	**23-Jul-2020**	**30-Jul-2020**	19-Jan-2021	✓	**31-Jul-2020**	19-Jan-2021	✓
GW3,	GWQA1,							
Blank								
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
GW1,	GW2,	**23-Jul-2020**	**30-Jul-2020**	19-Jan-2021	✓	**31-Jul-2020**	19-Jan-2021	✓
GW3,	GWQA1,							
Blank								
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
GW1,	GW2,	**23-Jul-2020**	**30-Jul-2020**	19-Jan-2021	✓	**31-Jul-2020**	19-Jan-2021	✓
GW3,	GWQA1,							
Blank								

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CHAIN OF CUSTODY DOCUMENTATION

Australian Laboratory Services Pty Ltd

CLIENT: Ace Environmental P/L
ADDRESS / OFFICE: Shop 17/2 South West Highway, Armadale.
PROJECT MANAGER (PM): Gina Pemberton
PROJECT ID: J020-003
SITE:
P O NO: EP/222/18
RESULTS REQUIRED (Date): 7 days
QUOTE NO: [illegible]

SAMPLER: G. Pemberton
MOBILE: 0439 948 545
PHONE: (08) 9497 5000
EMAIL REPORT TO: gina @ aceenvironmental.com.au.
EMAIL INVOICE TO (if different to report): same as above.

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)
EP231X-LL

Notes e.g. Highly contaminated samples e.g. "High PAHs expected" Extra volume for QC or trace LORs etc

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DIPOSAL:

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles
1	GW1	W	23/7		bottles	2
2	GW2					
3	GW3					
4	GWQA1					
5	Blank					
2	Lab MS-GW2					
1	Lab Dup-GW1					

SAMPLE INFORMATION (note S = Soil, W=Water); CONTAINER INFORMATION

Environmental Division
Perth
Work Order Reference
EP2007759
Telephone: +61-8-9406 1301

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
Name: G. Pemberton	Date: 23/7/2020	Name: MD	Date: 23/7/2020	Con' Note No:
Of: ACE	Time: 1 pm	Of: ALS	Time: 1130	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserveed Plastic; AG = Amber Glass Unpreserved, V = VOA Vial HCl Preserved, VS = VOA Vial Sulphuric Preserved, SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass, Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles; ST = Sterile Bottle, ASS = Plastic Bad for Acid Sulphate Soils, B = Unpreserved Bag

COC Page 1 of 1

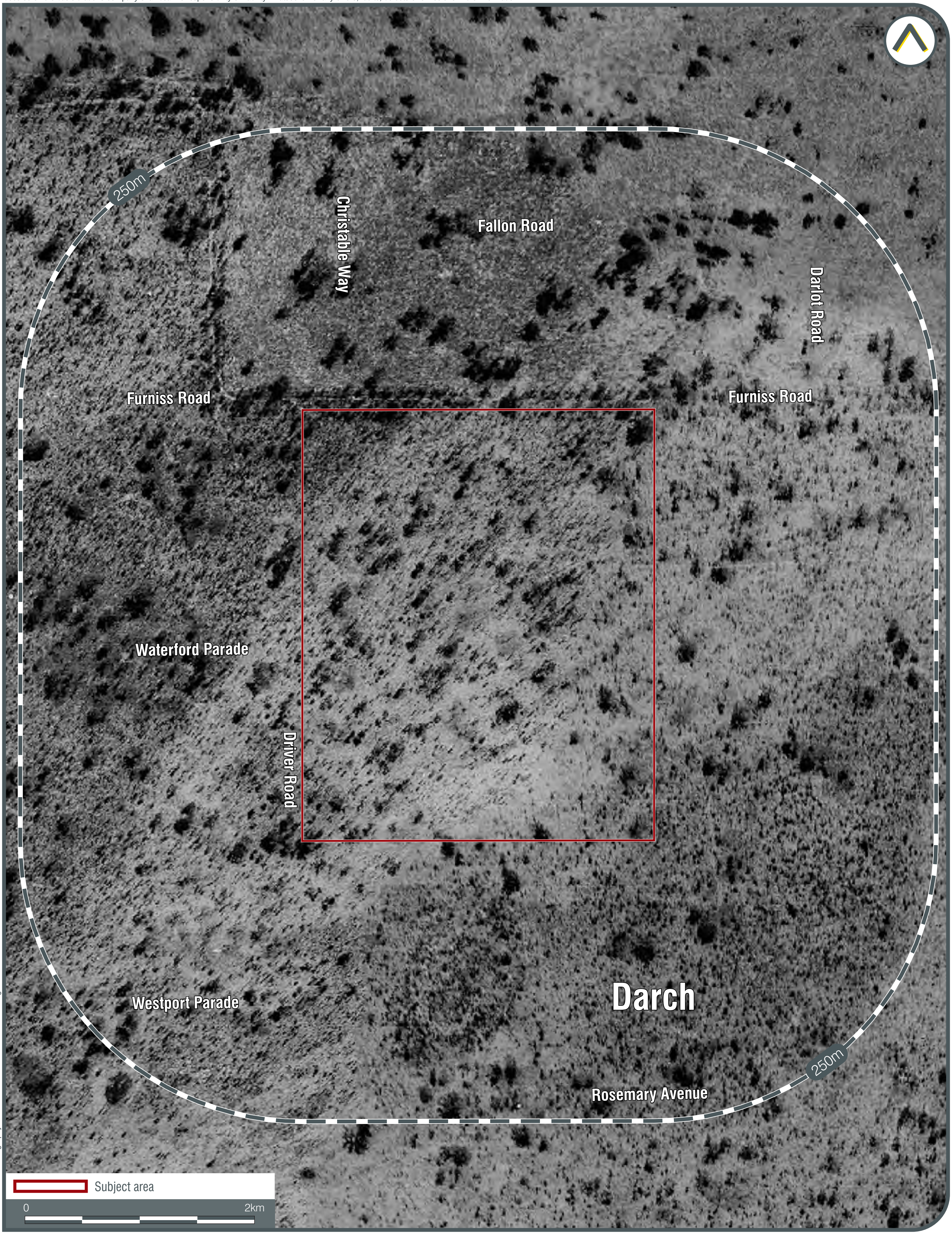
AUSTRALIAN LABORATORY SERVICES P/L

APPENDIX F

HISTORICAL AERIAL PHOTOGRAPHS

ATTACHMENT B

Historical Imagery



LIR-01435 Aerial Photography 1953. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1953

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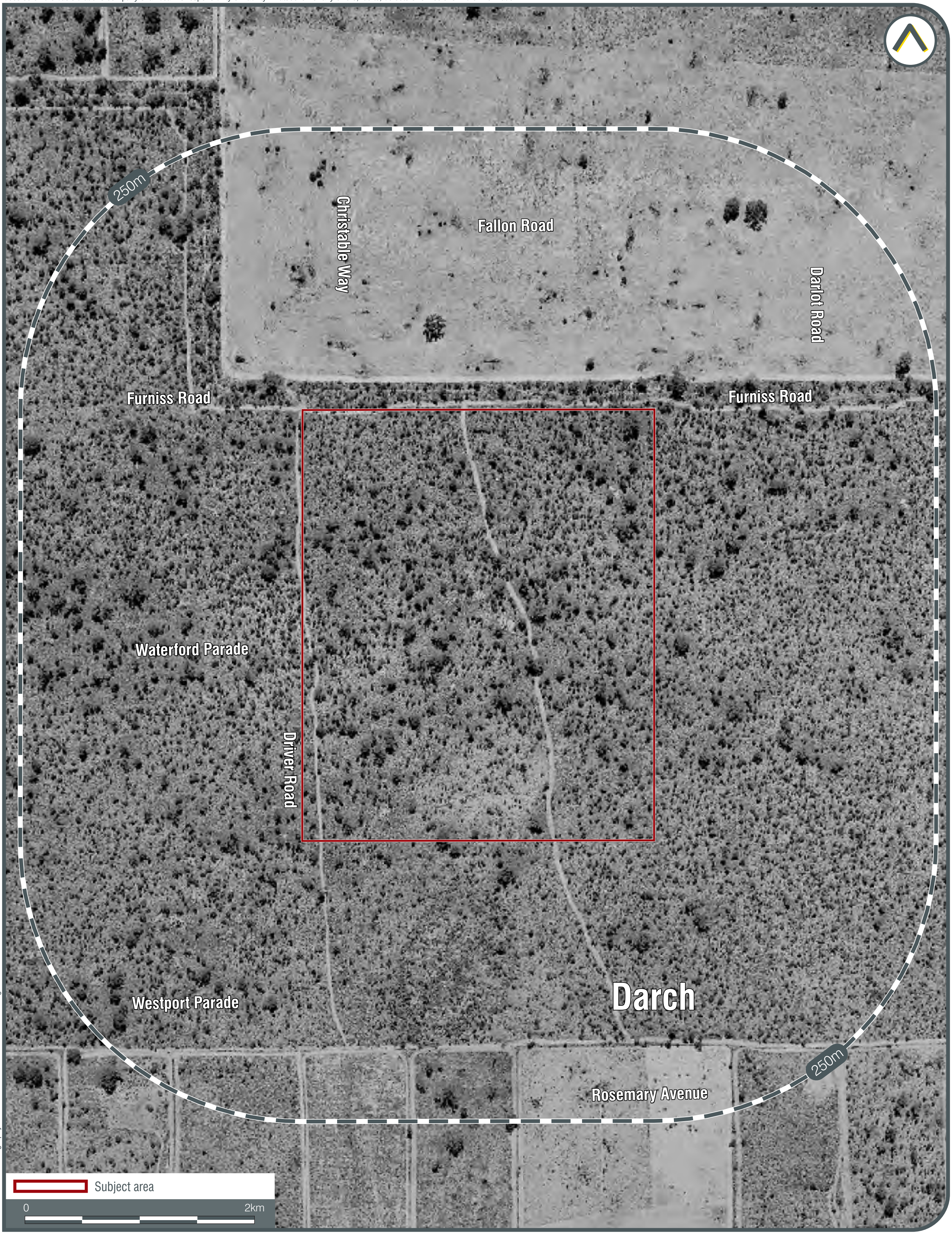
MAP 11



LIR-01435 Aerial Photography 1953. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1965

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MAP 12

LIR-01435 Aerial Photography 1974. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1974

LAND INSIGHT & RESOURCES

MAP 13

LIR-01435 Aerial Photography 1985. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1985

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MAP 14

LIR-01435 Aerial Photography 1995. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1995

LAND INSIGHT & RESOURCES

MAP 15

LIR-01435 Aerial Photography 2007. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2007

LAND INSIGHT & RESOURCES

MAP 16

LIR-01435 Aerial Photography 2010. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2010

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MAP 17

LIR-01435 Aerial Photography 2012. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2012

LAND INSIGHT & RESOURCES

MAP 18

LIR-01435 Aerial Photography 2012. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2014

LAND INSIGHT & RESOURCES

MAP 19

LIR-01435 Aerial Photography 2016. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2016

LAND INSIGHT & RESOURCES

MAP 20

LIR-01435 Aerial Photography 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2018

LAND INSIGHT & RESOURCES

MAP 21

LIR-01435 Aerial Photography 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2020

LAND INSIGHT & RESOURCES

MAP 22

APPENDIX G

SITE PHOTOGRPAHS

PLATE 1

Photo Orientation:
South-west

Date: 22nd September 2020

Comment: Fence along the southern boundary of the Site.

PLATE 2

Photo Orientation: East

Date: 22nd September 2020

Comment: Yellow sand within Stockpile H in the south-western corner of the Site (refer Figure 5).

PLATE 3

Photo Orientation: East

Date: 22nd September 2020

Comment: Fence along the southern boundary of the Site. Landfill gas monitoring wells are visible on the right (southern) side of the fence, installed as part of separate investigations being undertaken on Lot 2.

PLATE 4

Photo Orientation: South

Date: 22nd September 2020

Comment: Southern Site boundary fence visible at the bottom of the photo, Lot 2 in the foreground with numerous piles of mulch and residential properties further to the south in the background.

PLATE 5

Photo Orientation: North - West

Date: 22nd September 2020

Comment: Stockpiles of wood material (approximately 6,500m³) within Stockpile F in the south-western portion of the Site (refer Figure 5).

PLATE 6

Photo Orientation: North

Date: 22nd September 2020

Comment: Stockpiles of concrete on either side of the road within Stockpile C in the western portion of the Site (refer Figure 5).

PLATE 7

Photo Orientation: North West

Date: 22nd September 2020

Comment: Stockpiles of concrete with some residual wood and steel building material within Stockpile C along the western boundary of the Site (refer Figure 5).

PLATE 8

Photo Orientation:
North-west

Date: 22nd September 2020

Comment: Vegetation growth over screened sand (fines) within Stockpile A (refer Figure 5).

PLATE 9

Photo Orientation: Northeast

Date: 22nd September 2020

Comment: Mulched timber (processed from Stockpile F) stockpiled and ready for transport off-site for further processing. The aggregate stockpile (Stockpile B) is visible in the background.

PLATE 10

Photo Orientation: North

Date: 22nd September 2020

Comment: Stockpile of fine aggregate within Stockpile D located in the northwestern portion of the Site (refer Figure 5).

PLATE 11

Photo Orientation:
South

Date: 22nd September 2020

Comment: Stockpile of concrete within Stockpile C.

PLATE 12

Photo Orientation: South

Date: 22nd September 2020

Comment: Stockpile of concrete within Stockpile C.

PLATE 13

Photo Orientation: Southwest

Date: 22nd September 2020

Comment: Self bunded diesel fuel storage on the southeastern side of the workshop (refer Figure 3).

PLATE 14

Photo Orientation: West

Date: 22nd September 2020

Comment: Workshop area located in the northeast corner of the Site (refer Figure 3). There is an IBC containing lubricating fluids for diesel engines (right) and empty 200L drums once containing hydraulic fluids (left).

PLATE 15

Photo Orientation: Southeast

Date: 22nd September 2020

Comment: Empty drums that once contained hydraulic fluids, located adjacent to the workshop in the northeast portion of the Site (refer Figure 3).

PLATE 16

Photo Orientation: North

Date: 22nd September 2020

Comment: Storage drum for containing asbestos containing materials found during inspection of waste within the tipping area. The drum was adjacent to the shed of the bunded waste oil storage.

PLATE 17

Photo Orientation:
North

Date: 22nd September 2020

Comment:
Aboveground waste oil storage tank. The tank sits within a bund inside an open-air shed with water pooling within the bund (see Plates 18 and 19).

PLATE 18

Photo Orientation: Northeast

Date: 22nd September 2020

Comment: Water pooling inside the bund of the waste oil storage area.

PLATE 19

Photo Orientation: Northeast

Date: 22nd September 2020

Comment: Front gates of the bunded waste oil storage shed. Water can be seen pooling inside the bund.

PLATE 20

Photo Orientation: North

Date: 22nd September 2020

Comment: Offices in the northeastern portion of the Site.

PLATE 21

Photo Orientation: South

Date: 22nd September 2020

Comment: Stockpile of unprocessed material within Stockpile E (approximately 14,000 m^3) located in the northeastern portion of the Site (refer Figure 5).

PLATE 22

Photo Orientation: Northwest

Date: 22nd September 2020

Comment: Picking belt, scalping screen and feed belt of the waste process infrastructure located in the northeastern portion of the Site (refer Figure 3 and Plate 23).

PLATE 23

Photo Orientation: West

Date: 22nd September 2020

Comment: Waste processing infrastructure (refer Figure 3). Stockpile of sand (fines) (Stockpile A) in the background.

PLATE 24

Photo Orientation: Northwest

Date: 22^{nd} September 2020

Comment: Stockpile of fine aggregate (Stockpile D) in the foreground and sand (fines) (Stockpile A) in the background (refer Figure 5).

PLATE 25

Photo Orientation: Southwest

Date: 22nd September 2020

Comment: Infrastructure for unknown purpose south of Stockpile D and northeast of Stockpile B (refer Figure 5).

APPENDIX H

NON-ORGANIC DISPOSALS ENVIRONMENTAL IMPROVEMENT PLAN INCORPORATING THE SITE ASBESTOS MANAGEMENT PLAN

NON-ORGANIC DISPOSALS

Environmental Improvement Plan
Incorporating the site
Asbestos Management Plan

Compliance Assessment Report
Reference Licence Number L6832/1997/12
Reporting Condition Table3 IR2

Cell 6 Pty Ltd atf Cell 6 Unit Trust t/a Non Organic Disposals

Peter Margetic & Luwam Araya

11 April 2013

Purpose.

The Environmental Improvement Plan (EIP) included in this Asbestos Management Plan (AMP) is to form part of the Site Management Plan and is intended to detail the management of asbestos that enters the site as part of Class 1 Waste the site is licensed to receive and process under the C62 Licence.

The site is not licensed to receive asbestos, however small amounts have been detected within incoming waste and are to be managed in accordance with this EIP & AMP.

Environmental Policy.

Non Organic Disposals (NOD) maintains constant improvement in environmental management through its' OMP risk assessment and compliance practices contained there in plus a dynamic review of these practices to better manage environmental and compliance risk.

There are annual projects to be undertaken that focus on the areas of higher risk, which are under constant assessment. To date these projects have included fuel and oil management, dust management with automatic dust suppression, development of a process to remove contaminants from <80mm aggregate, the introduction of a Sampling Analysis Plan and continual product testing.

NOD will continue to strive through constant (daily) assessment of areas containing environmental risk and commits to improving processes and controls to minimise or negate the risk to the extent possible.

All introduced practices to date have been voluntary to mitigate and minimize impact on the environment before it becomes a problem, such as product testing which was commenced in mid 2009. NOD commits to maintaining vigilance in risk identification and subsequent practice modification.

Due to the dynamic nature of the site environment, (being weather conditions, load composition, plant availability), areas of risk of environmental impact are actively assessed daily with operations tailored to suit the current conditions. As such supervision and awareness are the key elements, which deliver an acceptable, and improving environmental and site management status. As such there are always to be senior site members present on site while in operation to direct resources as necessary to manage current conditions.

Site management has never been, nor is ever to be, "set and forget"; active, aware and pre-emptive supervision will always be in place as it is the only realistic method of controlling the various facets of site operations.

The owners and managers of NOD commit to maintain and endeavor to improve the environmental status, compliance and operational practices with the rigour and integrity demonstrated over the previous four years of ownership.

Asbestos Risk Management Strategy.

An over all site strategy has been implemented to minimise the risk of asbestos contamination to both employees and materials produced under the C62 licence.

This strategy forms part of the overarching operational practices, which reduces the amount of Asbestos Containing Material (ACM) that has to be directly dealt with, the intent being not to receive any on site and to treat high-risk waste separately from low risk waste.

Demolition waste was identified as the highest risk waste category NOD is licensed to receive; this waste was is priced higher than new build waste resulting in a significant reduction in demolition material received.

High-risk waste is tipped in a separate area to allow a more thorough examination.

If ACM is identified in a load before it is tipped, the truck is turned away, if identified after tipping the truck is reloaded.

If ACM is identified following the above, it is placed in marked sealed containers for disposal at a licensed facility.

Reclaimed fill material derived from the incoming waste is tested in accordance with the site Sampling and Analysis Plan. Included in the list of analytes is asbestos; the fill sand is reclaimed prior to crushing and screening processes.

The above processes are laid out in the table below (Operation Practices) which cover incoming waste assessment and site handling including staff responsibilities and designated actions / responsibilities.

Stage	Action / Responsibility	Whom	Result
Incoming Waste Assessment Load Arrival.	Visually Assess load in accordance with risk assessment table (see page 5 and photo on page 6 Complete the **Load Recieval Register**, if the driver refuses to sign, or ACM is observed turn the truck away and enter details into the **Load Refusal Register**.	Load Assessment Supervisor.	1. Direction to appropriate tipping area (see site layout on page 8) 2. Complete **Load Recieval Register** (see page 10 and photo 1 on page 6) 3. Complete **Load Refusal Register** (see page 11) 4. If accepting load, advise office of grade and volume for invoice / payment data entry. 5. See photos of load recieval and asbestos notification on page 9
Incoming Waste Assessment. Tipping Area.	Watch and assess load where tipped, wet down with high-pressure hose, carry out further visual inspection for ACM. Observe excavator with grab when sorting through the high risk tipping area and spreading over a larger area to give better visual access. The high and low risk tipping areas are identified on page 8 **Action Plan if ACM is found:** 1. If ACM is observed, isolate the area with witches' hats, dress with protective disposable overalls and mask and carry out further investigation. 2. Advise management who will assist and advise on further actions. Ensure the area concerned is well wetted with high-pressure hoses and that no other staff enters the area before management direction and that no other loads are tipped on or in the affected area. 3. Notify the Load Assessment Officer in effort to establish if the owner of the load is known, if so the Load Assessment Officer is to fill out the **Load Refusal Register.** 4. If examination finds minimal ACM, it is to be removed and placed in the marked yellow asbestos holding drums. 5. If the amount of ACM is deemed to be more than incidental, the load is to be further wetted, pushed into an isolated heap, covered with clean fill and marked "Contains Asbestos - Off Site Disposal". 6. Management to arrange a licensed operator to collect and dispose of at a facility licensed to receive asbestos. 7. Management to view CCTV recording in effort to identify the operator responsible. A letter detailing the incident including off site disposal costs to be sent to the operator with a copy to the WA DEC Compliance Officer.	Tipping Area Officer. (Front End Supervisor) Load Assessment Supervisor (if required). Site Management (if required).	1. Visually confirm high or low risk when tipped. (see photo 2 on page 6) 2. Spread high risk thinner and examine by watching the grab sort through the material. (see photo 3 & 4 on page 7) 3. Carry out **Action Plan if ACM is found** procedure if ACM is identified. 4. Note trucks with "suspect loads" when tipping EG if a truck has declared low risk and when tipping it becomes apparent full disclosure of the load has not been made. 5. Where necessary check with the Load Assessment Officer to what grade the load has been assessed. 6. If any doubt arises over material, immediately wet with high-pressure hose, cordon off the area and advise site management.
Waste Process	1. The feed stockpile is to be kept damp at all times.	Plant Supervisor	1. Maintain a constant watch on picking

Provisions Process Belt	2. After the damp waste has been scalped of fines and is passing down the picking belt, staff on the picking are to maintain a watch for ACM, when spotted on the belt the belt is to be stopped, staff to wear disposable overalls and mask before picking the ACM and placing in the appropriately labeled drum. 3. Sections before and after the location of the ACM are then to be scrutinized to ascertain if the ACM was isolated or more generally found on the belt. If the latter, the material on the belt is to be further wet down and site management be advised immediately	Front End Supervisor	belt staff. 2. Ensure appropriate PPE is always on hand. 3. Ensure asbestos-containing drum is always securely sealed. (see photo 5 on page 8) 4. Stop the belt is any suspect waste is sited and visually inspect. 5. Ensure no unsafe handling of ACM occurs.
Stockpile Management	The Bottom End Supervisor clears away from under 4 stackers, being; 1. fines scalper from the initial feed screen 2. middle grade belt containing <80 aggregate which is stockpiled for further treatment see pages 12 & 13, photos 9, 10 & 11 of the nearly complete air / water separator 3. fines belt from the bottom screen containing <16mm co-mingled aggregate, 4. and the oversized belt containing lightweight waste stockpiled for transport to Red Hill via 30m3 bins. It is the Bottom End Supervisor's responsibility to ensure stockpiles are managed and segregated in an orderly way and the water cart is called when ever necessary to eliminate / minimise dust and airborne litter.	Bottom End Supervisor	1. Maintaining separation between different stockpiled materials. 2. Maintaining dust suppression as required. 3. Loading tested fill sand into outgoing trucks. 4. Minimizing litter by managing the oversize lightweight waste.

Operational Practices.

Please note that the personnel stated in carrying out the above tasks have received training as detailed on page 9, these records are kept on site and are available for inspection at anytime. Further training will be provided due to staff turn over or additional tailored courses appropriate to the positions held.

Mentoring is carried out daily by supervising stall and employees and when (or if) a situation arises that maybe considered ambiguous a minimum of two trained staff meet to discuss the appropriate course of action contained Action Responsibility table above

Risk Classification Matrix Comparison

Below is the Risk Matrix contained in the guidelines followed by comparative definitions and risk classifications from NOD's previously developed Risk Matrix associated with incoming waste assessment.

	Risk Classification Matrix - (Colored to NOD equivalent in following table)		
	Type of load		
Material Type	Commercial	Public, utes, cars and trailers*	Skip bins
Clean Concrete (without formwork)	Low	High	High
Clean Brick	Low	High	High
Clean Bitumen Asphalt	Low	High	High
Mixed Construction waste	High High	High	High
MixedDemolition waste		High	High

NON ORGANIC DISPOSALS - GRADE / RISK ASSESSMENT

GRADE	DESCRIPTION	CLIENT(S)	RISK / NOTES
G1	Clean Fill - NO CONSTRUCTION WASTE.	General	Very low levels of organic materials, no light weight waste (off site disposal costs), low level risk of contaminants. Low commercial and environmental risk.
G2	Concrete (may contain sand). NO ORGANIC MATERIAL.	General	No organic material and no residual waste (off site disposal). Low level commercial and environmental risk.
G3	General Construction Waste. Refer to docket books for detail.	General	Contains lightweight waste (off site disposal). G3 is typically new build site clean up to plate height. Care must always be taken not to allow demolition material not to be graded as G3, any sign of demolition material automatically classifies the load as G5 - High Risk
G4	General Construction Waste with a higher amount of residual waste	General	Maximum 30% residual waste including wood, cardboard, plasterboard etc. If origin is demolition classify as G5.
G5	Non construction waste	General	Demolition waste, skip bins, turf, any load that has had the fines scalped. High commercial (due to high residual) and high environmental risk.
Trailers	Can contain anything, thorough visual inspection required	General	Tip separately if entire contents not easily identifiable.

RISK		
		LOW
		HIGH

Photo 1

Photo 2

Photo 3

Photo 4

Site Layout

Photo 5

Non-Organic Disposals - Asbestos Identification Training Register

Name	Course	Date Attended	Position
Michael White	Asbestos Awareness	26/10/2013	Loader Assessment Officer
Thomas Vandlerberg	Asbestos Awareness	26/10/2013	Front End Supervisor
Karl Lynch	Asbestos Awareness	26/10/2013	Loader Driver
Daniel Tun	Asbestos Awareness	26/10/2013	Plant Supervisor
Rob Nicol	Asbestos Awareness	26/10/2013	Infrastructure Manager
Peter Margetic	12 Years as Construction Manager on large inner city and major regional construction sites including the supervision of asbestos removal and asbestos identification on shopping centre redevelopments with Multiplex and Bovis lend Lease with site labour of up to 1,000 personnel.	1991 – 2003	Director
Rocky Zamin	Asbestos Awareness	8/4/2013	Director
Aaron Anderson	Asbestos Awareness	8/4/2013	Heavy Diesel Mechanic
Ryan Auld	Asbestos Awareness	8/4/2013	Front End Load Assessment
Ko Klaw Htoo	Asbestos Awareness	8/4/2013	Front End / Sorting
Hser Nay Khaw	Asbestos Awareness	8/4/2013	Front End / Sorting

The above records are maintained on site and updated as required.

Photos 6, 7 & 8 Signage Regarding Load Recieval and Asbestos Management

Non-Organic Disposals

Date 6TH March 2013

Sheet No

Delivery and Sales Register

By signing this sheet you are declaring your load is free from asbestos; operators refusing to sign will be declined entry to offload.

Item No	Payment Method (Cash, CC or Acc).	MYOB Customer Name	Vehicle Registration No	Volume	Grade	Invoice (Collect or email)	Tax Invoice or Recipient GTI	Driver Signature	Comment (Order No, Truck No etc as req)
85	A	HIND'S SANDS	1COY 879	10	G1	C	T	[illegible]	O/N 932400
86	A	CITY OF VINCENT	1CYS 005	18	G2	E	T	[illegible]	O/N 832311
87	CHQ	BUGSY MCALL MALONE'S	1AFL 120	8	G3	C	T	Malone	
88	CASH SALE	CASH SALE	9ED 552	7	G2	C	T	[illegible]	
89	A	HOLCIM	1BFT 159	1	G2	E	T	[illegible]	381 GNANGARA
90	A	BORAL	1DYK 605	5	G2	E	T	[illegible]	717 BAYSWATER

All Columns

Non Organic Disposals - Load Refusal Register - Asbestos

Load Refused due to Asbestos Contamination

Date	Rego	Company	Reason Refused

Photos 9 & 10

Photo 11

Monitoring and Testing

In 2009 NOD developed and Sampling and Analysis Plan (Appendix A) for testing re-claimed fines for a suite of analytes

A NATA laboratory tests each sample with the results stored in 3 separate areas electronically.

A database was constructed to store and analyse the results.

Recycled drainage rock is not supplied to customers as detailed further in this document; we are completing a process train to warrant the product is free from asbestos.

Once commissioned, products will be tested at the appropriate frequency to satisfy IR1 before release to the public.

Our sand testing is carried out direct from the fines stockpiling belt. The only time testing from stockpiles is carried out is when the plant is shut dawn.

Therefore the location of testing on stockpiles, and the marking of such is not applicable.

With regard to suspect area(s) when sampling; no single sample is ever taken, a minimum of 3 samples are taken from heterogenic material that has been mixed a number of times before being placed on the scalping screen.

The reason for the 3 samples is to determine if detection is isolated (random detection) or generic (a generalized hot spot) within an area of material. To date, over four years of testing has verified that any detection is not generic.

Our main stockpile that has been continuously tested over the four year period has never failed the 95% ucl protocol, which is built into our database, that is an internationally recognized model designed for a minimum of 12 samples and a maximum of 30 samples to be dealt with as a sample set. The 95% ucl model is detailed within the attached S.A.P.

Speaking with the technical author of the guideline, he stated that averaging is not acceptable, the 95% ucl model, ironically, is based on averages.

The cover page of our test data analysis report was also discounted on the bases of averaging, a cursory glance will show that the cover page does not average results, it totals weight of sampled material, weight of ACM & AF detected and as all guidelines represent asbestos quantification as % (w/w); we report our testing in the same manner comparative to the guideline upper limits.

All test results (as per sample in appendix A) are kept on site in 2 locations electronically plus for security of information, one location off site electronically and via ALS (the testing laboratory) via webtrieve.

Please see pages 16 - 21 inclusive giving an indication of our data base and reporting ability regarding asbestos and a suite of equally important analytes.

This example of 1 batch of tests, each batch contains 3 samples and the laboratory reports associated with the represented batch in Appendix B.

Please find attached testing (from stockpile) external audit attached in Appendix C.

Audit & Review Timetable

Timetable for reviewing and modifying the EIP & AMP will be February and November each year.

The proposed reviewing officer will be Mr Neville Blesing from Parker Brinkerhoff.

Accidents, Incidents and Emergencies

Incident

An incident may be classified, as visible dust crossing the boundary of the side the action under taken in this incident is to shut the plant down and ensure all material on side is wet & not generating dust. This is also detail in NOD's side management plan.

Accident

Where ACM & AF is identified in an uncontrolled area or there is spillage from an ACM /AF labeled container.

The procedure to remedy the above is for all personal to clear the area. The material is to be wet with water cannon on the water truck.

Staff trained in the handling of asbestos and wearing the appropriate P.P.E are to contain and reseal, or place in the marked containers any loose ACM or AF sighted and continue to keep the area wet until a loader can remove approx. the top 100 mm of soil in the affected area and place it in a plastic lined skip bin. 200 um plastic is located in the workshop for this reason.

Emergency

An emergency may be darned as accidental exposure to AF/FA.

In this instance the employee is to be showered in the side shower, all clothes to be washed and the employee taken to a GP to understand the level of risk and if the employee should be placed on the asbestos management register.

Following the above initial actions, the procedures contained in item 2 (accidents) are to be implemented.

Dust

Water sprays and automatic reticulation cover each stage of the process capable of generating dust.
A site board is updated each morning with the days' weather conditions and gives a risk category being low, medium or high depending on wind direction and strength, one employee is permanently using high pressure hoses to wet down loads as they are tipped.

If it is clear that dust generation cannot be controlled the plant is shut down and all unnecessary site movement is stopped.

Risk Based Assessment on Air Quality Monitoring

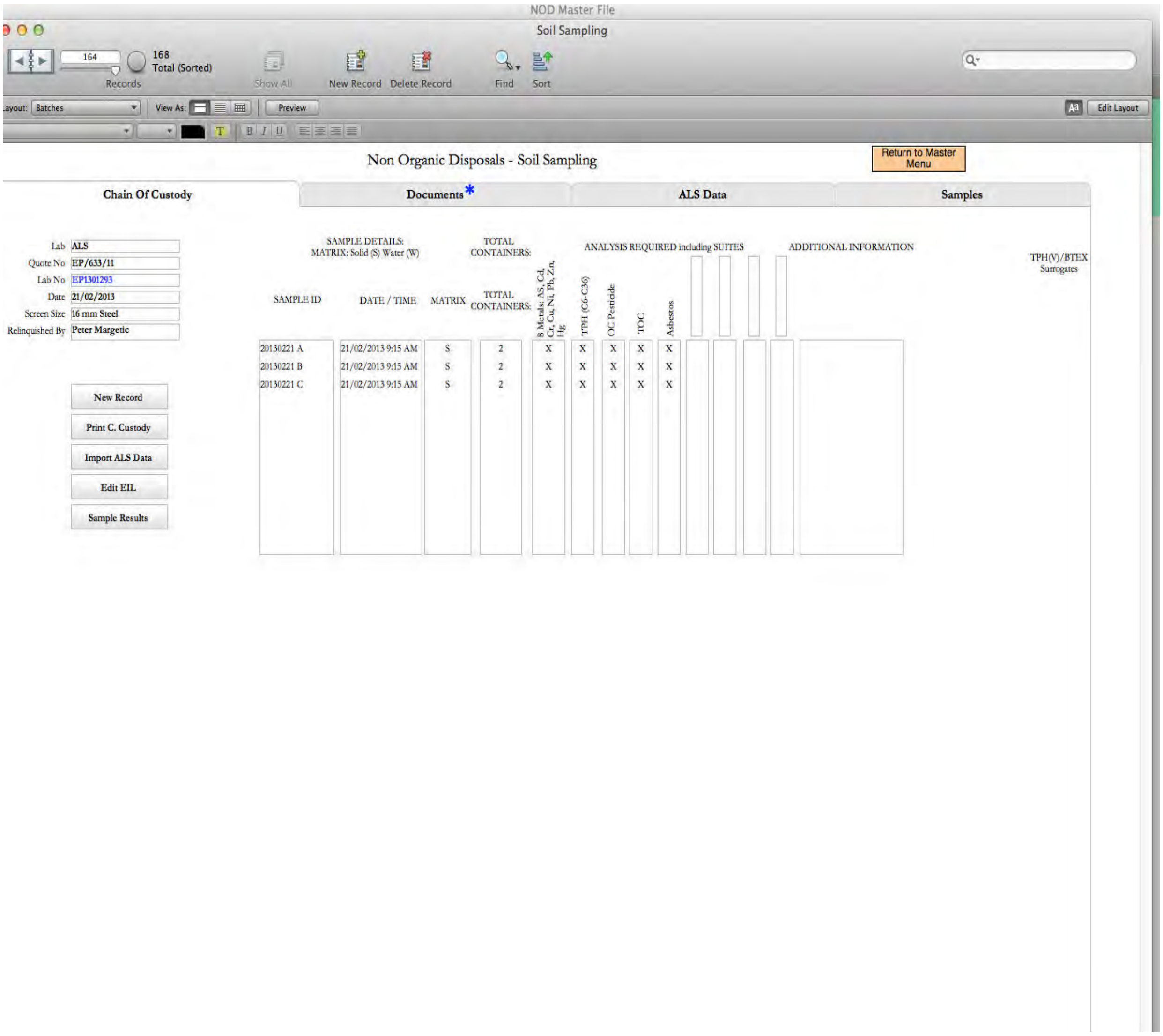
The most accurate means of dust identification and mitigation is by visual observation and knowledge of wind direction and activities that are not appropriate in high-risk conditions.

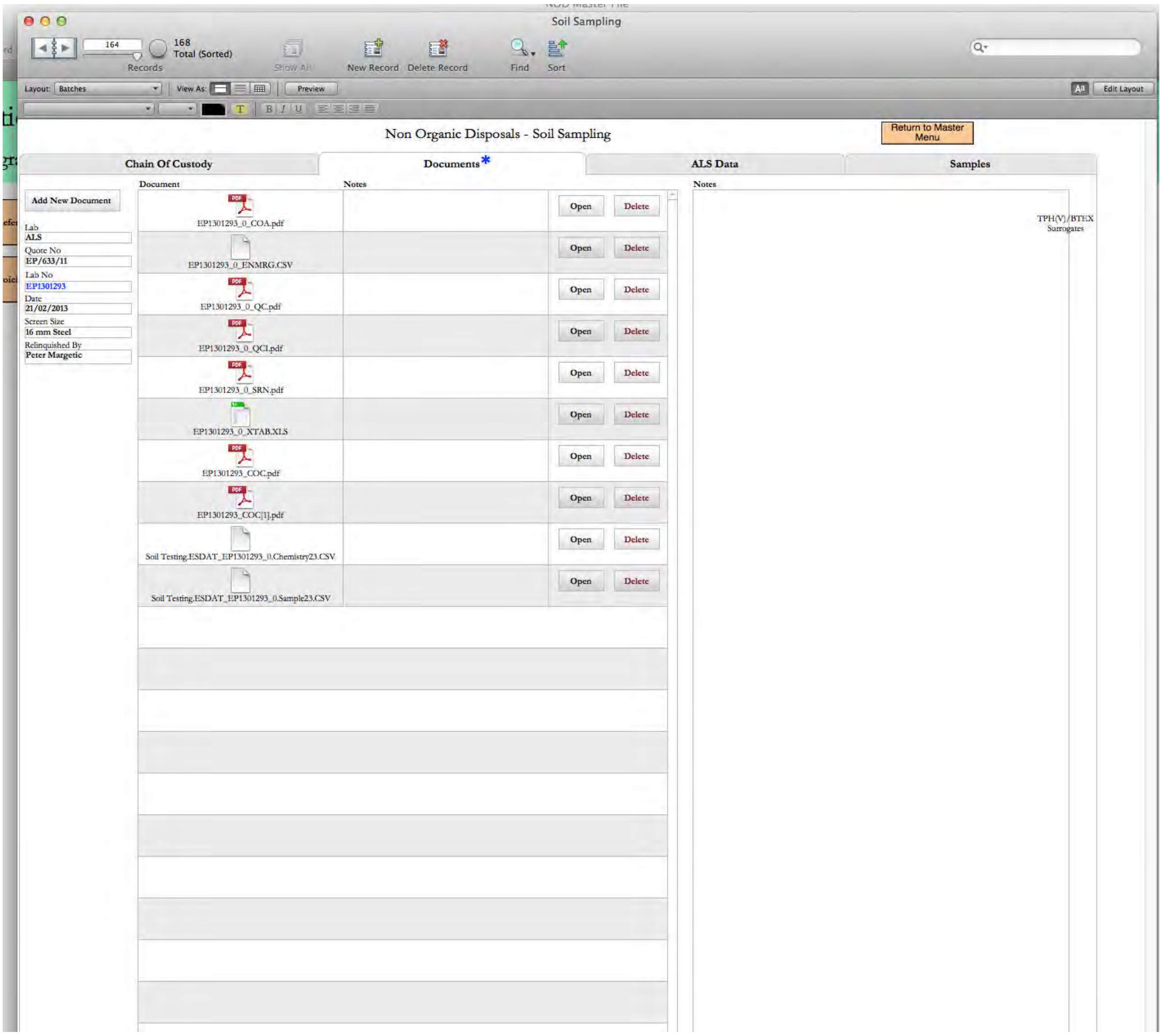
Air quality devices typically alert personal after a fact which is of little use the site operation methods are real time and relevant to changing conditions.

In demonstration of the above we have received 5 complaints (Appendix D) in a 4-year period. These complaints were followed through on to the satisfaction of the DEC & COW.

Within the annual monitoring report, all complaints received are reported. The ICR book is maintained on site for inspection at all times.

Each complaint (relating to dust) has been dealt with via the source of the dust generating area being covered by automatic reticulation, the area of operation re-located or the offending activity ceased.


NOD Master File
Soil Sampling
164
168
Total (Sorted)
Records
Show All
New Record
Delete Record
Find
Sort
Layout: Batches
View As:
Preview
Edit Layout
Non Organic Disposals - Soil Sampling
Return to Master Menu
Chain Of Custody
Documents
ALS Data
Samples
Lab ALS
Quote No EP/633/11
Lab No EP1301293
Date 21/02/2013
Screen Size 16 mm Steel
Relinquished By Peter Margetic
SAMPLE DETAILS: MATRIX: Solid (S) Water (W)
TOTAL CONTAINERS:
ANALYSIS REQUIRED including SUITES
ADDITIONAL INFORMATION
TPH(V)/BTEX Surrogates
SAMPLE ID
DATE / TIME
MATRIX
TOTAL CONTAINERS:
8 Metals: AS, Cd, Cr, Cu, Ni, Pb, Zn, Hg
TPH (C6-C36)
OC Pesticide
TOC
Asbestos
20130221 A 21/02/2013 9:15 AM S 2 X X X X X
20130221 B 21/02/2013 9:15 AM S 2 X X X X X
20130221 C 21/02/2013 9:15 AM S 2 X X X X X
New Record
Print C. Custody
Import ALS Data
Edit EIL
Sample Results



The documents listed above (excl .csv files) can be found in Appendix B

Soil Sampling

164 | 168 Total (Sorted) | Records | Show All | New Record | Delete Record | Find | Sort

Layout: Batches | View As: | Preview

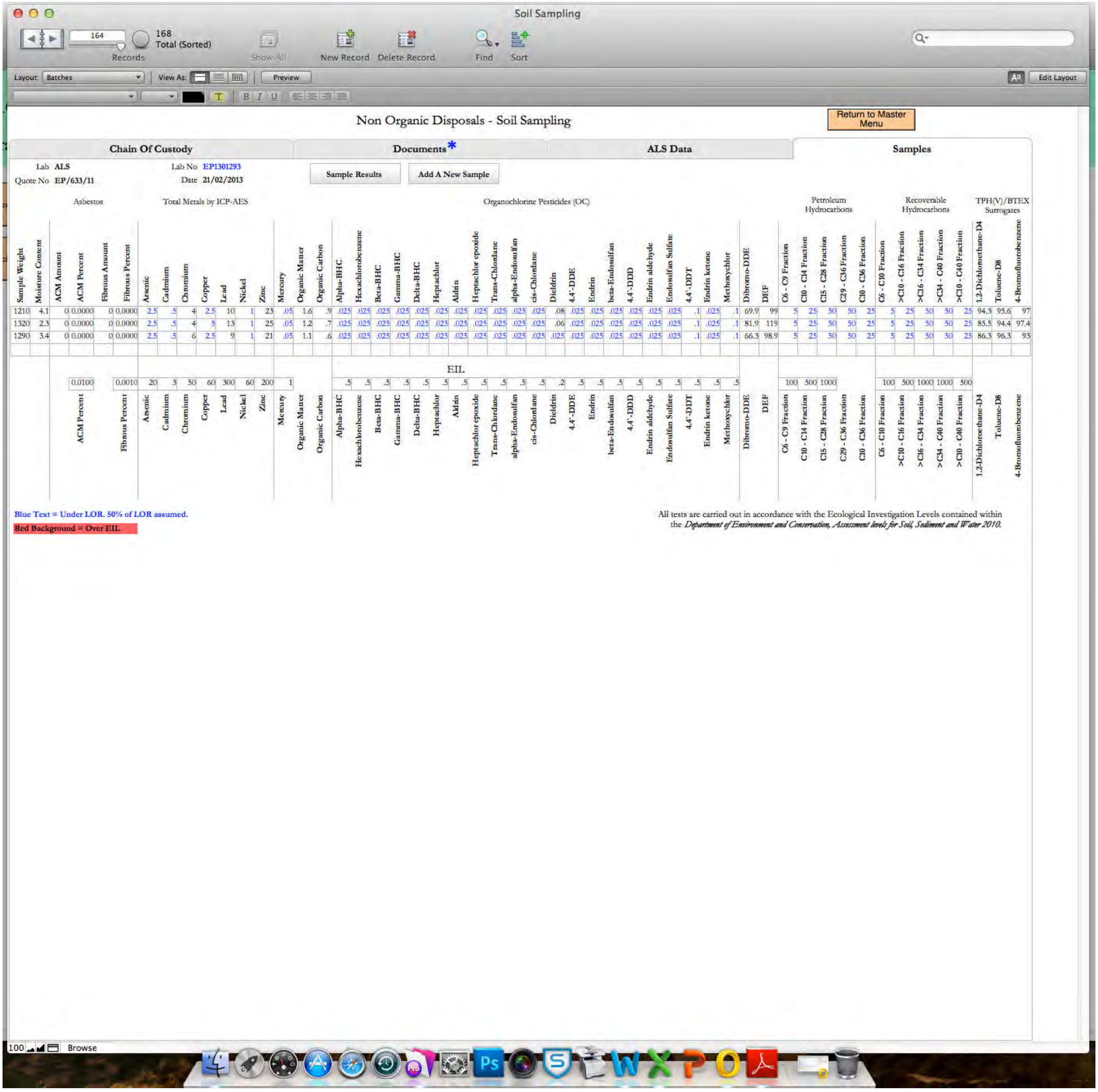
Non Organic Disposals - Soil Sampling

Return to Master Menu

Chain Of Custody | Documents* | ALS Data | Sample

Client - Matrix:	SOIL			REG	REG	REG
Workgroup:	EP1301293			EP1301293001	EP1301293002	EP1301293003
Project name/number:	Soil Testing			21/02/2013	21/02/2013	21/02/2013
				20130221 A	20130221 B	20130221 C
				Non Organic Disposals -	Non Organic Disposals -	Non Organic Disposals -
Analyte grouping/Analyte	CAS Number	Units	LOR			
EA055: Moisture Content						
Moisture Content (dried @		%	1.0	4.1	2.3	3.4
EA200: AS 4964 - 2004						
Asbestos Detected	1332-21-4	g/kg	0.1	No	No	No
Asbestos Type	1332-21-4	--	0.1	-	-	-
Sample weight (dry)		g	0.01	1210	1320	1290
Description		--	1	Mid brown sandy soil with some	Mid brown sandy soil with some	Mid brown sandy soil with some
APPROVED IDENTIFIER:		--	-	P.RENNIE	P.RENNIE	P.RENNIE
EA200Q: Asbestos						
Weight Used for % Calculation		kg	0.0010	1.21	1.32	1.29
Asbestos Containing Material	1332-21-4	%	0.01	<0.01	<0.01	<0.01
Asbestos Fines and Fibrous	1332-21-4	%	0.001	<0.001	<0.001	<0.001
EG005T: Total Metals by ICP-						
Arsenic	7440-38-2	mg/kg	5	<5	<5	<5
Cadmium	7440-43-9	mg/kg	1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2	4	4	6
Copper	7440-50-8	mg/kg	5	<5	5	<5
Lead	7439-92-1	mg/kg	5	10	13	9
Nickel	7440-02-0	mg/kg	2	<2	<2	<2
Zinc	7440-66-6	mg/kg	5	23	25	21
EG035T: Total Recoverable						
Mercury	7439-97-6	mg/kg	0.1	<0.1	<0.1	<0.1
EP004: Organic Matter						
Organic Matter		%	0.5	1.6	1.2	1.1
Total Organic Carbon		%	0.5	0.9	0.7	0.6
EP068A: Organochlorine						
alpha-BHC	319-84-6	mg/kg	0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	mg/kg	0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	mg/kg	0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	mg/kg	0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	mg/kg	0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	mg/kg	0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	mg/kg	0.05	<0.05	<0.05	<0.05
Total Chlordane (sum)		mg/kg	0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	mg/kg	0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	mg/kg	0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	mg/kg	0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	mg/kg	0.05	0.08	0.06	<0.05
4.4`-DDE	72-55-9	mg/kg	0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	mg/kg	0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	mg/kg	0.05	<0.05	<0.05	<0.05
Endosulfan (sum)	115-29-7	mg/kg	0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	mg/kg	0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	mg/kg	0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	mg/kg	0.05	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	mg/kg	0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	mg/kg	0.2	<0.2	<0.2	<0.2
Sum of Aldrin + Dieldrin	309-00-2/60-57-1	mg/kg	0.05	0.08	0.06	<0.05
Sum of DDD + DDE + DDT		mg/kg	0.05	<0.05	<0.05	<0.05
EP068S: Organochlorine						

100 Browse



Soil Sampling

Non Organic Disposals - Soil Sampling

Chain Of Custody | Documents* | ALS Data | Samples

Lab ALS — Lab No EP1301293

Quote No EP/633/11 — Date 21/02/2013

Sample Weight	Moisture Content	ACM Amount	ACM Percent	Fibrous Amount	Fibrous Percent	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon
1210	4.1	0	0.0000	0	0.0000	2.5	.5	4	2.5	10	1	23	.05	1.6	.9
1320	2.3	0	0.0000	0	0.0000	2.5	.5	4	5	13	1	25	.05	1.2	.7
1290	3.4	0	0.0000	0	0.0000	2.5	.5	6	2.5	9	1	21	.05	1.1	.6
EIL			0.0100		0.0010	20	3	50	60	300	60	200	1		

Asbestos: ACM Amount – Fibrous Percent. Total Metals by ICP-AES: Arsenic – Zinc.

Organochlorine Pesticides (OC)

Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4'-DDE	Endrin	beta-Endosulfan	4.4'-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4'-DDT	Endrin ketone	Methoxychlor
.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.2	.5	.5	.5	.5	.5	.5	.5	.5	.5

Last row: EIL

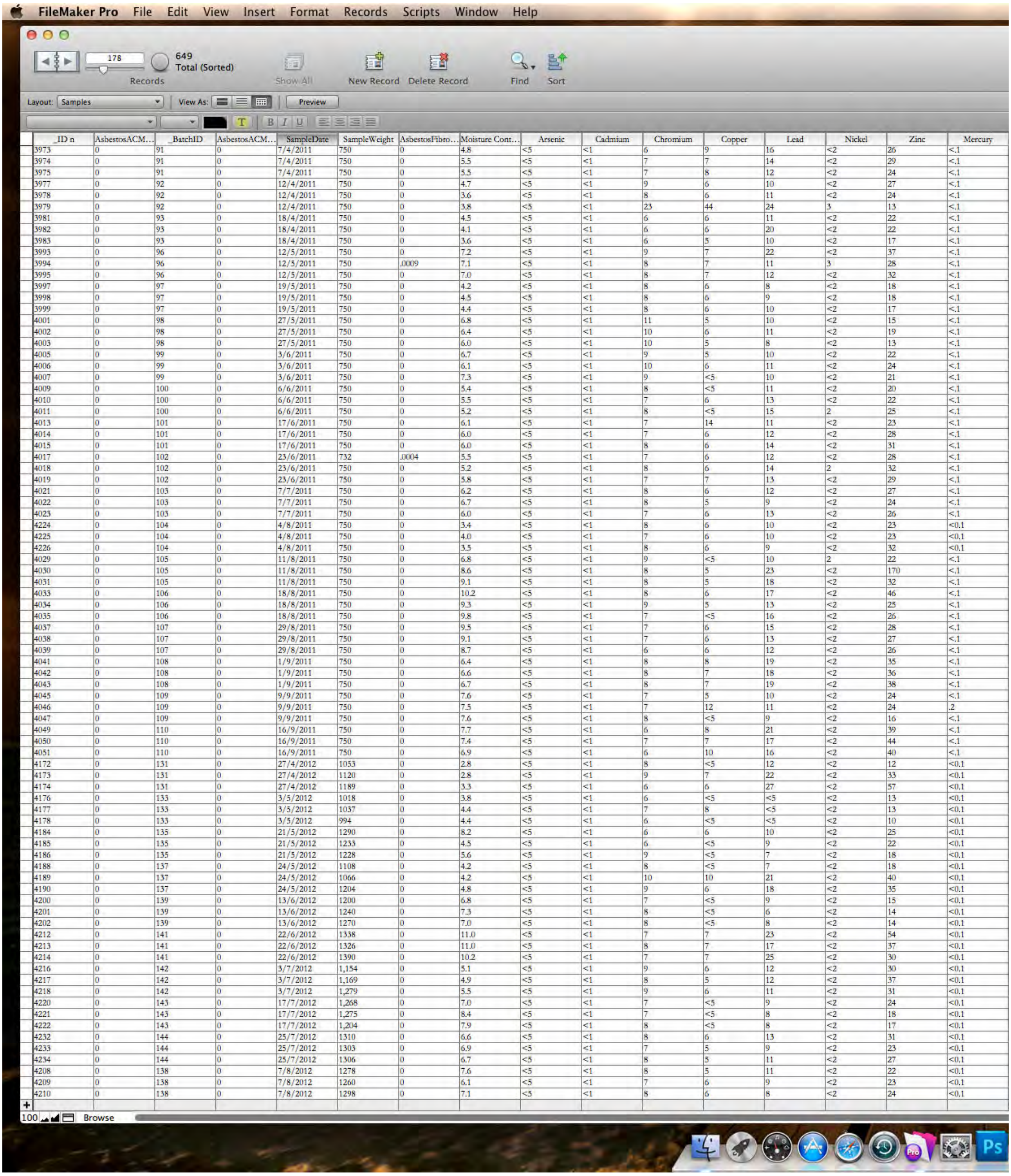
Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
69.9	99	5	25	50	50	25	5	25	50	50	25	94.3	95.6	97
81.9	119	5	25	50	50	25	5	25	50	50	25	85.5	94.4	97.4
66.3	98.9	5	25	50	50	25	5	25	50	50	25	86.3	96.3	93
		100	500	1000			100	500	1000	1000	500			

Petroleum Hydrocarbons: C6 - C9 – C10 - C36 Fraction. Recoverable Hydrocarbons: C6 - C10 – >C10 - C40 Fraction. TPH(V)/BTEX Surrogates: 1.2-Dichloroethane-D4 – 4-Bromofluorobenzene. Last row: EIL

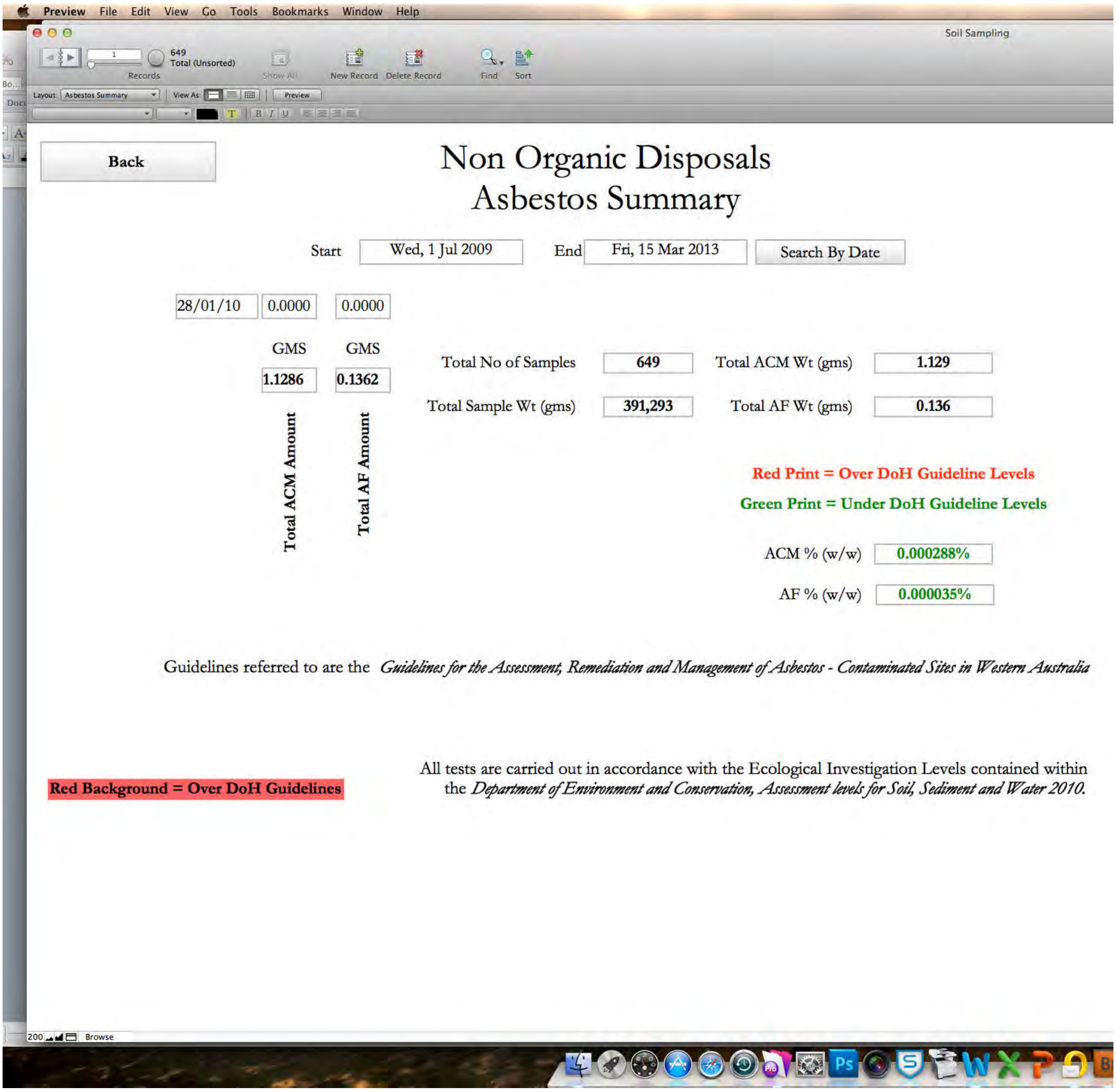
Blue Text = Under LOR. 50% of LOR assumed.

Red Background = Over EIL

All tests are carried out in accordance with the Ecological Investigation Levels contained within the *Department of Environment and Conservation, Assessment levels for Soil, Sediment and Water 2010.*



_ID n	AsbestosACM…	_BatchID	AsbestosACM…	SampleDate	SampleWeight	AsbestosFibro…	Moisture Cont…	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
3973	0	91	0	7/4/2011	750	0	4.8	<5	<1	6	9	16	<2	26	<.1
3974	0	91	0	7/4/2011	750	0	5.5	<5	<1	7	7	14	<2	29	<.1
3975	0	91	0	7/4/2011	750	0	5.5	<5	<1	7	8	12	<2	24	<.1
3977	0	92	0	12/4/2011	750	0	4.7	<5	<1	9	6	10	<2	27	<.1
3978	0	92	0	12/4/2011	750	0	3.6	<5	<1	8	6	11	<2	24	<.1
3979	0	92	0	12/4/2011	750	0	3.8	<5	<1	23	44	24	3	13	<.1
3981	0	93	0	18/4/2011	750	0	4.5	<5	<1	6	6	11	<2	22	<.1
3982	0	93	0	18/4/2011	750	0	4.1	<5	<1	6	6	20	<2	22	<.1
3983	0	93	0	18/4/2011	750	0	3.6	<5	<1	6	5	10	<2	17	<.1
3993	0	96	0	12/5/2011	750	0	7.2	<5	<1	9	7	22	<2	37	<.1
3994	0	96	0	12/5/2011	750	.0009	7.1	<5	<1	8	7	11	3	28	<.1
3995	0	96	0	12/5/2011	750	0	7.0	<5	<1	8	7	12	<2	32	<.1
3997	0	97	0	19/5/2011	750	0	4.2	<5	<1	8	6	8	<2	18	<.1
3998	0	97	0	19/5/2011	750	0	4.5	<5	<1	8	6	9	<2	18	<.1
3999	0	97	0	19/5/2011	750	0	4.4	<5	<1	8	6	10	<2	17	<.1
4001	0	98	0	27/5/2011	750	0	6.8	<5	<1	11	5	10	<2	15	<.1
4002	0	98	0	27/5/2011	750	0	6.4	<5	<1	10	6	11	<2	19	<.1
4003	0	98	0	27/5/2011	750	0	6.0	<5	<1	10	5	8	<2	13	<.1
4005	0	99	0	3/6/2011	750	0	6.7	<5	<1	9	5	10	<2	22	<.1
4006	0	99	0	3/6/2011	750	0	6.1	<5	<1	10	6	11	<2	24	<.1
4007	0	99	0	3/6/2011	750	0	7.3	<5	<1	9	<5	10	<2	21	<.1
4009	0	100	0	6/6/2011	750	0	5.4	<5	<1	8	<5	11	<2	20	<.1
4010	0	100	0	6/6/2011	750	0	5.5	<5	<1	7	6	13	<2	22	<.1
4011	0	100	0	6/6/2011	750	0	5.2	<5	<1	8	<5	15	2	25	<.1
4013	0	101	0	17/6/2011	750	0	6.1	<5	<1	7	14	11	<2	23	<.1
4014	0	101	0	17/6/2011	750	0	6.0	<5	<1	7	6	12	<2	28	<.1
4015	0	101	0	17/6/2011	750	0	6.0	<5	<1	8	6	14	<2	31	<.1
4017	0	102	0	23/6/2011	732	.0004	5.5	<5	<1	7	6	12	<2	28	<.1
4018	0	102	0	23/6/2011	750	0	5.2	<5	<1	8	6	14	2	32	<.1
4019	0	102	0	23/6/2011	750	0	5.8	<5	<1	7	7	13	<2	29	<.1
4021	0	103	0	7/7/2011	750	0	6.2	<5	<1	8	6	12	<2	27	<.1
4022	0	103	0	7/7/2011	750	0	6.7	<5	<1	8	5	9	<2	24	<.1
4023	0	103	0	7/7/2011	750	0	6.0	<5	<1	7	6	13	<2	26	<.1
4224	0	104	0	4/8/2011	750	0	3.4	<5	<1	8	6	10	<2	23	<0.1
4225	0	104	0	4/8/2011	750	0	4.0	<5	<1	7	6	10	<2	23	<0.1
4226	0	104	0	4/8/2011	750	0	3.5	<5	<1	8	6	9	<2	32	<0.1
4029	0	105	0	11/8/2011	750	0	6.8	<5	<1	9	<5	10	2	22	<.1
4030	0	105	0	11/8/2011	750	0	8.6	<5	<1	8	5	23	<2	170	<.1
4031	0	105	0	11/8/2011	750	0	9.1	<5	<1	8	5	18	<2	32	<.1
4033	0	106	0	18/8/2011	750	0	10.2	<5	<1	8	6	17	<2	46	<.1
4034	0	106	0	18/8/2011	750	0	9.3	<5	<1	9	5	13	<2	25	<.1
4035	0	106	0	18/8/2011	750	0	9.8	<5	<1	7	<5	16	<2	26	<.1
4037	0	107	0	29/8/2011	750	0	9.5	<5	<1	7	6	15	<2	28	<.1
4038	0	107	0	29/8/2011	750	0	9.1	<5	<1	7	6	13	<2	27	<.1
4039	0	107	0	29/8/2011	750	0	8.7	<5	<1	6	6	12	<2	26	<.1
4041	0	108	0	1/9/2011	750	0	6.4	<5	<1	8	8	19	<2	35	<.1
4042	0	108	0	1/9/2011	750	0	6.6	<5	<1	8	7	18	<2	36	<.1
4043	0	108	0	1/9/2011	750	0	6.7	<5	<1	8	7	19	<2	38	<.1
4045	0	109	0	9/9/2011	750	0	7.6	<5	<1	7	5	10	<2	24	<.1
4046	0	109	0	9/9/2011	750	0	7.5	<5	<1	7	12	11	<2	24	.2
4047	0	109	0	9/9/2011	750	0	7.6	<5	<1	8	<5	9	<2	16	<.1
4049	0	110	0	16/9/2011	750	0	7.7	<5	<1	6	8	21	<2	39	<.1
4050	0	110	0	16/9/2011	750	0	7.4	<5	<1	7	7	17	<2	44	<.1
4051	0	110	0	16/9/2011	750	0	6.9	<5	<1	6	10	16	<2	40	<.1
4172	0	131	0	27/4/2012	1053	0	2.8	<5	<1	8	<5	12	<2	12	<0.1
4173	0	131	0	27/4/2012	1120	0	2.8	<5	<1	9	7	22	<2	33	<0.1
4174	0	131	0	27/4/2012	1189	0	3.3	<5	<1	6	6	27	<2	57	<0.1
4176	0	133	0	3/5/2012	1018	0	3.8	<5	<1	6	<5	<5	<2	13	<0.1
4177	0	133	0	3/5/2012	1037	0	4.4	<5	<1	7	8	<5	<2	13	<0.1
4178	0	133	0	3/5/2012	994	0	4.4	<5	<1	6	<5	<5	<2	10	<0.1
4184	0	135	0	21/5/2012	1290	0	8.2	<5	<1	6	6	10	<2	25	<0.1
4185	0	135	0	21/5/2012	1233	0	4.5	<5	<1	6	<5	9	<2	22	<0.1
4186	0	135	0	21/5/2012	1228	0	5.6	<5	<1	9	<5	7	<2	18	<0.1
4188	0	137	0	24/5/2012	1108	0	4.2	<5	<1	8	<5	7	<2	18	<0.1
4189	0	137	0	24/5/2012	1066	0	4.2	<5	<1	10	10	21	<2	40	<0.1
4190	0	137	0	24/5/2012	1204	0	4.8	<5	<1	9	6	18	<2	35	<0.1
4200	0	139	0	13/6/2012	1200	0	6.8	<5	<1	7	<5	9	<2	15	<0.1
4201	0	139	0	13/6/2012	1240	0	7.3	<5	<1	8	<5	6	<2	14	<0.1
4202	0	139	0	13/6/2012	1270	0	7.0	<5	<1	8	<5	8	<2	14	<0.1
4212	0	141	0	22/6/2012	1338	0	11.0	<5	<1	7	7	23	<2	54	<0.1
4213	0	141	0	22/6/2012	1326	0	11.0	<5	<1	8	7	17	<2	37	<0.1
4214	0	141	0	22/6/2012	1390	0	10.2	<5	<1	7	7	25	<2	30	<0.1
4216	0	142	0	3/7/2012	1,154	0	5.1	<5	<1	9	6	12	<2	30	<0.1
4217	0	142	0	3/7/2012	1,169	0	4.9	<5	<1	8	5	12	<2	37	<0.1
4218	0	142	0	3/7/2012	1,279	0	5.5	<5	<1	9	6	11	<2	31	<0.1
4220	0	143	0	17/7/2012	1,268	0	7.0	<5	<1	7	<5	9	<2	24	<0.1
4221	0	143	0	17/7/2012	1,275	0	8.4	<5	<1	7	<5	8	<2	18	<0.1
4222	0	143	0	17/7/2012	1,204	0	7.9	<5	<1	8	<5	8	<2	17	<0.1
4232	0	144	0	25/7/2012	1310	0	6.6	<5	<1	8	6	13	<2	31	<0.1
4233	0	144	0	25/7/2012	1303	0	6.9	<5	<1	7	5	9	<2	23	<0.1
4234	0	144	0	25/7/2012	1306	0	6.7	<5	<1	8	5	11	<2	27	<0.1
4208	0	138	0	7/8/2012	1278	0	7.6	<5	<1	8	5	11	<2	22	<0.1
4209	0	138	0	7/8/2012	1260	0	6.1	<5	<1	7	6	9	<2	23	<0.1
4210	0	138	0	7/8/2012	1298	0	7.1	<5	<1	8	6	8	<2	24	<0.1



As can be seen from the above, over 600 samples totaling nearly 400 Kg of soil has been tested by a NATA laboratory for asbestos.

The sampling method used is always one that the fines are taken directly off the stockpiling belt immediately after screening in effort to get as representative a sample as possible. The only time we test from the fines stockpile is when the plant is not running, such as when the sampling methodology was audited externally (see appendix 3).

Method of Assessment.

There is overwhelming evidence that the fines being re-claimed meet the specified targets. The material loaded into the plant for processing (scalping being the first section of the process) has been blended by virtue of being mixed after tipping, pushed up into stockpiles, relocated to be within reach of the excavator feeding the process that it has become generic, homogenous, the one strata, which ever label you wish to apply. Four years of testing has verified this and minimises the possibility of a weight high enough in any single truckload, loader bucket etc to be anywhere near .001% (w/w), again the evidence demonstrates this given such a low rate of detection and weight measured in a considerable amount of sample.

Qualitive, or quantitive, either way taking any given volume that is removed off site, it complies with being below .001% (w/w).

Appendix A

Non Organic Disposals

Sampling and Analysis Plan

For: Cell 6 Pty Ltd

14 July 2009

TABLE OF CONTENTS

LIST OF TABLES

1 Introduction

SMEC Australia Pty Ltd (SMEC) has been commissioned by Cell 6 Pty Ltd, the operators of Non Organic Disposals (NOD) - a licensed Class I inert waste landfill, to develop a sampling and analysis plan to validate fill material screened on-site as ‘clean’ (i.e. posing no actual or potential risk to human health and/or the environment) for re-use off-site. This document has been compiled in accordance with the guidelines of the Department of Environment (DoE, now Department of Environment and Conservation (DEC)) *Contaminated Sites Management Series*; National Environment Protection Council (NEPC) Measure, (1999, *Assessment of Site Contamination*), including all relevant schedules, and the Department of Health (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia.*

1.1 Objectives

The primary aims and objectives are to develop an appropriate sampling and analysis plan to statistically validate the hypothesis that the arithmetic mean concentration of contaminants, if present, is less than DEC Ecological Investigation Levels (EIL) at a 95% upper confidence level to meet ‘not contaminated’ and off-site ‘fill’ criteria posing no actual or potential risk to human health and/or the environment.

1.2 Scope of Work

SMEC has undertaken the following:

- informal discussions with the DEC Contaminated Sites Section and DEC/Environmental Protection Authority (EPA) licensing officer;
- review of relevant legislation, guidelines and standards; and
- review of site operations and information.

This document details the:

- Sampling and Analysis Plan (SAP); and
- Environmental and Health Risk Assessment.

1.3 Relevant Legislation, Guidelines And Standards

Currently there are no guidelines or regulations (2006) under the *Contaminated Sites Act, 2003* or the *Environmental Protection Act, 1986* (*EP Act*) that provide for the assessment of clean fill originating from a disturbed site.

Generally the *EP Act* provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment including incidental matters. Therefore any reuse of fill material should include an assessment of the potential adverse environmental or human health impacts from the use (placement) of the fill material.

The DEC *Landfill Waste Classification and Waste Definitions guide* (1996, as amended in 2005) defines clean fill material as… “material that will have no harmful effects on the environment and which consists of rocks or soils arising from the excavation of undisturbed material. For material not from a clean excavation, it must be validated to have contaminants below relevant ecological investigation levels (as defined in the document *Assessment Levels for Soil, Sediment and Water*, Department of Environment, 2003)(DEC, 2005)”.

Legislative requirements, guidelines for categorising material and standards for sampling fill material have been listed below in Table 1. These documents have been considered in developing the sampling and analysis plan for the site.

Table 1: Relevant legislation, guidelines and standards for the sampling and analysis plan.

WA Legislation
Contaminated Sites Act, 2003 and Regulations, 2006.
Guidelines
Department of Environment, Contaminated Sites Management Series: Assessment Levels for Soil, Sediment and Water – Draft for Public Comment, Version 3, November 2003.
Department of Environment, Contaminated Sites Management Series: Development of Sampling and Analysis Programs.
Department of Environment, Landfill Waste Classification and Waste Definitions, 1996 (as amended, 2005).
Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, May 2009.
National Environment Protection Council, National Environmental Protection (Assessment of Site Contamination) Measure, Schedule B(3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, 1999.
EPA New South Wales, Contaminated Sites – Sampling Design Guidelines, September 1995.
EPA Victoria, publication 441, A Guide to the Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, March 2000.
EPA Victoria, publication 448, Classification of Wastes, May 2007.
EPA Victoria, publication 722, Environmental Guidelines for Reducing Greenhouse Gas Emissions from Landfills and Wastewater Treatment, November 2000.
EPA Victoria, publication 1178, Soil Sampling Guideline (Off-site Management and Acceptance to Landfill), November 2007.
Standards
AS1141:3.1–1996, Methods for Sampling and Testing Aggregates, Method 3.1: Sampling-aggregates.
AS 4482.1-2005, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and Semi-volatile compounds.
AS 4482.2-1999, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 2: Volatile Substances.
AS4964-2004: Method for the Qualitative Identification of Asbestos in Bulk Samples.
Main Roads Western Australia, MRWA 100.1: Sampling Procedures for Soil and Manufactured Granulated Materials.

2 Site identification

Non Organic Disposals (the site) is located on Lot 8005 on Plan 36178 Driver Road, Darch, WA, 6065. The site is a licensed premise (Licence No. 6832/1997/11) within Schedule 1 of the *Environmental Protection Regulations, 1987* for the operation of an inert landfill. Activities at the premise include, but are not limited to:

- operation of an inert landfill site - building material, i.e. concrete, sand, bricks etc.;
- storage and screening of excavated lawn; and
- crushing of building material and storage in stockpiles for sale or disposal.

The site is prescribed under the categories shown in Table 2, taken from the *Environmental Protection Regulations, 1987*:

Table 2: Categories prescribed to the site under the Environmental Protection Regulations, 1987.

Category Number	Category Name	Description
13	Crushing of building material.	Premises on which waste building or demolition material is crushed or cleaned.
62	Solid waste disposal.	Premises on which waste is stored, or sorted, pending final disposal or re-use.
63	Class 1 inert landfill site.	Premises on which waste (as determined by reference to the waste types set out in Landfill Waste Classification and Waste Definitions (DoE, 2005) is accepted for burial.

The site occupies 11.953 hectares (119,530 m^2) subdivided as 'Proposed Lot 1" in the north-western corner of Lot 8005 Driver Road (36.668 hectares) and is bound to the north by Furniss Road and west by Driver Road. "Proposed Lot 2" borders the site to the east and the south and is currently vacant. However "Proposed Lot 2" is under future plans for residential development. NOD's landfill activities occur on Proposed Lot 1.

Present and proposed infrastructure and resources at the site include:

- Picking belt;
- Site office;
- Isuzu service truck;
- Komatsu excavator and grab;
- 2 x Terex dump truck TA 40;
- 2 x light vehicle wagons;
- 4 x Komatsu wheel loaders;
- Hyundai wheel loader;
- 2 x Terex Finlay 883 screens;
- Rangerscreen mobile conveyor and screen;
- Ingersol roller;
- Shaetec CS5X Diesel Shredder;
- Caterpillar water cart; and
- Extec C-13 Impactor.

3 Site Operation

3.1 Historical Operations

Currently the site is zoned as a Landfill Precinct under the City of Wanneroo District Structure Plan No.2 - Zoning Plan (CoW, 2008). A search of the DEC's Contaminated Sites Database for the site returned no matches (DEC, 2009). The site has historically been used for sand mining since the 1960s, introducing filling activities in the late 1980s. Surrounding land uses have included native bush land and market gardens prior to redevelopment into residential and industrial/ commercial areas.
A timeline of land use at the site is given in Table 3. Information has been collated through discussions with the previous site owner and historical aerial photographs:

Table 3: Timeline of land use at the site.

Year	Land Use
Pre 1960s	Native bush land.
1960s	Sand mining commenced on the western section of the site.
Late 1960s	A residence was constructed in the southwest corner of the site.
1970s	Sand mining continued to the northern and eastern sections of the site.
1987	Uncontrolled land filling commenced.
1990s	Sand mining and land filling activities occurred concurrently.
2003	Sand mining operations ceased.
2003 to present	The site has operated as a Class I inert landfill, being filled from the eastern edge of the site heading in a westerly direction.

3.2 Current Operations

Cell 6 Pty Ltd, trading as Non Organic Disposals (NOD) took over operations 17 April 2009. The site receives between 200,000 and 300,000 cubic metres (m^3) of Class I building and demolition waste each year. Inert waste received has been layered and compacted in 500 millimetre (mm) layers. The waste received at the site can be categorised in grades as shown in Table 4:

Table 4: Grades of waste received at the site.

Grades of Waste					
Grade 1 (G1)	Clean fill.				
Grade 2 (G2)	Sand, gravel, limestone, road materials (<50mm).				
Grade 3 (G3)	Bricks, tiles, sand and concrete.				
Grade 4 (G4)	Loads with reinforced concrete, steel and iron sheeting.				
No wood, green waste or grass allowed in Grades 1-4.					
Grade 5 (G5)	Mixed Loads.				
Grade 6 (G6)	Lawn/Grass.				
Not accepted on Site:					
Asbestos	Household Rubbish	Fibreglass	Tyres	Liquid	Car Bodies
Chemicals	Trees & stumps	Motor Oils	Plastic	Carpet	
Food waste	Office Waste	Wire Fencing			
NOTE: Lawn and grass received (Grade 6) has never been buried on site, it is used to cover completed areas to approx 200mm thick.					

Superceded See Risk Matrix

3.3 Proposed Operations

Based on current operations it is proposed to implement a process to crush and screen all suitable incoming waste, removing organics and other light weight waste from the fines and crushed aggregates for on-selling with the unsuitable waste being disposed to landfill off-site. Testing by NOD on site has indicated that less than 3% weight for weight (w/w) of unsuitable waste will need to be disposed from clean fill and construction material.

It is proposed that incoming waste will be stockpiled prior to processing according to five different types of material:

1. Construction waste – for screening, testing and re-sale;
2. Demolition waste – sand scalped for screening, testing and re-sale;
3. Grade 1 (clean fill) – for screening, testing and re-sale;
4. Grade 2 (road materials) – for crushing to form road base; and
5. Grade 6 (lawn) – to be used for rehabilitation purposes (surface cover).

Grade 1, Grade 2 and construction wastes will be tested against clean fill criteria for re-sale as a fill material. Grade 1 waste is clean fill from virgin ground and is considered as having a low risk of containing contaminants, i.e. heavy metals. Grade 1 material is also expected to be asbestos free, due to the absence of previous demolition and construction activities. asbestos. Grade 2 material consists of road materials such as sand, gravel, road base and bitumen and is considered as having a medium risk of containing elevated contaminated levels, i.e. hydrocarbons. Construction waste is also considered to have a medium risk of elevated contaminant levels and potential for asbestos presence, primarily due to construction in established suburbs (i.e. in renovation projects).

Demolition waste will be initially screened, with material passing the smallest screen (sands) removed and considered as a high risk material for testing and potential sale. Demolition waste retained on the smallest screen will be crushed and then disposed on site as landfill. It will not be tested for re-sale, due to the higher potential risk of it containing contaminants exceeding relevant clean fill criteria and the potential presence of asbestos from older buildings.

Existing waste on site (approximately 550,000 tonnes) will be treated as demolition waste.

Lawn will be used to cover completed areas of the site for rehabilitation.

The objective is to fill the site with screened material, allowing future beneficial use of the site. The City of Wanneroo Agreed Local Structure Plan shows proposed subdivisions and residential development as the end land use (CoW, 2008b).

4 Potential Contaminants

In accordance with requirements set by Licence No. 6832/1997/11, no contaminated materials are to be accepted/disposed of at the site. However, potential exists for some contaminated material to be introduced. Potentially contaminating material entering the site is expected to be associated with construction/demolition waste from off-site and uncontrolled waste from historical landfill activities on-site. Potentially contaminating material may include:

- asbestos;
- tyres and wood;
- pre-1980's fill;
- demolition waste from old sites where a higher potential exists for contamination by metals, pesticides, hydrocarbons and asbestos; and
- building waste, including from domestic storages/workshops (i.e. fertilisers, pesticides, oil, paint and grease).

Common indicators of contamination associated with building (demolition) waste include metals, hydrocarbons, pesticides and asbestos. Sources of the common indicators (contaminants) include, but are not limited to:

- metals – fragments from building waste, paints,
- hydrocarbons – oil and grease used in garages and/or sheds;
- pesticides – used around the house and stored in sheds;
- asbestos – used in asbestos-cement products in house construction for ceilings and fences until 1984,with chrysotile asbestos being used until 1987 (DoH, 2009); and
- acid sulfate soils – widespread around coastal regions of Western Australia and are also locally associated with freshwater wetlands and saline sulfate rich groundwater in some agricultural areas (DEC, 2009).

5 Sampling and analysis plan

The Sampling and Analysis Plan has been developed in accordance with the documents listed in Table 1 (section 1.3) of this document. The aim of the sampling and analysis plan is to obtain representative and accurate data to adequately assess any potential health and environmental risks associated with the fill material.

5.1 Soil Matrices

Step 1: Separate high, medium and low risk material types based on origin

To reduce the suite of analytes that are tested and to reduce the risk of blending potentially contaminated material with clean fill it is recommended that soil is quarantined and managed based on its origin. For example, it is considered that demolition waste from a well established suburb, such as Fremantle, would pose a greater risk of containing contaminants (i.e. asbestos, pesticides, hydrocarbons) than construction waste from a new (undisturbed) suburb (i.e. Ellenbrook). Because of this risk the sand scalped from demolition waste is characterised as high risk material.

The number and frequency of trucks arriving at the facility from sites across Perth makes separating soil by individual sites problematic, due to potential space requirements.

By keeping soils of similar origin together it is also expected that the material will be relatively homogenous and pose less risk of containing skewed (log-normal) results. Homogenous material is advantageous as it produces more accurate results from laboratory analysis. Statistical means such as the co-efficient of variation (CV) will be used to measure the relative homogeneity or heterogeneity of a distribution following laboratory analysis. The co-efficient of variation is described in Section 9.

On entry to the site a visual inspection of the truck should be conducted and a quick delivery record should be completed by the driver to determine the origin and type of material (G1 - G6). A second visual inspection at the tipping face is also recommended. Material not meeting the criteria of the landfill licence and/or suspected of containing asbestos should not be accepted on site.

To keep soil of the same origin together the delivery record should aim to provide information on the origin, history, and nature of material/contaminants. An example of the proposed delivery record is shown in Appendix C and the Operational Management Plan. The final stockpiles, ranging from 1000 tonnes (t) and not exceeding 5000t in size, should be kept in the same designated risk category (high/medium/low) during all stages of operations.

Recording the origin of the material, i.e. selecting the site type (construction or demolition), will assist in identifying high risk material as early indicators of potentially contaminated material.

High, medium and low risk material should be separated into risk categories to determine if the material is to be tested for on-selling. As stated in Section 3.3, incoming waste will be stockpiled into five material types, depending on its origin. These five material types are:

1. Construction waste – for screening, testing and re-sale;
2. Demolition waste – sand scalped for screening, testing and re-sale;
3. Grade 1 (clean fill) – for screening, testing and re-sale;
4. Grade 2 (road materials) – for crushing to form road base; and
5. Grade 6 (lawn) for rehabilitation and surface cover.

The five material types fit into the three risk ratings in a manner shown in Table 5. Sand will be removed (scalped) from selected demolition waste and considered as a high risk material for testing against clean fill criteria for potential re-sale. Demolition waste retained on the smallest screen will be crushed and put to landfill on site, not to be tested or sold. Medium and low risk material will be tested from the conveyor against clean fill criteria for potential re-sale.

Table 5: Recommended risk ratings for the five proposed material types.

High Risk	• Demolition waste • Grade 6 (lawn)
Medium Risk	• Construction waste • Grade 2 (road materials)
Low Risk	• Grade 1 (clean fill)

It is recommended that stockpiles be sorted based upon material type and origins into high, medium and low risk to improve material homogeneity and reduce the risk of blending potentially contaminated material with potentially clean material.

5.1.1 Organics

Large volumes of material containing organics have the potential to generate significant quantities of methane gas. Methane gas generation in buried material could potentially move laterally within the soil. Laterally moving methane can become trapped and accumulate in buildings at concentrations hazardous to human health and higher than lower explosive limit (LEL). Methane is flammable at concentrations between the LEL of 5% volume for volume (v/v) and the upper explosive limit (UEL) of 15% v/v (USEPA, 1993). In severe cases of methane accumulation, asphyxiation or explosion could occur (EPA, 2000).

All organic material should be removed to prevent methane generation. Methane is a greenhouse gas with 21 times the warming potential of carbon dioxide (VIC EPA, 2000). On-site testing has shown that it requires only 2-3% weight for weight (w/w) organics in material to generate methane at a concentration of 40% v/v in the soil strata. Areas not producing methane were found to typically have an organic content below 1% w/w. Screening and crushing trials conducted by NOD on site has delivered fines with organic content below 0.5% w/w, indicating processes on site will adequately manage organic content and potential methane generation.

5.1.2 Blending

During the screening process, stockpiles classified as high risk should not be blended with medium or low risk material. Blending stockpiles will significantly increase the risk of introducing contaminants into the final fill material to be sold. Another by-product of blending stockpiles is an increased probability of undetected contaminant hotspots existing within the blended fill material.

Blending is also likely to increase material heterogeneity. Statistical analyses for contaminants, i.e. the 95% Upper Confidence Level for average concentration (95% $UCL_{average}$), are more suited to homogenous material (VIC EPA, 2007). The 95% $UCL_{average}$ demonstrates with 95% confidence that the true site average of a contaminant is at or below the stated concentration levels.

The 95% $UCL_{average}$ has been defined by the Environmental Professionals of Connecticut (EPOC) as a statistical tool for acknowledging uncertainties and variability within an environmental set of data without presenting an unacceptable risk to human health or the environment (2000). The 95% $UCL_{average}$ should be used when only one single sample concentration exceeds twice the applicable concentration (EPOC, 2000).

Where the material is heterogeneous, it may be necessary to take larger sample numbers to enable the calculation of a more accurate 95% $UCL_{average}$ (VIC EPA, 2007). This is due to a higher coefficient of variation (CV) compared with homogenous (CV < 1.2) material. Heterogeneous fill material possesses a CV greater than 1.2 and uses a different (logarithmic) equation to homogenous fill for calculating the 95% $UCL_{average}$. For any particular analyte, a heterogeneous material will require a lower average concentration when compared with homogenous material to meet acceptance criteria, due to a higher standard deviation and $UCL_{average}$ of results. This will lead to an increased sampling frequency in many cases.

Step 2: Collect representative samples of potential fill material

To collect representative samples for assessment against clean fill criteria, unbiased samples need to be collected from the finished product. A sampling and analysis plan must therefore be designed and implemented. The main aspect of the sampling and analysis plan is the sampling procedure, which includes:

- the sampling design, which determines the frequency of sampling;
- the sampling pattern, which determines where samples will be taken from; and
- sampling techniques, which determine sampling methodology for unbiased sampling and proper Quality Assurance/Quality Control (QA/QC).

5.1.3 Sampling Design

For classifying waste, the Victorian EPA recommends a minimum of three samples to be taken from stockpiles with a volume of $200m^3$ or less, with one sample per $25m^3$ minimum for volumes between $75m^3$ and $200m^3$ (VIC EPA, 2007). Stockpile volumes at the site are expected to exceed $200m^3$.

For soil volumes greater than $200m^3$, the sample frequency may be reduced by comparing the 95% $UCL_{average}$ for soil contaminants with acceptance criteria (VIC EPA, 2007). The recommended minimum sample number for use of the 95% $UCL_{average}$ is 10 samples. This minimum sample number guarantees an accurate result by minimising uncertainty in the variation of contaminants. Subsequently, there is more confidence that the true mean of contaminant concentrations within the material body has been accurately identified. For soil volumes above $2500m^3$ the minimum sampling rate should not be less than one sample per $250m^3$ for analysis using the 95% $UCL_{average}$ (NSW EPA 1995; VIC EPA 2007).

This sampling frequency is considered appropriate for classifying waste. Table 6 overleaf has been adapted from VIC EPA (2007) and shows minimum sample numbers required for proposed clean fill stockpiles of varying volumes.

Table 6: Sample numbers required by VIC EPA (2007) for the classification of waste

Soil mass (t) (based on dry density of 1.40	Soil volume (m^3)	Minimum No. of samples at 1:25m^3	Minimum No. of samples using 95% $UCL_{average}$ for waste classification
420	300	12	10
560	400	16	10
700	500	20	10
840	600	24	10
980	700	28	10
1,120	800	32	10
1,260	900	36	10
1,400	1,000	40	10
2,100	1,500	60	10
2,800	2,000	80	10
3,500	2,500	100	10
4,200	3,000	120	12 (1:250m^3)
5,600	4,000	160	16 (1:250m^3)
6,300	4,500	180	18 (1:250m^3)
7,200	5,000	200	20 (1:250m^3)
>7,200	>5,000	1:25 m^3	1:250m^3

The sampling design for assessing asbestos differs from that described above. The Department of Health (2009) recommends one sample per 70m^3 (approximately 100t) or 14 samples per 1000m^3 for sampling asbestos from building waste or waste without a defined origin where a conveyor has been used in the screening process. This is approximately four times the sampling frequency for waste classification for other contaminants, i.e. metals. This sampling frequency shall be adopted for asbestos testing of high and medium risk material.

Based upon the suggested sample frequencies for metals and asbestos, together with a production rate of 210t per hour (150m^3 per hour based upon a dry density of 1.40t/m^3), the frequency of sampling per unit time can be calculated. Each day of production at NOD will be treated as one batch, with the one type of material (high, medium or low risk)) screened per day. The maximum volume of material to be produced in one day, based upon a 10-hour production shift is 2,100t or 1,400m^3. The licence conditions set for operations at the site limit hours of operation to 0700 – 1700 daily to meet noise criteria, making production times in excess of 10 hours impossible.

From Table 6, it can be concluded that ten samples will need to be taken for waste classification per day of production, regardless of the production time. It is therefore more cost-effective for daily production times to be maximised. Asbestos will need to be sampled for high and medium risk stockpiles at a frequency of one sample per 28 minutes of production or approximately twice hourly to meet its 1:70m^3 sample frequency recommendation for material off a conveyor process (DoH, 2009). Low risk material does not need to be tested for asbestos, however it is suggested that initial testing of low risk material should involve some sampling and testing for asbestos to validate that it is asbestos free.

Table 7 shows the sampling frequency based upon varying production times from six to 12 hours.

Table 7: Sample frequency for waste classification based upon production time in hours.

Production time in hours	Volume produced (t) at 210t/hr	Volume produced (m^3) at 210t/hr	Sampling frequency for waste classification per volume (m^3)	Sampling frequency for waste classification in hours and minutes
6	1,260	900	1:90m^3	0 hours 36 min
7	1,470	1,050	1:105m^3	0 hours 42 min
8	1,680	1,200	1:120m^3	0 hours 48 min
9	1,890	1,350	1:135m^3	0 hours 54 min
10	2,100	1,500	1:150m^3	1 hour 0 min
11	2,310	1,650	1:165m^3	1 hour 6 min
12	2,520	1,800	1:180m^3	1 hour 12 min

It is recommended a minimum of 10 samples are collected or a sampling frequency of 1:250m^3 is used for volumes exceeding 3,500t except asbestos, where a 4:1 sampling ratio (1 sample per 70m^3) should be implemented for high and medium risk stockpiles. Analysis should be conducted using the 95% UCL$_{average}$ for all contaminants.

5.1.4 Sampling Pattern

At the site, crushed building waste is screened and sorted before being stockpiled for sale. Stockpiles will range from 1,000t to a maximum of 5,000t (715m^3 to 3,570m^3).

The sampling pattern describes where and when samples are to be taken from a conveyor belt or stockpile. Sampling may be systematic (uniform/grid) or random. Random sampling may also be stratified to minimise potential bias. Methods for sampling from conveyor belts and stockpiles are described in AS1141.3.1-1996 (SA, 1996). Stratified random sampling is described in AS1289.1.4.2-1998 (SA, 1998).

Sampling from the conveyor belt is recommended by Australian Standards (1996) and Department of Health (2009) as it is easier to obtain a more accurate and representative sample. Sampling may be conducted whilst the conveyor is moving or stopped, depending on accessibility, safety and production factors. Sampling from a moving conveyor minimises potential bias in sampling and maximises production, however it comes with inherent safety hazards and potential manual labour risks. For this reason, sampling from a stopped conveyor is the recommended option for the sampling pattern, however sampling from a moving conveyor may be performed if potential hazards and risks can be adequately minimised.

There are two options for unbiased sampling of soils from the conveyor belt. Depending on site conditions, either sampling pattern has its own advantages and disadvantages. Options for sampling include:

- Systematic sampling off the conveyor, i.e. at specific time intervals based on volume; or
- Random sampling off the conveyor, i.e. at random time intervals. When sampling for asbestos, the Department of Health recommends that random time interval sampling is conducted off the conveyor (DoH, 2009).

Random sampling is used primarily to eliminate the potential for bias in sampling. Random sampling should be performed in a stratified manner so that samples are taken throughout the entire day. Stratified sampling divides the sampling up into a number of segments based upon the number of samples to be taken and the time of production.

For example, if the production time is eight hours and ten samples need to be taken, the sampling frequency (Table 7) is 48 minutes. Therefore, instead of randomly taking ten samples throughout the day at any time and potentially having several samples taken within close proximity of each other, one sample will be taken randomly in each 48 minute segment.

For operational and accuracy reasons, sampling from a stopped conveyor belt is recommended at random (stratified) time intervals. This can be achieved by the use of a sampling frame. Sampling frames are described in AS1141.3.1-1996.

It is recommended that stratified random sampling from a stopped conveyor belt is adopted as it provides an accurate method of sampling whilst posing minimal risks to safety.

5.1.5 Sampling Technique

The sampling technique describes the methodology for each sampling pattern. For accuracy and operational reasons, sampling from conveyor belts is considered to be the most appropriate sampling technique. For safety reasons, sampling should be performed on a stopped conveyor. The most advantageous sampling technique for a conveyor belt depends on a number of factors, namely:

- conveyor belt accessibility and height
- conveyor width; and
- the mass and volume of sample increments to be collected.

The main focus of the sampling procedure is to gain a representative sample, i.e. a sample that is considered to be similar in physical and chemical properties to the entire material body (SA, 1996). Therefore, sampling techniques should be adhered to so the representativeness and integrity of the sample is maximised. Techniques for the aforementioned sampling patterns have been briefly described below.

Sampling off Conveyor Belts

Sampling off conveyors is considered more accurate than sampling from stockpiles, due to the ability to sample the entire cross-section of the material body more easily and eliminating factors that decrease accuracy in stockpile sampling, such as settling. The aim of sampling from conveyor belts is to gain a representative sample by obtaining a full cross-section of the conveyor, i.e. full width by a pre-determined length. Sampling can be performed on moving or stopped conveyor belts, each with their inherent advantages and disadvantages.

A cross-section of material can be obtained from a stopped conveyor by using a sampling frame as described in AS1141.3.1-1996 (SA, 1996). A sampling frame is basically a metal frame that fits on the belt to separate the sample increment from all other material. It should be full width of the belt by a predetermined length, i.e. 300mm. The full amount of material should be removed from inside the sampling frame, taking care to collect all of the fines. The advantages of stopping the conveyor belt are maximised accuracy and reduced safety hazards. However, production is disrupted by stopping the conveyor belt.

Sampling from a moving conveyor belt, if done correctly, can minimise safety hazards whilst minimising disruption to productivity. Obtaining a full cross-section of material from a moving conveyor belt, i.e. from the point of discharge, helps to minimise potential bias. Sampling from a moving conveyor should be performed using an extendable sampling pole with a sturdy container attached to the end. The container should be large enough to obtain a sample from the entire cross-section of material without creating manual handling and/or safety issues. If necessary, the sample may be taken in more than one increment to decrease individual sample masses. Using a pole to sample from the point of discharge eliminates safety issues arising from working at heights and potentially falling objects. It is important to note that OH&S procedures such as Personal Protective Equipment (PPE) will need to be implemented and adhered to prior to commencement of sampling.

It is recommended that sampling is performed from a stopped conveyor belt using a sampling frame or similar device to isolate the sample increment.

5.1.6 Suite Of Analytes

The suites of analytes are based on the likely ‘common indicators’ or potential contaminants from a Class I inert landfill comprising of building materials. Initial samples should be selectively analysed for:

- Metals: Arsenic (As), Cadmium (Cd), Total Chromium (Cr), Copper (Cu), Mercury (Hg), Lead (Pb), Nickel (Ni) and Zinc (Zn);
- Total Petroleum Hydrocarbons (TPH);
- Organochlorine (OC) pesticides;
- Total Organic Carbon (TOC); and
- Asbestos.

Potential acid sulfate soils (PASS) are not to be accepted by the Class I facility. Where material is suspected of containing potentially acid forming soils/materials additional sampling and analysis will need to be undertaken in accordance with DEC guidelines.

It is expected that analysis of an individual sample of high or medium risk material (with one asbestos sample) by a NATA accredited laboratory for the parameters described above would cost around $200. However, additional asbestos samples may need to be analysed at around $50 each to comply with the 1:70m^3 recommended frequency. An individual low risk sample will cost around $150 to test by the same laboratory.

Total and leachable concentrations, where required, should be measured against DEC (WA) Ecological (EIL) Investigation Levels (full NEPM suite) NEPC investigation levels should be used if there are no investigation levels set by DEC for an analyte.

5.1.7 Leachate Analysis

Leachate analysis is not required when the total concentration of all samples for an analyte (i.e. zinc) is less than the leachate analysis threshold. The leachate analysis threshold is For example, if zinc is measured to be 5000 mg/kg, and the Australian Standard Leaching Procedure (ASLP) for zinc is 300 mg/kg, then leachate analysis is required if concentrations are greater than 6000 mg/kg (20 x 300).

Therefore, if zinc is 5000mg/kg, it is less than 6000mg/kg and does not require leachate analysis. The leachable concentration threshold and leachate analysis concentration threshold for the analytes to be tested are given overleaf in Table 8.

Table 8: Threshold for leachate analysis as described by DoE (2005).

Analyte	Leachate analysis threshold (CT x 20) in mg/kg	ASLP test required
Arsenic, As	500	concentration x 20 > 500
Cadmium, Cd	100	concentration x 20 > 100
Chromium (hexavalent), Cr VI	500	concentration x 20 > 500
Copper, Cu	5% by weight	
Mercury, Hg	75	concentration x 20 > 75
Lead, Pb	1500	concentration x 20 > 1500
Nickel, Ni	3000	concentration x 20 > 3000
Zinc, Zn	5% by weight	
C_6-C_9	2800	concentration x 20 > 2800
C_6-C_{35} (aromatics)	450	concentration x 20 > 450
C_{10}-C_{35} (aliphatics)	28000	concentration x 20 > 28000
Organochlorine (OC) pesticides	50	concentration x 20 > 50

Laboratory testing should include as a minimum the standard 8 metal suite (As, Cd, Cr, Cu, Hg, Pb, Ni, Zn); Total Petroleum Hydrocarbons; organochlorine (OC) pesticides and Total Organic Carbon, with asbestos testing required for high and medium risk material.

It is also recommended that one sample is tested for the full NEPM suite as per Schedule B(3) of the National Environmental Protection (Assessment of Site Contamination) Measure (1999) Series per sampling batch on high and medium risk stockpiles.

5.1.8 Asbestos

Asbestos sampling design and testing should be performed for high and medium risk material proposed for on-selling in accordance with Section 4.1.6 of the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (DoH, 2009). Low risk material is not considered to contain asbestos material.

The minimum sampling frequency for asbestos is 14 samples per 1000m^3, or approximately 1:70m^3 for material coming off a conveyor process. Suspect material should be targeted during sampling. This is called justified sampling.

Asbestos sampling and testing in accordance with Department of Health (2009) is two-fold:

For asbestos-containing material (ACM) and fibrous asbestos (FA), a ten (10) Litre (L) sample is taken at each sampling point and screened through a 7mm sieve or spread out for inspection on a contrasting colour fabric. Particles retained on the sieve are inspected for ACM. The colour fabric is useful for identifying both ACM and FA. Identified ACM and FA is weighed for each sample and calculated for asbestos concentration, as described overleaf and in Section 4.1.7 of the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (DoH, 2009).

$$\%\ \text{Soil Asbestos} = \frac{\%\ \text{Asbestos Content} \times \text{ACM (kg)}}{\text{Soil Volume (L)} \times \text{Soil Density (t/m}^3)}$$

Where:

- Asbestos Content is 15% (for asbestos cement materials);
- Soil Volume is 10L per sample; and
- Soil Density is 1.40 t/m^3 (from geotechnical testing of fill material).

For asbestos fines (AF), the Department of Health (2009) suggests one wetted 500mL sample is taken from a different sampling point to ACM/FA and submitted to a NATA accredited laboratory for analysis by phase-contrast microscopy (PCM) or polarised-light microscopy (PLM) in accordance with *AS4964-2004*: *Method for the Qualitative Identification of asbestos in bulk samples*.

NATA accredited laboratories often recommend a 250g bagged sample is supplied for asbestos presence/absence testing by PLM (asbestos identification) and PCM (fibre count), together with qualitative identification as per *AS4964-2004*.

ACM, FA and AF investigation criteria are shown in Table 9, adapted from DoH (2009).

Table 9: Soil asbestos investigation criteria, dependant on end usage, as per DoH (2009).

DoH (2009) Soil asbestos investigation criteria	Site uses
0.001 % w/w asbestos for FA and AF	All site uses.
0.01 % w/w asbestos for ACM	Residential use, day care centres, preschools, etc.
0.04 % w/w asbestos for ACM	Residential, minimal soil access.
0.02 % w/w asbestos for ACM	Parks, public open spaces, playing fields, etc.
0.05 % w/w asbestos for ACM	Commercial/Industrial.

If asbestos of any form is above investigation criteria, the material will be treated as contaminated and proceedings for detailed investigation and management of asbestos contamination must commence in accordance with:

- Department of Health (2009): Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; and
- Department of Environment (2003): Contaminated Sites Management Series.

If ACM concentrations are found to be below investigation criteria set by both DoH (2009) and NEPM (1999) and no free fibres or FA are found in the stockpile, then the stockpile may be considered asbestos-free and in compliance with clean fill criteria.

It is recommended sampling is conducted in accordance with Department of Health (2009) and laboratory analysis by a NATA laboratory by phase-contrast microscopy (PCM) and polarised light microscopy (PLM) in accordance with AS4964-2004. This should be in addition to visual inspection of stockpiles and delivery trucks for asbestos presence.

6 Field Quality Assurance/Quality Control (QA/QC)

Procedures to adopt during field sampling of clean fill material include:

- Personal Protective Equipment (PPE) should be worn by staff when sampling. This includes disposable latex gloves, helmet, high visibility vest, safety glasses and any other appropriate PPE (i.e. dust mask).
- All soil samples are to be collected using clean equipment decontaminated between sampling points using a brush and/or water with laboratory grade detergent.
- One duplicate and one blank sample are to be taken for analysis per batch or per 20 samples, whichever is most frequent. Duplicate samples measure the variation in analytes between two samples taken from the same location, as well as measuring variation potentially from sampling techniques. Blank samples measure contamination of samples from transportation, storage, containers and/or laboratory analysis;
- Clean solvent washed glass jars provided by a NATA laboratory are to be used to retain the samples, stored on ice in an esky prior to delivery the same day or refrigerated overnight, prior to delivery the following day to SGS laboratories.
- Holding times must not be exceeded. The analyte with the shortest maximum holding time is total organic carbon (TOC), with a maximum holding time of seven days. Maximum holding times are described by NEPM (1999), VIC EPA (2000) and in AS4482.1-2005. Holding times are shown in Table 10.
- Containers should be clearly labeled with sample identification details, sampling date and sampler initials. This will aid sample traceability.
- A register of sample data should be kept to track the samples and the corresponding stockpiles and location of sampling points within each stockpile, (i.e. a grid reference).
- Chain of custody should be upheld, as per Section 6.1.

Split samples are part of best practice and will aide sample QC. However, it may not be necessary for waste classification. During further analysis, where contaminants are known to be present and could potentially be above EILs, one split sample should be taken per 20 samples or one per sample batch, whichever is more frequent. Split samples measure the variation in results between two laboratories using the same test methods for the same analytes, with variation potentially due to natural variation in material or differences in laboratory preparation/accuracy.

Table 10: Maximum holding times for analytes in soil samples as described by AS4482.1-2005, unless otherwise stated.

Analyte	Maximum Holding Time in days as per AS4482.1-2005
Metals and metalloids other than mercury(i.e. As, Cd, Cr, Cu, Ni, Pb, Zn)	180
Mercury (Hg)	28
Pesticides, organochlorines (OC)	14
Petroleum Hydrocarbons, Total (TPH)	14
Organic Carbon, Total (TOC)[1]	7
Asbestos	14

1 – Source: NEPC (1999).

6.1 Chain Of Custody

Chain of Custody forms should be provided by the receiving NATA laboratory on delivery/collection of sample containers. The chain of custody details the collection and transportation of samples. An example chain of custody form is given in Appendix B. It is primarily used to aide sample traceability. The minimum criteria for a chain of custody form, described in *Development of Sampling and Analysis Programs* (DEP, 2001) include:

- the name of the people transferring and receiving the samples;
- the time and date the samples were taken and received at the laboratory;
- condition of the samples (temperature) and the use of ice bricks etc;
- name and contact details of the client;
- analytes to be measured;
- details of the sample matrix;
- required limits of reporting (detection limits);
- criteria to be compared against, i.e. Ecological Investigation Levels; and
- any additional notes or comments.

Adherence to all described QA/QC methods listed in Section 6, with an emphasis on sample traceability (chain of custody), sample integrity and the use of QC samples to validate sampling methods is recommended.

7 Laboratory QA/QC

Laboratory analysis should be undertaken by a NATA registered laboratory and is therefore fully compliant with ISO:9001. NATA accredited laboratories will have in-house QA and QC systems and detailed procedures to maximise the accuracy of testing and integrity of results.

Limits of reporting (LOR) from test methods performed should be appropriate to this SAP. Testing by a NATA accredited laboratory will have LORs similar to the preliminary testing shown and should meet the same criteria for QA/QC. Common LORs and test methods, compared against EILs for the analytes to be tested are shown in Table 11.

The surrogate spikes and matrix spikes, together with their percentage recoveries, should be appropriate for the purposes of this SAP. Surrogate and matrix spikes are QC procedures used to test the accuracy of laboratory methods by adding a known amount of an analyte (i.e. Zinc) to a blank sample and measuring its concentration. The measured concentration is compared with the predicted or known concentration and given as a percentage.

Further inspection of laboratory reports, considering that most analytes are expected to be present in concentrations below their LOR (detection limits), should reveal that appropriate measures were taken to satisfy the requirements for proper QA/QC.

Table 91: Comparison of test procedure LORs to EIL.

Analyte	Limit of Reporting in mg/kg	Ecological Investigation Level in mg/kg (DoE, 2003)	Test Method
Arsenic, As	5	20	AN045-AN321
Cadmium, Cd	0.4	3	AN045-AN321
Chromium, Cr	5	50	AN045-AN321
Copper, Cu	5	60	AN045-AN321
Mercury, Hg	0.05	1	AN045-AN321
Nickel, Ni	4	60	AN045-AN321
Lead, Pb	5	300	AN045-AN321
Zinc, Zn	5	200	AN045-AN321
Total Organic Carbon (TOC)	0.01%	N/A	CSA03V
Organochlorine Pesticides (OC)	0.1 – 0.2	1	PEO-100
C_6-C_9	20	100	AN403
C_{10}-C_{14}	20	500	AN403
C_{15}-C_{28}	45	1000	AN403

Laboratory QA/QC procedures such as matrix spikes in analysis results should be checked to ensure analysis methods are providing accurate and comparable results.

8 QA/QC data evaluation

Australian Standard 4482.1:2005 suggests that the typical relative percent difference (RPD) can be calculated to evaluate the quality control of samples. Typical RPD should be within the range of 30% to 50% of the mean concentration of each analyte. That is to say, the difference between duplicate or split sample concentrations is within 30 to 50% of the analyte's mean concentration.

However, for low concentrations of analytes, especially where the limit of reporting is close to investigation levels, a higher variation can be expected. Variation is also expected to be higher for organic samples (SA, 2005). Acceptable criteria for duplicate (blind) samples, split samples and blank samples are given in Table 12:

Table 12: Acceptable criteria for QC samples, including typical RPD, adapted from AS4482.1-2005.

QC Sample	Minimum No. of Samples	Typical RPD for QC Samples
Duplicate sample	One for every 20 samples or batch* collected.	30-50% of the mean concentration of the analyte.
Split sample	One for every 20 samples or batch* collected during further analysis.	30-50% of the mean concentration of the analyte.
Blank sample	One per matrix per piece of equipment per day.	The significance of the blank analysis will need to be evaluated with respect to each field samples.

* If the number of samples in one batch is less than 20.

Typical RPD can be calculated using:

$$\textbf{Relative Percent Difference (RPD)} = \frac{\textbf{Result No. 1 – Result No. 2}}{\textbf{Mean Result}} \times 100$$

For example, if two measured concentrations for Zinc from duplicate samples are 30mg/kg and 20mg/kg, with the mean concentration being 25mg/kg, the RPD of Zinc in the sample would be 40%. This is considered an acceptable result.

The concentration of contaminants in clean fill material should generally be below the LORs of the test procedures. Low concentrations can decrease the effectiveness of RPD as a QC evaluation tool. Therefore, RPD may not be applicable or of particular relevance/significance due to the large effect on typical RPD by an incremental increase in the concentration of an analyte. Also, where analytes have concentrations below LORs, direct comparison with concentrations above LORs may not be accurate, due to the unknown concentration of the contaminants below LORs.

A review of the laboratory Quality Control Data should reveal that QA/QC procedures, data quality and reporting objectives have been met therefore the results can be considered representative, accurate, reliable and comparable.

9 Basis for adoption of assessment levels

For the purposes of this SAP, clean fill acceptance criteria will need to be met, with all contaminants at concentrations lower than investigation levels and contaminant thresholds.

The assessment of clean fill should adopt the Ecological Investigation Levels (EILs) in consideration of the proposed use of the fill material. Clean fill should not contain material with contaminant concentrations, using the 95% $UCL_{average}$ exceeding either EILs or HILs (DoE, 2005). HIL Category A, the most stringent Health Investigation Level, sets concentration levels higher than EILs therefore as long as concentrations are below EILs then HILs will not exceed investigation levels.

Investigation Levels are not available for some contaminants, such as total organic carbon.

Investigation levels are considered appropriate to ensure there is no risk to humans or the environment associated with using material as clean fill for commercial purposes.

9.1 Investigation Levels

The following investigation levels for contaminants (Table 13), in milligrams per kilogram (mg/kg) should be adopted for analysis of laboratory results.

Table 13: Investigation levels for contaminants as per DoE (2003), unless otherwise stated.

Analyte	Ecological Investigation Level (EIL) (mg/kg)
Metals	
Arsenic, As	20
Cadmium, Cd	3
Chromium, Cr (total)	50
Copper, Cu	60
Mercury, Hg	1
Nickel, Ni	60
Lead, Pb	300
Zinc, Zn	200
Hydrocarbons	
C_6-C_9	100
C_{10}-C_{14}	500
C_{15}-C_{28}	1000
Organochlorine (OC) pesticides	1
Total Organic Carbon (TOC)	N/A

Department of Environment and Conservation's Ecological Investigation Levels should be adopted as acceptance criteria for fill material.

9.2 Statistical Analysis

The assessment of analytical results should be completed with a degree of statistical confidence, i.e. a percentage confidence level. Statistical confidence should demonstrate that a set of data has not occurred by chance and that two data sets are statistically different.

The standard deviation (σ) is a statistical tool used to measure the closeness or variation in a set of data. The standard deviation is used in statistical analysis to determine confidence in the respective data set by adding and subtracting two standard deviations (2σ) from the mean concentration (95% confidence interval). That is to say, for a normally distributed (bell-shaped) population, with most samples close to the mean concentration and little or no outliers, 95% of samples will lie within approximately 2 (1.96) standard deviations of the mean.

The coefficient of variation (CV) is the ratio of the standard deviation to the mean. It measures the relative homogeneity or heterogeneity of a data set. A CV of less than 0.05 indicates a homogenous (normal) distribution, whereas a CV greater than1.2 implies a heterogeneous and highly skewed (log-normal) distribution of results.

A confidence level, similar to the confidence interval, can be used to state that a percentage of a data set is at, below or greater than a particular concentration. Statistical analysis commonly uses a 95% confidence level as 95% is a typical level of statistical significance. A 95% confidence level equates to 5% risk, which has been adopted by state authorities for statistically measuring confidence in a data set (DoE, 2005; NSW EPA, 1995; VIC EPA, 2007).

Concentrations should be assessed against relevant EIL's using the following:

- use of the co-efficient of variation (CV) to determine relative homogeneity or heterogeneity; and
- use of the 95% $UCL_{average}$ to show statistical confidence that contaminant(s) are at or below the stated concentration (EIL), refer to Equation 1.

Using the 95% $UCL_{average}$, concentrations should be assessed against the relevant EIL. Where more than one individual sample exceeds twice the EILs concentration the 95% $UCL_{average}$, is not considered appropriate. Further sampling and analysis will be required in this instance or when 95% $UCL_{average}$ results exceed relevant EILs.

9.2.1 Equation 1: CV and 95% $UCL_{average}$ for Homogenous Data

The co-efficient of variation is given as:

$CV = \sigma/\mu$

Where σ = standard deviation of the data set; and
μ = the mean concentration of the data set.

The standard deviation is calculated as:

$\sigma = \sqrt{[\sum(x-\mu)^2/(n-1)]}$

Where σ = standard deviation of the data set;
x = an individual sample concentration;
μ = mean concentration of the data set;
n = number of samples measured in the data set;
$\sqrt{}$ = the square root of everything in brackets; and
$\sum$ = total of all deviations squared.

Procedure D of NSW EPA (1995), or Equation 1 of VIC EPA (2007b), can be used to calculate the 95% $UCL_{average}$ of a normal distribution where CV < 1.2 using preliminary results from laboratory analysis. The equation may be manually calculated or aided by computer software, i.e. ProUCL 4.00.04, developed by the USEPA (2009). The equation is given as:

$$UCL_{average} = \frac{\mu + (t_{\alpha(n-1)})(\sigma)}{\sqrt{n}}$$

Where: a = 0.05 (5% risk, 95% confidence);
μ = mean (average of all samples measured);
n = number of samples measured;
σ = standard deviation of all samples measured; and
$t_{\alpha(n-1)}$ = students t at an α level of significance and n-1 degrees of freedom.

Student's *t* scores for n samples at 95% UCL are given in Appendix 4 of VIC EPA (2007).

A worked example of equation 1 for a homogenous data set, including the CV, is shown in section 10.1, where it has been applied to results from preliminary sampling.

9.2.2 Equation 2: CV and 95% $UCL_{average}$ for Heterogeneous Data

Procedure E of NSW EPA (1995), or Equation 2 of VIC EPA (2007b), can be used to calculate the 95% $UCL_{average}$ of a heterogeneous (log-normal) distribution where CV > 1.2. The equation is given as:

$$UCL_{average} = \frac{\exp^*(y + 0.5Sy2 + SyH)}{\sqrt{n-1}}$$

Where y = arithmetic mean of the log-transformed sample measurements;
Sy2 = variance of the log-transformed sample measurements;
n = number of sample measurements;
H = a statistical constant dependant on the value of Sy and n; and
exp = exponential function, i.e. 2.7183 to the power of the value in the brackets.

To log-transform results, each measured contaminant concentration should be multiplied by the natural log function, *In*, (i.e. 25mg/kg * *In* = 3.218876mg/kg log-transformed). The value of *H*, dependant on *Sy* and n, is given in Appendix 5 of VIC EPA (2007).

A worked example of equation 2 for a heterogeneous data set, including the CV, is shown in section 10.1, where it has been applied to results from preliminary sampling.

Statistical analysis using Co-efficient of Variation and 95% Upper Confidence Level (ProUCL) to compare mean contaminant concentrations with relevant acceptance criteria is recommended.

9.3 Sample Results Below The Limit Of Reporting

Where the 95% $UCL_{average}$ is to be calculated for a sample that contains some results with lower concentrations than the limit of reporting (LOR), a value half of the limit of reporting is commonly used (VIC EPA, 2007). This is however unsuitable where the EIL is close to the LOR. Common LORs of test methods used by NATA accredited laboratories to measure analytes for the purpose of this SAP are described in Table 12 and show that none of the LORs for testing are close to their respective EIL. The process of halving a non-detected analyte (below the LOR) is therefore adequate for the 95% $UCL_{average}$ when analysing laboratory results.

9.4 Other Considerations For The Sampling And Analysis Plan

In addition to the contaminant levels and meeting criteria for the classification of clean fill, other aspects outside of the scope of this sampling protocol should be considered:

- geotechnical requirements of fill material (*AS2870-1996* i.e. plasticity, particle size, permeability, maximum dry density etc;
- license and works approval requirements;
- training, i.e. sampling techniques, sampling design and analysis of results; and
- tools for compliance (spreadsheet/flowchart/procedures).

Staff should be adequately trained to carry out the sampling and analysis plan.

10 Demonstrative results

An initial batch of four soil samples were taken by NOD from stockpiles at the site. The samples were analysed by SGS on 13/03/2009 for:

- metals;
- total organic carbon (TOC);
- total petroleum hydrocarbons (TPH);
- organochlorins (OC) and organophosphates (OP);
- benzene, toluene, ethyl benzene and xylene (BTEX); and
- polycyclic aromatic hydrocarbons (PAH).

Measured concentrations of contaminants did not exceed either EILs or Category A HILs. No contaminants measured were greater than 50% of their respective investigation levels. Total Organic Carbon was approximately 0.4% w/w, significantly less than levels typically attributed to significant methane generation. Asbestos forms were not measured.

Four samples are not considered a representative number of samples (minimum number of samples should be 10) therefore assessment of results in this section is for demonstrative purposes only.

10.1 Statistical Analysis Of Preliminary Testing Results

The normal distribution equation and its applicability can be shown by applying it to laboratory results from the four samples taken at the site in March, 2009:

Lead EIL = 300mg/kg:

Sample 1: 14mg/kg;
Sample 2: 12mg/kg;
Sample 3: 13mg/kg; and
Sample 4: 13 mg/kg.

Co-efficient of Variation (CV):
X= 13
σ = 0.8165

Therefore CV = 0.82/13 = 0.06
(> 0.05 relatively homogenous)

Table B of NSW EPA (1995), or Appendix 4 of VIC EPA (2007b) shows student's *t* scores for a particular *confidence level, a* (95%) and *n-1* (3) degrees of freedom. Therefore:
$t_{\alpha,\, n-1}$ = (0.05 x 2.353) = 0.117

95% $UCL_{average}$:
$= 13 + \frac{(0.117)(0.816)}{\sqrt{4}}$
= 13 + 0.047 = 13.047mg /kg

Therefore, 13.05mg/kg is less than 300mg/kg (EIL) so it is acceptable for re-use.

Zinc EIL = 200mg/kg:

Sample 1: 22mg/kg;
Sample 2: 24mg/kg;
Sample 3: 18mg/kg; and
Sample 4: 35mg/kg.

Co-efficient of Variation (CV):
X=24.75
σ = 7.27

Therefore CV = 7.27/24.75 = 0.29
(> 0.05 fairly homogenous)

95% $UCL_{average}$:
= 24.75 + (0.117)(7.27)
$\sqrt{4}$
= 24.75 + 0.425 = 25.17mg/kg

Therefore, 25.17mg/kg is less than 200mg/kg (EIL) so it is acceptable for re-use.

10.2 Ecological Risk Assessment - EIL

Concentrations measured in Section 10 (for demonstrative purposes only) using the 95% $UCL_{average}$ equation did not exceed EIL concentrations therefore the material would be considered acceptable for use as fill material off-site. Should results collected using the SAP prescribed in this document be assessed below EILs then it can be assumed there is no risk to the environment and the material can be used as fill material off-site. Should the EILs be exceeded further analysis would be required to assess the material against *Landfill Waste Classification and Waste Definitions* (DoE, 2005). Should further sampling and analysis record concentrations above EILs then the material is not considered suitable for re-use unless remediated as it poses a risk to the environment.

Adverse environmental effects from the process of screening of waste at the site to produce the fill material will be managed by procedures recommended in the Operation Management Plan.

10.3 Health Risk Assessment – Category A HIL

Concentrations measured during this assessment did not exceed or approach EILs and therefore did not approach HIL Category A concentrations. The mean concentration of each analyte was statistically different to HILs and was not deemed elevated enough to warrant further actions and/or remediation. Results obtained from preliminary sampling show no potentially adverse health effects from use of the fill material.

Asbestos is not accepted at the facility. Asbestos should therefore not be present at the site, however quantitative testing should be completed to back this up with evidence. All asbestos should be disposed at a site approved by the Environmental Protection Authority, (NOHSC:2002(2005)) and the Department of Health (2009).

Based on the results obtained and assessed during this investigation, there is no evidence to indicate a potential health risk to the future end users of the soil.

10.4 Discussion Of Demonstrative Results

Limits of reporting for the four samples were all below EILs and therefore Category A HILs. The laboratory test methods were considered to be appropriate for assessing the material's potential clean status and potential waste classification.
However, the number of samples (four) is not considered an adequate number (too low) for statistical analysis of potential contaminants from the proposed clean fill material. The 95% $UCL_{average}$ used to show confidence in the results recommends ten samples or one sample per 250m^3, whichever is more frequent (VIC EPA, 2007b).

Asbestos was not tested. Although asbestos is not accepted for disposal at the site, asbestos containing materials (ACM) may be inadvertently added to waste piles on demolition sites that are marked for disposal at NOD. Another potential source of ACM is the deliberate placement of ACM on waste piles at demolition sites by contractors that do not want to go through asbestos disposal procedures, especially if the amount present is small. For these reasons and in compliance with DoH (2009), further sampling must feature asbestos testing and analysis.

Field QA/QC procedures were not documented, i.e. where the samples were taken from (stockpile number, GPS coordinates), sample history (origin), sampling techniques used and other details such as equipment used, sampling depth, holding times, sample preservation and sample transportation.

Field QA procedures, such as duplicate samples, split samples and blanks were not taken. This inhibited the comparison of field sampling procedures (variation in results from one sampling site), laboratory analysis procedures (between SGS and another NATA accredited laboratory) and cross contamination due to containers, storage or transportation.

Laboratory QA/QC procedures, i.e. matrix spikes and blank samples all gave adequate data and accurate results to show traceability and confidence in laboratory procedures.

11 Conclusions and recommendations

The following is recommended for the classification of the end product material as clean fill:

- stockpiles should be categorised into those posing a high, medium or low risk and should not be blended together at any time;
- the sampling design should incorporate a minimum frequency of one sample per $250m^3$, with a minimum of ten samples for stockpiles between $200m^3$ and $2,500m^3$ in volume. Time intervals for sampling should be based on hours of production divided by the number of samples to be taken (10);
- asbestos sampling should be at a 4:1 ratio ($1:70m^3$) for clean fill testing for high and medium risk material with sampling in accordance with DoH (2009). The asbestos sampling frequency should be, at minimum, twice hourly for every hour of production on high and medium risk material, assuming 210t/hr production rate;
- the sampling pattern should incorporate stratified random sampling from the conveyor belt;
- sampling techniques should incorporate engineered devices that enable efficient, accurate sampling of the entire conveyor (either stopped or moving) cross-section, with no adverse accuracy, safety and/or manual handling aspects;
- sampling for asbestos should be in accordance with DoH (2009) and tested by a NATA accredited laboratory in accordance with AS4964-2004;
- samples should be placed in provided containers (250mL glass jars) and should be filled with the sample, except for asbestos, where DoH (2009) recommends providing a 500mL wetted sample in a durable and appropriate sample bag;
- sample holding times must be kept to a minimum, ideally being immediately transported to the proposed laboratory or the next morning at latest;
- samples should be transported in eskies provided by the laboratory;
- all sample details and chain of custody forms must be kept and where appropriate given to the laboratory to aide analysis;
- contaminants should be assessed against levels given in DoE (2003) EILs and DoH (2009) to determine the classification of the material and whether it meets acceptable criteria for clean fill;
- appropriate statistical methods such as the co-efficient of variation and the 95% upper confidence level should be used to state with a level of statistical confidence that each contaminant is at or below criteria; and
- classification and analysis results should be made available to the appropriate decision making authorities and the material must not be sold until it is approved as clean fill.

12 Glossary and abbreviations

Table 10: Abbreviations and terms used in the Sampling and Analysis Plan.

Term	Definition
ACM	Asbestos Containing Material – these are usually large pieces of asbestos-cement greater than 7mm.
AF	Asbestos Fines – respirable asbestos that may become airborne.
Analyte	Any chemical compound, element or parameter as a subject for analysis.
Assessment	Study, may involve reviews of literature, reports, data and information and/or field inspections and/or investigations, to ascertain environmental status or possible and actual contamination.
Assessment Levels	Guideline concentrations of contaminants adopted by the DoE to be used as a comparison against which to assess the presence and severity of contamination at a site.
Background Concentrations	Naturally occurring ambient concentrations in the local areas of a site.
Beneficial Use	The use of the environment, or any portion thereof, which is: (a) conducive to public benefit, public amenity, public safety, public health or aesthetic enjoyment; or (b) identified and declared under Section 35(2) of the *Environment Protection Act, 1986* (as amended) to be a beneficial use to be protected under an approved policy.
Bioavailability	Availability of contaminants in a form in which organisms or biota can assimilate contaminants e.g. contaminants being in a dissolved state or capable of being solubilised once ingested.
Blank Samples	These samples provide information ensuring that there is no cross-contamination of substances from the sampling equipment used. Blank samples should be collected where the investigation level for a contaminant is near the detection limit for the contaminant. All blanks collected during the decontamination process (one blank per day, per matrix per piece of equipment) should be analysed for the analytes of interest.
Blind replicate samples	Samples used to identify the variation in analyte concentration between samples collected from the same sampling point and/or also the repeatability of the laboratory's analysis. The blind samples should be taken from a larger than normal quantity of soil collected from the same sampling point, removed from the ground in a single action, mixed as thoroughly as practicable, and divided into two replicate samples using a suitable divider.
BTEX	Benzene, toluene, ethyl benzene and xylene.
Clean Fill	Material that will have no harmful effects on the environment and which consists of soil or rock arising from excavating undisturbed material. Material not from a clean excavation must be validated to have possible contaminants below the Ecological Investigation Levels.
Composite Sample	The bulking and thorough mixing of equal quantities of soil samples collected from more than one sample location to form a single soil sample for chemical analysis.
Contaminant	A substance which has the potential to present a risk of harm to human health or any environmental value.

Term	Definition
Contaminated	In relation to soil and water, means that a substance is present in, or on or under that soil, or in that water, at a concentration that present, or has the potential to present, a risk of harm to human health or any environmental value.
Contamination	The condition of land and water where any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact.
CV	The co-efficient of variation is the ratio of the standard deviation to the mean of a data set and is a measure of the relative homogeneity or heterogeneity of the data set.
Data Quality Objective	Qualitative and quantitative statements specifying the quality of data required.
DEC	Department of Environment and Conservation (WA).
DEP	Department of Environmental Protection (WA), now DEC.
Detailed Site Investigation (Report)	A report on an investigation of a site and includes detailed information on the nature and distribution of contaminants on a contaminated, or potentially contaminated, site.
DoE	Department of Environment (WA), now DEC.
DoH	Department of Health (WA).
Ecosystem	Unit including a community of organisms, the physical and chemical environment of that community, and all the interactions among those organisms and between the organisms and their environment.
EIL	Ecological investigation level is the concentration of a contaminant below which adverse impacts upon site-specific ecological values are unlikely to occur.
EPA	Environmental Protection Authority.
FA	Fibrous asbestos – ACM that has been worn down by mechanical action.
Hazard	The intrinsic capacity of a chemical, biological, physical or social agent to produce a particular type of adverse health or ecological effect.
Health	Freedom from disease or ailment.
Heterogeneous	A material is heterogeneous, i.e. is non-uniform and has a log-normal distribution of results if the co-efficient of variation is greater than 1.2.
HIL	Health Investigation Level to assess contamination where there: (a) is no adverse impact, or little potential for any adverse impact, to the environment, or the environmental value or beneficial use of an environmental receptor; and therefore (b) the adverse impacts arising from contamination at a site are to human health only.
Homogeneous	A material is homogenous, i.e. is uniform and has a normal distribution of results if the co-efficient of variation is less than 1.2.
Landfill	In relation to the legal disposal of contaminated material, landfill means a site used for disposal of solid material by burial in the ground that is licensed under the *Environmental Protection Act, 1986*.
LEL	The Lower Explosive Limit is the lowest concentration by volume in air that a gas will burn or explode. For methane, the LEL is considered to be 5% by volume in air.
NEPC	National Environment Protection Council.

Term	Definition
NEPM	National Environmental Protection Measure.
NOD	Non organic disposals.
NSW EPA	Environmental Protection Authority of New South Wales.
PAH	Petroleum Aromatic Hydrocarbons.
PASS	Potential Acid Sulfate Soils – soils that contain pyrites and other compounds that have the potential to leach acid when disturbed.
Preliminary Site Investigation (Report)	An investigation consisting of a desk study, a detailed site inspection and, where appropriate, limited sampling. The preliminary site investigation should be of such scope as to be sufficient to indicate whether contamination is present or likely to be present and to determine whether a detailed site investigation should be conducted and to provide information for designing a detailed site investigation. A report for a phase 1 preliminary investigation of a site and includes information on the potential risks posed by a site.
Remediation	Action taken to eliminate, limit, correct, counteract, mitigate or remove any contaminant or the negative effects on the environment or human health of any contaminant.
Risk	The probability in a certain timeframe that an adverse outcome will occur in a person, a group of people, plants, animals and/or the ecology or water resources of a specific area that is exposed to a particular dose or concentration of a hazardous agent i.e. it depends on both the level of toxicity of the hazardous agent and the level of exposure.
Risk Assessment	Process of estimating the potential impact of a chemical, biological or physical agent on humans, plants, animals and the ecology.
Safety	Freedom from injury or danger.
Sample Design	The number of samples to be taken for each round of testing. This is dependent on volume and may also be called the sampling frequency.
Sample Pattern	The location of sampling points within a sampling area.
Sampling Frame	A metal frame with the same approximate width as the conveyor belt to be used to isolate a sample increment from other material with the aim of reducing bias in sampling.
Sampling Technique	A set of methods or procedures to ensure accurate and unbiased sampling of the proposed clean fill material.
Site	An area of land or underground water being investigated or assessed for contamination.
Split samples	These samples provide a check on the analytical proficiency of the laboratories. The samples should be taken from a larger than normal quantity of soil collected from the same sampling point, removed from the ground in a single action, mixed as thoroughly as practicable and divided into two replicate samples using a suitable divider. One sample from each set should be submitted to a different laboratory for analysis. The same analytes should be determined by both laboratories, using the same analytical methods.
TOC	Total Organic Carbon.
TPH	Total Petroleum Hydrocarbons.
UEL	The Upper Explosive Limit is the highest concentration by volume in air that a gas will burn or explode. For methane, the UEL is considered to be 15% by volume in air.

Term	Definition
USEPA	United States Environmental Protection Agency.
VIC EPA	Environmental Protection Authority of Victoria.
Work Area	An area affected by site investigation activities and includes the exclusion zone, decontamination zone and support zone.
95% $UCL_{average}$	The 95% Upper Confidence Level of a set of data. This states with a level of statistical confidence (95%) that the mean of the true data set is at or below the stated value.

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APPENDIX A: Laboratory results from preliminary testing

APPENDIX B – Example chain of custody form

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
COOLER SEAL (circle appropriate)	
Intact: Yes No N/A	Stockpile 123475- 14/08/09
SAMPLE TEMPERATURE	07:00 to 17:00 production
CHILLED: Yes No	

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION													
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles		Heavy Metals - S-02	TPH - EP080/EP071	OC Pesticides - S-12	TOC - EP004							
	L1	s	14-Aug	7:28	Jar	1		X	X	X	X							
	L2	s	14-Aug	8:17	Jar	1		X	X	X	X							
	L3	s	14-Aug	9:03	Jar	1		X	X	X	X							
	L4	s	14-Aug	10:48	Jar	1		X	X	X	X							
	L5	s	14-Aug	11:58	Jar	1		X	X	X	X							
	L6	s	14-Aug	12:14	Jar	1		X	X	X	X							
	L7	s	14-Aug	13:44	Jar	1		X	X	X	X							
	L8	s	14-Aug	14:21	Jar	1		X	X	X	X							
	L9	s	14-Aug	15:35	Jar	1		X	X	X	X							
	L10	s	14-Aug	16:12	Jar	1		X	X	X	X							

NOD CoC now in use

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY

COOLER SEAL (circle appropriate)

Intact: Yes No N/A

SAMPLE TEMPERATURE

CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

Stockpile 123475- 14/08/09

07:00 to 17:00 production

Notes: e.g. Highly contaminated samples

e.g. "High PAHs expected".

Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Asbestos - ASB
	LA1	s	14-Aug	7:28	Bag	1	X
	LA2	s	14-Aug	7:34	Bag	1	X
	LA3	s	14-Aug	8:11	Bag	1	X
	LA4	s	14-Aug	8:56	Bag	1	X
	LA5	s	14-Aug	9:23	Bag	1	X
	LA6	s	14-Aug	9:47	Bag	1	X
	LA7	s	14-Aug	10:05	Bag	1	X
	LA8	s	14-Aug	10:32	Bag	1	X
	LA9	s	14-Aug	11:12	Bag	1	X
	LA10	s	14-Aug	11:45	Bag	1	X
	LA11	s	14-Aug	12:16	Bag	1	X
	LA12	s	14-Aug	12:32	Bag	1	X

NOD CoC now in use

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
Stockpile 123475- 14/08/09
07:00 to 17:00 production

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Asbestos - ASB
	LA13	s	14-Aug	13:25	Bag	1	X
	LA14	s	14-Aug	13:58	Bag	1	X
	LA15	s	14-Aug	14:22	Bag	1	X
	LA16	s	14-Aug	14:40	Bag	1	X
	LA17	s	14-Aug	15:05	Bag	1	X
	LA18	s	14-Aug	15:58	Bag	1	X
	LA19	s	14-Aug	16:12	Bag	1	X
	LA20	s	14-Aug	16:36	Bag	1	X

NOD CoC now in use

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

APPENDIX C – Delivery record

NON ORGANIC DISPOSALS

CELL 6 PTY LTD ACN 130 417 542 AS TRUSTEE FOR THE CELL 6 UNIT TRUST

LOT 1441 FURNISS ROAD, LANDSDALE WA 6065

Delivery Record

Superceded DATE: ../ / 20 .

Name of Driver	
Company Details	
Vehicle Rego	
Site of Waste Origin	
Site / Waste Type	**Construction / Demolition / Bins / Other** **....** (please circle one)

CIRCLE WASTE CATEGORY DELIVERED THIS LOAD:

Grade 1 (G1)	Clean fill.
Grade 2 (G2)	Sand, gravel, limestone, road materials (<50mm).
Grade 3 (G3)	Bricks, tiles, sand and concrete.
Grade 4 (G4)	Loads with reinforced concrete, steel and iron sheeting.

No wood, green waste or grass allowed in Grades 1-4.

Grade 5 (G5)	Mixed Loads.
Grade 6 (G6)	Lawn/Grass.

Not accepted on Site:

Asbestos / Household Rubbish / Fibreglass / Tyres / Liquid / Car Bodies / Chemicals / Trees & stumps / Motor Oils / Plastic / Carpet / Food waste / Office Waste / Wire Fencing

Signed:

VOLUME DELIVERED [ ] M3 No 73401

Souperceded

Appendix B

ALS Group

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EP1301293**	Page	: 1 of 6
Client	: **NON ORGANIC DISPOSALS**	Laboratory	: Environmental Division Perth
Contact	: PETER MARGETIC	Contact	: Scott James
Address	: LOT 1441 FURNISS ROAD LANDSDALE WESTERN ASUTRALIA 6065	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: peter.margetic@mzm.com.au	E-mail	: perth.enviro.services@alsglobal.com
Telephone	: 0408 092 468	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: Soil Testing	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-FEB-2013
Sampler	: Peter Margetic	Issue Date	: 28-FEB-2013
Site	: Non Organic Disposals - LANDSD		
		No. of samples received	: 3
Quote number	: EP/633/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 't' Trace levels**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2011 NEPM for Assessment of Site Contamination**
- **EA200Q: Estimations of Asbestos weight and Percentage are not covered under the Scope of NATA Accreditation.**
  Weights and Percentages of Asbestos are approximate estimates only. Weights and percentage estimates are based on extracted fibres, visual estimates and estimated Asbestos content in ACM. All numerical results under this method are approximate and should be used as a guide only. Asbestos Fines LOR is extrapolated from AS4964 based on the number of fibres found in trace analysis.
- **EG005T: Poor matrix spike recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**
- **EP068(Pesticides): Poor MS analyte recovery due to matrix effects. Confirmed by re-analysis.**

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Agnes Szilagyi	Senior Organic Chemist	Perth Organics Perth Organics
Chas Tucker	Inorganic Chemist	Perth Inorganics
Peter Rennie	Asbestos Identifier	Newcastle
Scott James	Laboratory Manager	Perth Inorganics Perth Inorganics

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		20130221 A	20130221 B	20130221 C	----	----
		Client sampling date / time		21-FEB-2013 09:15	21-FEB-2013 09:15	21-FEB-2013 09:15	----	----
Compound	CAS Number	LOR	Unit	EP1301293-001	EP1301293-002	EP1301293-003	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	**4.1**	**2.3**	**3.4**	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	----	----
Asbestos Type	1332-21-4	0.1	--	-	-	-	----	----
Sample weight (dry)	----	0.01	g	**1210**	**1320**	**1290**	----	----
APPROVED IDENTIFIER:	----	-	--	**P.RENNIE**	**P.RENNIE**	**P.RENNIE**	----	----
EA200Q: Asbestos Quantification (non-NATA)								
Weight Used for % Calculation	----	0.0010	kg	**1.21**	**1.32**	**1.29**	----	----
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%	<0.01	<0.01	<0.01	----	----
^ Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%	<0.001	<0.001	<0.001	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**4**	**4**	**6**	----	----
Copper	7440-50-8	5	mg/kg	<5	**5**	<5	----	----
Lead	7439-92-1	5	mg/kg	**10**	**13**	**9**	----	----
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	**23**	**25**	**21**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP004: Organic Matter								
Organic Matter	----	0.5	%	**1.6**	**1.2**	**1.1**	----	----
Total Organic Carbon	----	0.5	%	**0.9**	**0.7**	**0.6**	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	20130221 A	20130221 B	20130221 C	----	----
			Client sampling date / time	21-FEB-2013 09:15	21-FEB-2013 09:15	21-FEB-2013 09:15	----	----
Compound	CAS Number	LOR	Unit	EP1301293-001	EP1301293-002	EP1301293-003	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	**0.08**	**0.06**	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	**0.08**	**0.06**	<0.05	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
C6 - C10 Fraction	----	10	mg/kg	<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**69.9**	**81.9**	**66.3**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**99.0**	**119**	**98.9**	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

			Client sample ID	20130221 A	20130221 B	20130221 C	----	----
			Client sampling date / time	21-FEB-2013 09:15	21-FEB-2013 09:15	21-FEB-2013 09:15	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EP1301293-001**	**EP1301293-002**	**EP1301293-003**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**94.3**	**85.5**	**86.3**	----	----
Toluene-D8	2037-26-5	0.1	%	**95.6**	**94.4**	**96.3**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**97.0**	**97.4**	**93.0**	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	20130221 A - 21-FEB-2013 09:15	Mid brown sandy soil with some small grey rocks plus plenty of organic fibre board debris and a trace of vegetation
EA200: Description	20130221 B - 21-FEB-2013 09:15	Mid brown sandy soil with some small grey rocks plus plenty of organic fibre board debris and a trace of vegetation
EA200: Description	20130221 C - 21-FEB-2013 09:15	Mid brown sandy soil with some small grey rocks plus plenty of organic fibre board debris and a trace of vegetation

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	53.4	152.4
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	27.5	151.7
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63.2	132
Toluene-D8	2037-26-5	66.0	125.4
4-Bromofluorobenzene	460-00-4	60.4	124

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EP1301293**	Page	: 1 of 9
Client	: **NON ORGANIC DISPOSALS**	Laboratory	: Environmental Division Perth
Contact	: PETER MARGETIC	Contact	: Scott James
Address	: LOT 1441 FURNISS ROAD LANDSDALE WESTERN ASUTRALIA 6065	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: peter.margetic@mzm.com.au	E-mail	: perth.enviro.services@alsglobal.com
Telephone	: 0408 092 468	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: Soil Testing	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: Non Organic Disposals - LANDSD		
C-O-C number	: ----	Date Samples Received	: 21-FEB-2013
Sampler	: Peter Margetic	Issue Date	: 28-FEB-2013
Order number	: ----		
		No. of samples received	: 3
Quote number	: EP/633/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

NATA Accredited Laboratory 825

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WORLD RECOGNISED ACCREDITATION

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Agnes Szilagyi	Senior Organic Chemist	Perth Organics
		Perth Organics
Chas Tucker	Inorganic Chemist	Perth Inorganics
Peter Rennie	Asbestos Identifier	Newcastle
Scott James	Laboratory Manager	Perth Inorganics
		Perth Inorganics

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	***Client sample ID***	***Method: Compound***	***CAS Number***	***LOR***	***Unit***	***Original Result***	***Duplicate Result***	***RPD (%)***	***Recovery Limits (%)***
EA055: Moisture Content (QC Lot: 2742012)									
EP1301293-001	20130221 A	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	4.1	3.7	11.0	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 2744829)									
EP1301249-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	128	120	6.2	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	52	51	2.6	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	20	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	42	37	12.8	No Limit
EP1301293-002	20130221 B	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	25	35	32.5	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2744830)									
EP1301249-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP1301293-002	20130221 B	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP004: Organic Matter (QC Lot: 2741950)									
EP1301293-001	20130221 A	EP004: Organic Matter	----	0.5	%	1.6	1.3	22.2	No Limit
		EP004: Total Organic Carbon	----	0.5	%	0.9	0.7	22.2	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2741086)									
EP1301289-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2741086) - continued									
EP1301289-001	Anonymous	EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP1301289-012	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2741083)									
EP1301289-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP1301289-012	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2741085)									
EP1301289-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP1301289-011	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2741083)									
EP1301289-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP1301289-012	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2741085)									
EP1301289-001	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP1301289-011	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2744829)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.75 mg/kg	98.9	85.5	116
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	98.6	82.2	112
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	98.1	90	112
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	101	93	115
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	104	88.8	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	103	91	115
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	101	86.6	113
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2744830)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.36 mg/kg	96.8	75.4	121
EP004: Organic Matter (QCLot: 2741950)								
EP004: Organic Matter	----	0.5	%	<0.5	85 %	99.6	70	130
EP004: Total Organic Carbon	----	0.5	%	<0.5	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 2741086)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	5 mg/kg	97.1	47	139
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	5 mg/kg	97.5	46	138
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	5 mg/kg	92.5	50	132
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	5 mg/kg	94.3	50	138
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	5 mg/kg	94.0	49	135
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	5 mg/kg	96.2	46	140
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	5 mg/kg	141	47	141
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	5 mg/kg	91.7	48	136
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	5 mg/kg	94.0	48	134
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	5 mg/kg	65.7	45	139
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	5 mg/kg	92.4	47	135
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	5 mg/kg	92.5	44	142
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	5 mg/kg	92.6	48	138
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	5 mg/kg	86.2	44	150
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	5 mg/kg	92.0	44	140
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	5 mg/kg	93.5	40	138
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	5 mg/kg	100	28.3	136
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	5 mg/kg	108	43	139
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	5 mg/kg	122	34	154
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	5 mg/kg	105	43	135
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	5 mg/kg	126	33	149

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741083)								
EP071: C10 - C14 Fraction	----	25	mg/kg	----	1130 mg/kg	94.1	47	135
		50	mg/kg	<50	----	----	----	----
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	2505 mg/kg	87.7	63	129
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	351 mg/kg	84.9	53	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741085)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	32 mg/kg	107	64	134
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741083)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1779 mg/kg	91.6	61	133
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	2123 mg/kg	84.1	63	135
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	87 mg/kg	81.9	50	140
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741085)								
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	37 mg/kg	113	61	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 2744829)							
EP1301249-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	78.2	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	111	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	96.0	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	# 44.8	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	96.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2744830)							
EP1301249-002	Anonymous	EG035T: Mercury	7439-97-6	10 mg/kg	97.3	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2741086)							
EP1301289-002	Anonymous	EP068: gamma-BHC	58-89-9	5 mg/kg	89.8	57.9	124
		EP068: Heptachlor	76-44-8	5 mg/kg	77.4	57.4	135
		EP068: Aldrin	309-00-2	5 mg/kg	# 52.2	59.6	125
		EP068: Dieldrin	60-57-1	5 mg/kg	99.2	62.2	131

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP068A: Organochlorine Pesticides (OC) (QCLot: 2741086) - continued							
EP1301289-002	Anonymous	EP068: Endrin	72-20-8	5 mg/kg	# Not Determined	55.8	138
		EP068: 4.4`-DDT	50-29-3	5 mg/kg	# 48.5	50.5	145
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741083)							
EP1301289-002	Anonymous	EP071: C10 - C14 Fraction	----	1130 mg/kg	90.5	64.7	126
		EP071: C15 - C28 Fraction	----	2505 mg/kg	82.8	61.7	124
		EP071: C29 - C36 Fraction	----	351 mg/kg	84.0	64.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741085)							
EP1301289-002	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	96.2	69.1	135
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741083)							
EP1301289-002	Anonymous	EP071: >C10 - C16 Fraction	----	1779 mg/kg	87.1	64.7	126
		EP071: >C16 - C34 Fraction	----	2123 mg/kg	79.9	61.7	124
		EP071: >C34 - C40 Fraction	----	87 mg/kg	96.6	64.6	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741085)							
EP1301289-002	Anonymous	EP080: C6 - C10 Fraction	----	33 mg/kg	96.0	69.1	135

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Spike Recovery (%) MSD	Recovery Limits (%) Low	Recovery Limits (%) High	RPDs (%) Value	RPDs (%) Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741083)										
EP1301289-002	Anonymous	EP071: C10 - C14 Fraction	----	1130 mg/kg	90.5	----	64.7	126	----	----
		EP071: C15 - C28 Fraction	----	2505 mg/kg	82.8	----	61.7	124	----	----
		EP071: C29 - C36 Fraction	----	351 mg/kg	84.0	----	64.6	131	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741083)										
EP1301289-002	Anonymous	EP071: >C10 - C16 Fraction	----	1779 mg/kg	87.1	----	64.7	126	----	----
		EP071: >C16 - C34 Fraction	----	2123 mg/kg	79.9	----	61.7	124	----	----
		EP071: >C34 - C40 Fraction	----	87 mg/kg	96.6	----	64.6	131	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2741085)										
EP1301289-002	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	96.2	----	69.1	135	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2741085)										
EP1301289-002	Anonymous	EP080: C6 - C10 Fraction	----	33 mg/kg	96.0	----	69.1	135	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 2741086)										
EP1301289-002	Anonymous	EP068: gamma-BHC	58-89-9	5 mg/kg	89.8	----	57.9	124	----	----

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EP068A: Organochlorine Pesticides (OC) (QCLot: 2741086) - continued											
EP1301289-002	Anonymous	EP068: Heptachlor	76-44-8	5 mg/kg	77.4	----	57.4	135	----	----	
		EP068: Aldrin	309-00-2	5 mg/kg	# 52.2	----	59.6	125	----	----	
		EP068: Dieldrin	60-57-1	5 mg/kg	99.2	----	62.2	131	----	----	
		EP068: Endrin	72-20-8	5 mg/kg	# Not Determined	----	55.8	138	----	----	
		EP068: 4.4`-DDT	50-29-3	5 mg/kg	# 48.5	----	50.5	145	----	----	
EG005T: Total Metals by ICP-AES (QCLot: 2744829)											
EP1301249-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	78.2	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	111	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	----	70	130	----	----	
		EG005T: Copper	7440-50-8	50 mg/kg	96.0	----	70	130	----	----	
		EG005T: Lead	7439-92-1	50 mg/kg	102	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	# 44.8	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	50 mg/kg	96.4	----	70	130	----	----	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2744830)											
EP1301249-002	Anonymous	EG035T: Mercury	7439-97-6	10 mg/kg	97.3	----	70	130	----	----	

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EP1301293**	Page	: 1 of 6
Client	: NON ORGANIC DISPOSALS	Laboratory	: Environmental Division Perth
Contact	: PETER MARGETIC	Contact	: Scott James
Address	: LOT 1441 FURNISS ROAD LANDSDALE WESTERN ASUTRALIA 6065	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: peter.margetic@mzm.com.au	E-mail	: perth.enviro.services@alsglobal.com
Telephone	: 0408 092 468	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: Soil Testing	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: Non Organic Disposals - LANDSD		
C-O-C number	: ----	Date Samples Received	: 21-FEB-2013
Sampler	: Peter Margetic	Issue Date	: 28-FEB-2013
Order number	: ----		
		No. of samples received	: 3
Quote number	: EP/633/11 V2	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**----**	----	----	**22-FEB-2013**	07-MAR-2013	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**---**	20-AUG-2013	----	**27-FEB-2013**	26-AUG-2013	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**25-FEB-2013**	20-AUG-2013	✓	**25-FEB-2013**	20-AUG-2013	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**25-FEB-2013**	21-MAR-2013	✓	**25-FEB-2013**	21-MAR-2013	✓
EP004: Organic Matter								
Soil Glass Jar - Unpreserved (EP004)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**25-FEB-2013**	28-FEB-2013	✓	**27-FEB-2013**	25-MAR-2013	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**22-FEB-2013**	07-MAR-2013	✓	**25-FEB-2013**	06-APR-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
Soil Glass Jar - Unpreserved (EP071)								
20130221 A, 20130221 C	20130221 B,	**21-FEB-2013**	**22-FEB-2013**	07-MAR-2013	✓	**25-FEB-2013**	06-APR-2013	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft							
Soil Glass Jar - Unpreserved (EP080) 20130221 A, 20130221 B, 20130221 C	**21-FEB-2013**	**22-FEB-2013**	07-MAR-2013	✓	**22-FEB-2013**	07-MAR-2013	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organic Matter	EP004	2	3	**66.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organic Matter	EP004	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Asbestos - Quantitative Analysis	* EA200Q	SOIL	Estimation of Asbestos content with Confirmation of Identification by AS 4964 - 2004 Asbestos
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection ($SnCl_2$)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by $SnCl_2$ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na_2SO_4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na_2SO_4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EP1301249-002	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EP1301249-002	Anonymous	**Nickel**	7440-02-0	44.8 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EP1301289-002	Anonymous	**Aldrin**	309-00-2	52.2 %	59.6-125%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EP1301289-002	Anonymous	**Endrin**	72-20-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP068A: Organochlorine Pesticides (OC)	EP1301289-002	Anonymous	**4.4`-DDT**	50-29-3	48.5 %	50.5-145%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

ALS Group

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EP1301293**

Client	: **NON ORGANIC DISPOSALS**	Laboratory	: Environmental Division Perth
Contact	: PETER MARGETIC	Contact	: Scott James
Address	: LOT 1441 FURNISS ROAD LANDSDALE WESTERN ASUTRALIA 6065	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: peter.margetic@mzm.com.au	E-mail	: perth.enviro.services@alsglobal.com
Telephone	: 0408 092 468	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: Soil Testing	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: EP2011NONORG0003 (EP/633/11 V2)
Site	: Non Organic Disposals - LANDSD		
Sampler	: Peter Margetic	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 21-FEB-2013	Issue Date	: 21-FEB-2013 13:38
Client Requested Due Date	: 28-FEB-2013	Scheduled Reporting Date	: **28-FEB-2013**

Delivery Details

Mode of Delivery	: Client Drop off	Temperature	: 6.8 - Ice present
No. of coolers/boxes	: 1 small foam esky	No. of samples received	: 3
Security Seal	: Not intact.	No. of samples analysed	: 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- **Samples received in appropriately pretreated and preserved containers.**
- **pH analysis should be conducted within 6 hours of sampling.**
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (SamplesPerth@alsenviro.com)
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of Work Order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA200N Asbestos - Estimated Percentage by WA/NEPM	SOIL - EP004 (Carbon) Total Organic Carbon (Calc.)	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - TPH only TPH (C6 - C36)
EP1301293-001	21-FEB-2013 09:15	20130221 A	✓	✓	✓	✓	✓
EP1301293-002	21-FEB-2013 09:15	20130221 B	✓	✓	✓	✓	✓
EP1301293-003	21-FEB-2013 09:15	20130221 C	✓	✓	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	nonorganicdisposals@bigpond.com

PETER MARGETIC

- *AU Certificate of Analysis - NATA (COA)	Email	peter.margetic@mzm.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	peter.margetic@mzm.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	peter.margetic@mzm.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	peter.margetic@mzm.com.au
- Chain of Custody (CoC) (COC)	Email	peter.margetic@mzm.com.au
- EDI Format - ENMRG (ENMRG)	Email	peter.margetic@mzm.com.au
- EDI Format - ESDAT (ESDAT)	Email	peter.margetic@mzm.com.au
- EDI Format - XTab (XTAB)	Email	peter.margetic@mzm.com.au

Non Organic Disposals

Lot 1441 Furniss Rd LANDSDALE 6065

Lab: **ALS**

Quote No: **EP/633/11**

Date: **21/02/2013**

Screen Size: **16 mm Steel**

Site: **Non Organic Disposals - LANDSDALE**

Contact: **Peter Margetic Ph 0408092468**

Sampler: **Peter Margetic Ph 0408092468**

Email Reports: **peter.margetic@mzm.com.au**

Email Invoices: **nonorganicdisposals@bigpond.com**

PLEASE EMAIL COMPLETED CoC to peter.margetic@mzm.com.au

Laboratory Use (Circle)			
Custody Seal Intact	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt	Yes	No	N/A
Random Sample Temperature on Receipt	6.8	C	
Other Comments			

RELINQUISHED BY:	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
Peter Margetic	Rob Gross		
DATE / TIME: 21/2/13 11:50AM	DATE / TIME: 21/2, 11:52	DATE / TIME:	DATE / TIME:

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

LAB USE:	SAMPLE DETAILS: MATRIX: Solid (S) Water (W)			TOTAL CONTAINERS:	ANALYSIS REQUIRED including SUITES									ADDITIONAL INFORMATION
LAB USE:	SAMPLE ID	DATE / TIME	MATRIX	TOTAL CONTAINERS:	8 Metals: AS, Cd, Cr, Cu, Ni, Pb, Zn, Hg	TPH (C6-C36)	OC Pesticide	TOC	Asbestos					
	20130221 A	21/02/2013 9:15 AM	S	2	X	X	X	X	X					
	20130221 B	21/02/2013 9:15 AM	S	2	X	X	X	X	X					
	20130221 C	21/02/2013 9:15 AM	S	2	X	X	X	X	X					

Environmental Division
Perth
Work Order
EP1301293

Telephone : +61-8-9209 7655

Appendix C

Environmental Strategies WA
Trading Name of Deep South Pty Ltd
ABN 67 134 989 450

Suite 16, Ground Floor
185 High Street
FREMANTLE WA 6160
T: +61 (0)439 588 603

23 March 2012

Peter Margetic
Cell 6 Pty Ltd
Lot 1441 Furniss Road
LANDSDALE WA 6065

Our Reference: W12.006LTR01.doc

Dear Peter,

RE THIRD PARTY SOIL SAMPLING VERIFICATION – PART LOT 8005 DRIVER ROAD, DARCH

Environmental Strategies WA (ESWA) is pleased to provide Cell 6 Pty Ltd trading as Non-Organic Disposals (NOD) with the following letter, which verifies that the soil sampling methodology undertaken by NOD on 13 March 2012 is adequate for the intended purpose/s. The soil sampling observed by ESWA was indicative of the sampling methodology undertaken for internal auditing purposes at the Class I landfill and waste recycling facility located at Part Lot 8005 Driver Rd, Darch (the Site).

BACKGROUND

NOD collects samples on a regular basis from soil that is screened through a processing plant, which originates from waste that is received at the Site. The waste received at the Site complies with Prescribed Premises Category 13 and is in accordance with the *Environmental Protection Act 1986* (Licence Number 6832/1997/11) (EP Act licence). The soil samples are collected to demonstrate that the quality of soil is suitable for the proposed end use. The end use of soil generated from the process at the Site includes the following:

- Backfill at the Site itself (as authorised under Prescribed Premises Category 63 of the EP Act licence)
- Sold for re-use as backfill off-Site (as authorised under Prescribed Premises Category 62 of the EP Act licence)

To determine the suitability of the soil for the proposed end use, the soil sample results are compared against the Ecological Investigation Level (EIL) where applicable and as required by DEC (2009 and 2010). NOD have developed a model whereby the 95% upper confidence limit (UCL) of a batch of a minimum of 12 samples from any sampling period may be calculated and compared against the EIL. It is ESWA's understanding that this model was developed based on guidance outlined in the EPA Victoria Industrial Waste Resource Guideline – *Soil Sampling* (IWRG702, June 2009).

OBJECTIVE

The objective of this process was to observe and verify the adequacy of the methodology used to collect these soil samples against the relevant industry and regulatory guidelines and standards.

SOIL SAMPLING METHODOLOGY

The following table outlines the soil sampling methodology observed at the Site on 13 March 2012, which was undertaken by Peter Margetic (Guideline / Standard references are included in *Attachment A*).

Item	Description	Compliance with Applicable Guideline / Standard	Guideline / Standard Reference
Sample Collection*	Soil samples were collected from a stockpile of sand (screened soil) that resulted from the process (pending disposal / reuse), which was formed by a loader. Soil samples were collected as follows: ▪ A hollow sampling tube (metal rod) was inserted approximately 500-750mm into the base of the stockpile to obtain a representative (non-exposed) sample (*Photograph 1, Attachment B)* ▪ Soil collected in the sampling tube was transferred directly into laboratory supplied sample containers (*Photographs 2 and 3, Attachment B)* ▪ Soil sample jars were filled to the top with zero headspace to prevent the loss of any potential volatiles ▪ A total of three soil samples were collected with each soil sample being collected from a different randomly selected location at the base of the stockpile	▪ Sample collection was conducted in accordance with the applicable guidelines and standards	▪ DEP, 2001 ▪ DEC, 2009 ▪ VIC EPA, 2009 ▪ CCAA, 2006 ▪ AS 4482.1-2005 ▪ AS 4482.2-1999
Sampling Frequency	▪ According to NOD, soil samples are collected at a rate of approximately 1:250m^3 (or 260 samples/year based on an estimated throughput of 60,000-70,000m^3/year) ▪ The frequency of sample collection varies depending on the amount of material being received at the Site and the rate at which they are able to process this material	▪ The sampling rate meets the required frequency as outlined in the applicable guidelines	▪ DEC, 2009 ▪ VIC EPA, 2009
Chain-of-Custody Procedures	A chain-of-custody was filled out for the samples collected, which included the following information: ▪ Sampler name and contact details ▪ Type of sample ▪ Collection date and time ▪ Name of person transferring and receiving samples ▪ Analyses to be performed ▪ Analytical laboratory ▪ Sample relinquishment date / time ▪ Sample receipt date / time	▪ All required details were included on the chain-of-custody in accordance with the applicable standard	▪ AS 4482.1-2005
Sample Handling	▪ Soil samples were transferred directly from the sampling tube into laboratory supplied sample jars and sealable plastic bags ▪ Sample containers were clearly labeled with the sample identification and sample date and time	▪ Sample jars were appropriate for the required analyses in accordance with the applicable standard	▪ AS 4482.1-2005
Sample Preservation, Transport and Storage	▪ Samples were placed directly into an esky in the field ▪ Samples were then transferred into a refrigerator prior to being packed back into the esky for delivery to the laboratory (*Photograph 4, Attachment B*) ▪ Samples are either delivered on the same day as sampling or the following day to a NATA accredited laboratory for the selected analyses	▪ Samples were preserved and stored in accordance with the applicable standard	▪ AS 4482.1-2005
Quality Assurance / Quality Control	▪ Nitrile gloves were not worn during sample collection ▪ Decontamination of the sampling equipment was not performed between sample collection ▪ Quality assurance samples were not collected	▪ QA/QC measures were not conducted in accordance with the applicable standard	▪ AS 4482.1-2005
Analytical Suite	Each of the soil samples are analysed for the following parameters: ▪ Organochlorine (OC) pesticides ▪ Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg) ▪ Total petroleum hydrocarbons (TPH) ▪ Total organic carbon (TOC) ▪ Asbestos	▪ Additional parameters outlined in the applicable guideline may need to be considered	▪ DoE, 2004

Note*:
Sample collection was conducted from the base of a stockpile of sand that was generated from the process. According to NOD, soil samples are normally collected from the fines discharge belt of the processing plant, which was not in operation at the time of soil sampling observed by ESWA on 13 March 2012.

SAMPLING CONSIDERATIONS

The following table summarises the considerations that should be made to address non-compliance issues outlined in the above table.

Item	Non-Compliance	Considerations
Quality Assurance / Quality Control	▪ QA/QC measures were not conducted in accordance with AS 4482.1-2005	▪ A fresh pair of nitrile gloves should be worn during each sample collection to prevent potential cross-contamination between samples and from coming into contact with any residual material that may be adhered to the skin (e.g. oils, sun screen, etc.) ▪ Decontamination of the sampling equipment between sample collection in this case would be of limited value due to the following factors: o Potential for cross contamination between samples is limited o Soil samples are being collected to determine if the quality of the soil is suitable for the proposed end use and not to determine the spatial extent of contamination ▪ Quality control samples would be of limited value given the following: o The number of samples being collected (approximately 260 samples/year) o The frequency of sample collection (up to 2-3 times per week depending on throughput) o The consistent results obtained from these samples to date
Analytical Suite	▪ Additional parameters outlined in DoE, 2004 for 'landfill sites' may need to be considered	▪ Consideration should be given to the analysis of the additional parameters not currently being analysed as listed under 'landfill sites' in DoE, 2004 o To assist in determining which additional parameters should be considered from DoE, 2004 – groundwater results obtained from groundwater monitoring conducted under the EP Act licence should be reviewed to determine if there are any analytes detected in groundwater that are not currently being analysed in soil o Consultation with DEC on the full list of analytes is recommended to ensure that they are satisfied that all perceived potential contaminants are being considered / analysed ▪ In addition to OC pesticides, organophosphate (OP) pesticides should also be analysed* ▪ In addition to those analytes already being analysed and any additional parameters listed in DoE, 2004 that may be included in the analytical suite, consideration should be given to the analysis of volatile organic compounds (VOCs) ▪ Analysis of VOCs may not be required at the same frequency as all other analytes and would only be intended to rule VOCs out as potential contaminants

Note*:
OC/OP pesticides are often offered as a package by the laboratories and may not be an additional cost to the OC pesticide analysis alone, however, this would need to be confirmed with the laboratory.

FURTHER VERIFICATION

NOD has indicated that they would like ESWA to conduct independent sampling of soil generated from the process at the Site to compare to the current dataset to further verify (or otherwise) the accuracy of the soil sample results obtained to date. ESWA will conduct this independent sampling without any prior notification to NOD to ensure the representativeness of the samples.

We trust that this letter meets your requirements at this stage. Please contact the undersigned on 0439 588 603 if you have any questions or any require additional information.

Yours faithfully,

Jeff Shivak
Principal Environmental Scientist

Attachment A – *References*
Attachment B – *Photographs*

ATTACHMENT A – REFERENCES

REFERENCES

Cement, Concrete and Aggregates Australia, August 2006. *Guide to SAMPLING for the Extractive Industry* (CCAA, 2006).

Department of Environment Protection, December 2001. *Development of Sampling and Analysis Plans*, Government of Western Australia (DEP, 2001).

Department of Environment, October 2004. *Potentially Contaminating Activities, Industries and Landuses*, Government of Western Australia (DoE, 2004).

Department of Environment and Conservation, December 2009. *Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009)*, Government of Western Australia (DEC, 2009)

Department of Environment and Conservation, February 2010. *Assessment Levels for Soil, Sediment and Water* (Version 4) Government of Western Australia (DEC, 2010).

EPA Victoria, Publication IWRG702 – June 2009. *Industrial Waste Resource Guidelines – Soil Sampling* (VIC EPA, 2009).

Standards Australia, *Australian Standard – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds* (AS 4482.1-2005).

Standards Australia, *Australian Standard – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances* (AS 4482.2-1999).

ATTACHMENT B – PHOTOGRAPHS

PHOTOGRAPHS

Photograph One: Hollow sampling tube is inserted into the base of the stockpile (approx. 500-750mm)

Photograph Two: Soil is transferred directly from the sampling tube into a lab supplied soil sample jar

Photograph Three: Soil is transferred directly from sampling tube into a plastic bag for asbestos analysis

Photograph Four: Soil samples are placed directly into an esky for transport to the laboratory

Appendix D

ICR 0001 NON ORGANIC DISPOSALS

INCIDENT / COMPLAINT REPORT

DATE OF INCIDENT / COMPLAINT: 8 / 3 / 2011

TIME OF INCIDENT / COMPLAINT: 10 am

DATE OF REPORT: 8 / 3 / 2011

TYPE: Environmental / Accident / Injury / Complaint / Other (E,A,I,C,O) ☐

DESCRIPTION OF INCIDENT / COMPLAINT:

Dust + unspecified odour.

COMPLAINANT'S NAME:

Unknown. Made though City of Wanneroo.

COMPLAINANT'S CONTACT DETAILS:

Chris Hill (CoW – EHO) T: 9405 5436

WEATHER CONDITIONS AT TIME OF INCIDENT:

Unknown. Plant down and abnormal activity onsite near Western border.

ACTION TAKEN:

Ceased all unnecessary vehicle movement. Increased water loading to suspect area.

WHO HAS BEEN NOTIFIED?

SITE MANAGEMENT ☑

DEC ☑

AUTHORITIES ☐

NAME OF PERSON COMPLETING THIS FORM:

Rocky Zamin

SIGNATURE:

ICR 0002

NON ORGANIC DISPOSALS

INCIDENT / COMPLAINT REPORT

DATE OF INCIDENT / COMPLAINT: 12/5/2011.

TIME OF INCIDENT / COMPLAINT: 10:20 AM

DATE OF REPORT: 12/5/2011

TYPE: Environmental / Accident / Injury / Complaint / Other (E,A,I,C,O) C

DESCRIPTION OF INCIDENT / COMPLAINT:

RESIDENT ATTENDED SITE & COMPLAINED ABOUT DUST ON CAR AT NEARBY RESIDENCE.

COMPLAINANT'S NAME:

WOULD NOT STATE.

COMPLAINANT'S CONTACT DETAILS:

WOULD NOT STATE.

WEATHER CONDITIONS AT TIME OF INCIDENT:

LIGHT EASTERLY WINDS / FINE

ACTION TAKEN: NO VISIBLE DUST LEAVING SITE. COMPLAINT WAS OF A GENERAL NATURE & NOT SPECIFIC TO THIS DATE. (SEE BELOW)

WHO HAS BEEN NOTIFIED?

TO BE INCLUDED IN ANNUAL MONITORING REPORT.

- [x] SITE MANAGEMENT
- [x] DEC
- [ ] AUTHORITIES

* CONTINUING WITH THE INSTALLATION OF 2x WATER CANNONS TO ASSIST WITH DUST MANAGEM

NAME OF PERSON COMPLETING THIS FORM:

PETER MARGETIC.

SIGNATURE: P. M. Margetic

WHEN COMPLAINANT ATTENDED SITE ALL MATERIAL WAS WET & WATER TRUCK WITH CANNON WAS IN OPERATION.

ICR **0003** NON ORGANIC DISPOSALS

INCIDENT / COMPLAINT REPORT

DATE OF INCIDENT / COMPLAINT: 31/1/2012.

TIME OF INCIDENT / COMPLAINT: 8.00AM

DATE OF REPORT: 31/1/2012.

TYPE: Environmental / Accident / Injury / Complaint / Other (E,A,I,C,O) $\boxed{C}$

DESCRIPTION OF INCIDENT / COMPLAINT:
General comments regarding dust during easterly

COMPLAINANT'S NAME:
KYLIE GOODALL

COMPLAINANT'S CONTACT DETAILS:
PHONE 9302 3530 . 55 DRIVER ROAD.

WEATHER CONDITIONS AT TIME OF INCIDENT:
Wind +/- 20 km/hr E - N/E.

ACTION TAKEN:
APPLIED further water stopped activity on western portion of site.

WHO HAS BEEN NOTIFIED?

SITE MANAGEMENT ☑

DEC ☑

AUTHORITIES ☐

NAME OF PERSON COMPLETING THIS FORM:
PETER MANGETIC.

SIGNATURE:

ICR 0005 NON ORGANIC DISPOSALS

INCIDENT / COMPLAINT REPORT

DATE OF INCIDENT / COMPLAINT: 14/3/2012

TIME OF INCIDENT / COMPLAINT: 9.00AM

DATE OF REPORT: ....../......./......

TYPE: Environmental / Accident / Injury / Complaint / Other (E,A,I,C,O) O

DESCRIPTION OF INCIDENT / COMPLAINT:
Received a phone call from Kylie Goodall thanking us for the improvement

COMPLAINANT'S NAME:
in dust migration following a period of easterly winds.

COMPLAINANT'S CONTACT DETAILS:
This is subsequent to a site visit (on

WEATHER CONDITIONS AT TIME OF INCIDENT: behalf of Kylie)
on the 12th Jan 2012 by the Cow and

ACTION TAKEN: DEC.
In adverse conditions I park in front

WHO HAS BEEN NOTIFIED? of 55 River Road & check for dust migration.

SITE MANAGEMENT ☐
So far, so good.

DEC ☑

AUTHORITIES ☐

NAME OF PERSON COMPLETING THIS FORM:
Peter Morgenic

SIGNATURE: P. Morgenic

ICR 0006

NON ORGANIC DISPOSALS

INCIDENT / COMPLAINT REPORT

DATE OF INCIDENT / COMPLAINT: 5/3/2012

TIME OF INCIDENT / COMPLAINT: 8:10 5/3/2012

DATE OF REPORT: 5/3/2012

TYPE: Environmental / Accident / Injury / Complaint / Other (E,A,I,C,O) C

DESCRIPTION OF INCIDENT / COMPLAINT:
Complaint from "Jovan" re dust to eastern side of site.

COMPLAINANT'S NAME:
Jovan.

COMPLAINANT'S CONTACT DETAILS:
Not Given.

WEATHER CONDITIONS AT TIME OF INCIDENT:
light rain / cleaot.

ACTION TAKEN:
advised water-cart operator to keep Western area wet at all times.

WHO HAS BEEN NOTIFIED?

SITE MANAGEMENT ☑

DEC ☐

AUTHORITIES ☐

This gentleman has been on site 5 times to the best of my knowledge — general complaint threatening to padlock gate.

NAME OF PERSON COMPLETING THIS FORM:
PETER MARGETIC.

SIGNATURE: P. Margetic

Met with Tim Moore & John FRICKE to resolve - sent email 8/3/2012 outlining discussions.

APPENDIX I

DWER TERMINATION OF BANK GUARANTEE

Government of **Western Australia**
Department of **Environment Regulation**

COPY

Your ref:
Our ref: EDCE088/16; DER2015/000216
Enquiries: Tony Beeson
Phone: (08) 6467 5326
Fax: (08) 6467 5562
Email: tony.beeson@der.wa.gov.au

The Manager
Bank of Western Australia Ltd
Level 11D
300 Murray Street
PERTH WA 6000

Attention: Mr Vinden Mayalagan

Dear Sir/Madam

Cell 6 Pty Ltd – Termination of Bank Guarantee

On 2 November 2010, your client Cell 6 Pty Ltd, licensee of the Non Organic Disposals landfill premises located at Driver Road, Landsdale, lodged the attached Bank Guarantee with the Department of Environment Regulation.

The bank guarantee was provided by Cell 6 Pty Ltd to meet a statutory requirement under regulation 15 of the *Waste Avoidance and Resource Recovery Regulations 2008* for landfill operators to provide a financial assurance in respect of the quarterly landfill levy that they might be required to pay.

Cell 6 Pty Ltd has recently relinquished the landfill category from its prescribed premises licence and is no longer required to provide a financial assurance. The Department of Environment Regulation is satisfied that there is no outstanding landfill levy liability for the premises. I have therefore approved that the financial assurance be terminated.

In accordance with Clause 6 of the Bank Guarantee, I hereby relinquish the Bank of Western Australia of its obligations under the guarantee and return the documentation attached.

I have copied this correspondence to Cell 6 Pty Ltd for their information.

Yours sincerely

Germaine Healy
A/EXECUTIVE DIRECTOR COMPLIANCE AND ENFORCEMENT

4 April 2016

Att

cc. Mr Peter Margetic, General Manager, Cell 6 Pty Ltd bankwest

COPY

BANK GUARANTEE

To: Department of Environment and Conservation (DEC) of The Atrium, Level 4, 168 St Georges Terrace, Perth, WA, 6000 **("Beneficiary")**

From: **BANK OF WESTERN AUSTRALIA LTD** ABN 22 050 494 454 **("Bank")**

At the request of: Cell 6 Pty Limited ACN 130 417 542 of 48 Griver Street, Cottesloe, WA, 6011 **("Customer")**

Issued in connection with: Landfill levy **("Contract")**

1 In consideration of the Beneficiary, at the request of the Customer, agreeing to accept this guarantee in connection with the Customer's obligations to the Beneficiary pursuant to the Contract, the Bank, subject to the terms of this guarantee but otherwise unconditionally, undertakes to pay to the Beneficiary on demand any sum or sums from time to time demanded in writing by the Beneficiary to an amount not exceeding $77,950.00, less the aggregate of any amounts paid by the Bank to the Beneficiary under this guarantee **("Guaranteed Sum")**.

2 If demanded, payment of the Guaranteed Sum will be made by the Bank to the Beneficiary without reference by the Bank to the Customer and notwithstanding any notice to the Bank by the Customer not to pay and irrespective of the performance or non-performance by the Customer or the Beneficiary of the terms of the Contract.

3 The Bank's liability shall not be affected or discharged in any way by any variation to the Contract or by any extension of time or other forebearance on the part of the Beneficiary or the Customer to the other.

4 This guarantee shall continue in force until either notification in writing has been received by the Bank from the Beneficiary that this guarantee is no longer required by the Beneficiary or until payment to the Beneficiary by the Bank of the whole of the Guaranteed Sum.

5 The Bank may at any time without being required to do so pay to the Beneficiary the Guaranteed Sum and thereupon the Bank's liability under this guarantee shall immediately cease and determine.

6 The Beneficiary must return this document to the Bank upon termination of the Bank's obligations to:
The Manager
Bank of Western Australia Ltd
Perth

7 The benefit of this guarantee is personal to the Beneficiary and is not capable of assignment.

Dated: 2 November 2010

EXECUTED by **BANK OF WESTERN AUSTRALIA LTD** ABN 22 050 494 454 by its duly constituted Attorney under Power of Attorney H994310 dated 22 January 2002 who has no notice of revocation of such Power of Attorney in the presence of

[signature]

An Officer of the Bank

Name (please print)

STEVEN ROBERT FILARDI
ASSIST PORTFOLIO MANAGER
LV 30 – BWA TOWER

BANK OF WESTERN AUSTRALIA LTD by its Attorney:

[signature]

Signature

Koby Crawford - Business Development Manager

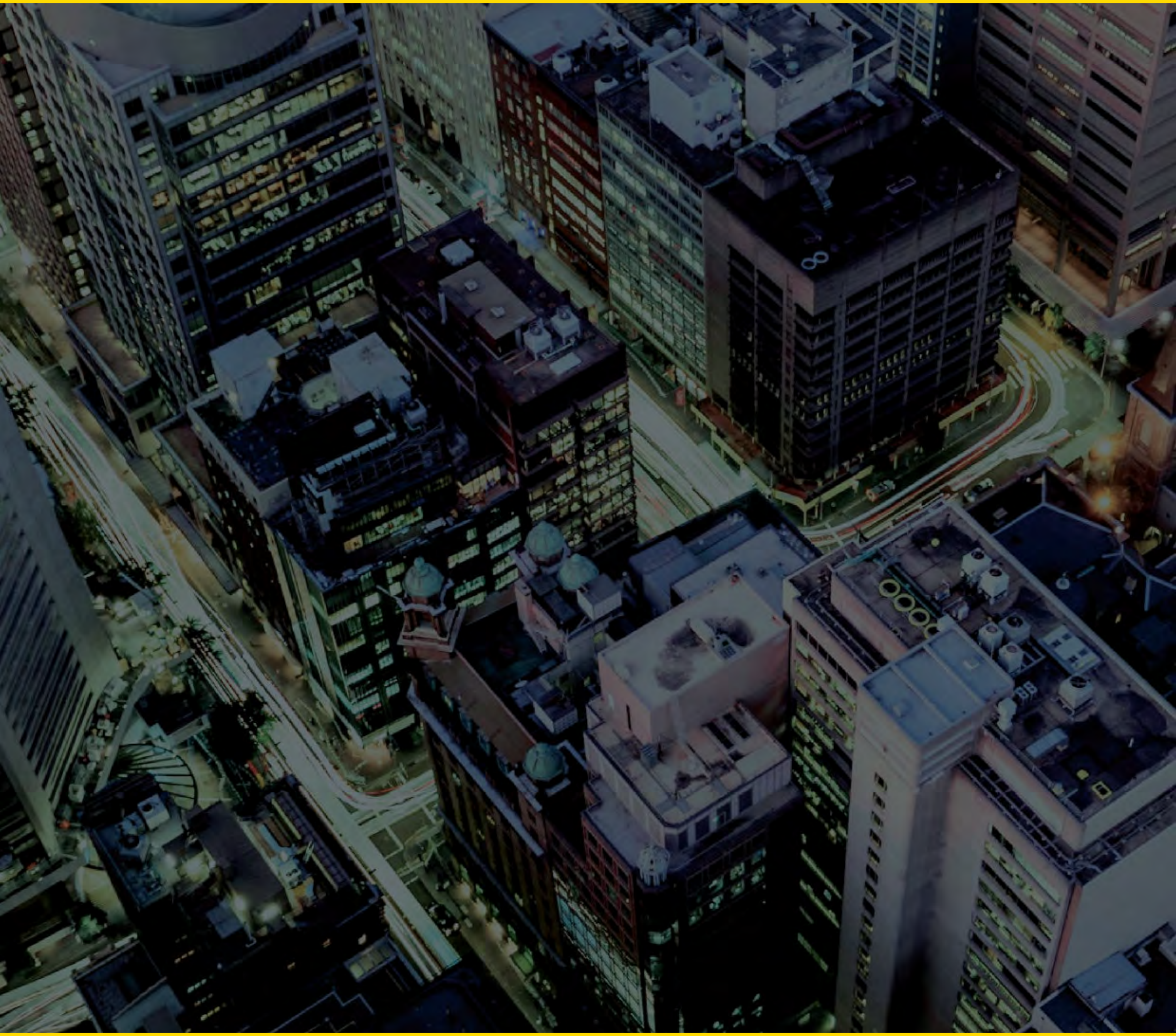
Name and Title (please print)

APPENDIX J

LAND INSIGHT AND RESOURCES DUE DILIGENCE INSIGHT REPORT

Fast, Accurate and Comprehensive Environmental and Development Risk Information

LAND INSIGHT & RESOURCES



DUE DILIGENCE *INSIGHT* REPORT

Property Details

Lot 1 Plan 69382

115 Furniss Road, Darch WA

Search Date: 19 August 2020

Executive Summary

Dataset	Identified	Not identified
Sensitive Receptors	✓	
Planning Controls	✓	
Soil Landscape	✓	
Salinity		✗
Radon	✓	
Acid Sulfate Soil	!	
Geology	✓	
Naturally Occurring Asbestos Potential	!	
Topography	✓	
Hydrogeology	✓	
Groundwater Bores	✓	
Groundwater Dependent Ecosystems		✗
Other Bores		✗
Environmental Registers, Licences and Incidents		
Contaminated Land Public Register	!	
Potentially Contaminated Areas		
Defence Sites (current, former and RCIP)		✗
Former Gasworks Sites		✗
PFAS Sites		✗
Licences and Works Approvals		
Licences	!	
Works Approvals		✗
NPI Industrial Facilities		✗
Other Potentially Contaminating Activities		
Contamination Legacy Areas		✗
Derelict Mines and Quarries	!	
Historical Landfills		✗
Unexploded Ordnance (UXO) Sites - Department of Defence (DoD)		✗
Aviation Fuel Depots/Terminals		✗
Cattle Dip / Saleyard Sites		✗
Dry Cleaners		✗
Liquid Fuel Depots/Terminals		✗
Fire and Rescue Sites		✗
Mines and Quarries		✗
Power Stations		✗
Service Stations		✗
Substation/Switching Station		✗
Telephone Exchanges		✗
Waste Management Facilities	!	
Wastewater Treatment Facilities		✗
Current Commercial & Trade Directory Data	!	
Historic Commercial & Trade Directory Data	!	
Other Environmental Constraints		
Federal, State and Local Heritage	!	
Natural Hazards	!	

Understanding your Report

Your Report has been produced by Land Insight and Resources (LI Resources).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000 m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, LI Resources cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by LI Resources includes data listed on page 3 (table of contents). All sources of data and definitions are provided on the report maps and as listed in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact LI Resources at info@liresources.com.au.

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

This Report, and your use of it, is regulated by LI Resources Terms and Conditions (See LIR Product Guide).

Land Insight and Resources

ABN 70 167 080 837

phone: + 61 2 9979 1720

e-mail: info@liresources.com.au

https://liresources.com.au/

INDEX

Section 1 - Property Setting

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS

Map 1 (200m Buffer)

Sensitive receptor	Category	Distance (m)*	Direction
Goodstart Early Learning Darch	Child Care Centre	48	west

*Distance from the sensitive receptor point feature to the site boundary centroid.

1.2 PLANNING CONTROLS

Map 2 (onsite)

Zoning

Code	Classification
2977	Urban development

Planning Schedule

Code	Category	Name
2	LPS Special Areas	Locality boundary

1.3 SOIL AND LAND USE INFORMATION

Map 3a/3b (onsite)

Soil Landscape

Soil Landscape	211Sp	Karrakatta Sand Yellow Phase	Zone	Perth Coastal Zone
Description	Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. Banksia spp. woodland with scattered emergent E. gomphocephala and E. marginata and a dense shrub layer. Coastal sand dunes and calcarenite. Late Pleistocene to Recent age. Calcareous and siliceous sands and calcarenite. (Quindalup and Spearwood Systems). Sand dunes and plains. Yellow deep sands, pale deep sands and yellow/brown shallow sands.			

Salinity

Salinity Hazard	-	Not identified

Radon

Radon Level	Bq/m3	11

Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

<table>
<tr><th>ASS Risk Maps
(Table 1.3.1)</th><th colspan="2">On the Property?</th><th colspan="2">Within Buffer?</th></tr>
<tr><td>Class</td><td colspan="2">Not identified</td><td colspan="2">Not identified</td></tr>
<tr><td>Atlas of Australian Acid Sulfate Soil (Table 1.3.2)</td><td>Cu(--)</td><td>unclassified</td><td>Probability of Occurrence</td><td>Extremely low probability of occurrence</td></tr>
</table>

Table 1.3.1. Classification scheme in the ASS Planning Maps

Risk classes as shown on ASS Risk Maps	
1	High to moderate risk of ASS occurring within 3m of natural soil surface which could be disturbed by most land development activities
2	Moderate to low risk of ASS occurring within 3m of the natural surface but a high to moderate risk of ASS occurring beyond 3m that could be disturbed by soil excavation and dewatering associated with infrastructure

Note: Areas outside these two risk categories have not been assessed due to the absence of suitable geological and geochemical information, however, ASS materials may occur in these areas

Table 1.3.2. Atlas of Australian Acid Sulfate Soils[1] (ASRIS) (CSIRO/NatCASS)

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
	Probability of Occurrence of ASS[1]
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence** - (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence -** (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence** - (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified** - (Insufficient information to classify map unit)
	Zones
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
	Subscripts to codes
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
	Confidence levels
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.4 GEOLOGY AND TOPOGRAPHY

Map 4 (onsite)

Geology

Map Sheet	Symbol	Name	Age	Era	Period	Description
1:250 000 geological map	Qpcs	COASTAL LIMESTONE	PHANEROZOIC	CAINOZOIC	QUATERNARY	predominantly quartz sand

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	40-50mAHD

Section 2 - Hydrogeology

2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 5a (500m - 2000m Buffer)

	On the Property?	Within Record Search Buffer?[1]
Aquifer Type	Porous, extensive highly productive aquifers	Porous, extensive highly productive aquifers
Public Drinking Water Source Areas	Not identified	Not identified
Wetlands	Consanguineous Wetlands	Consanguineous Wetlands Wetlands
Groundwater Proclaimed Areas	Perth Groundwater Area	Perth Groundwater Area Wanneroo Groundwater Area
Groundwater Salinity (mg/L)	<500	<500
Groundwater Bores	Not identified	Yes, see 2.1.1 and 2.1.2

[1] - Groundwater bore buffer size will change depending on the number of GW bores found within buffer; if there are less than 7 bores within buffer, buffer will increase to max 2km until bores are found.

Groundwater Licences

<table>
<tr><th>WRI number</th><th>Allocation (KL)</th><th>Address</th><th>All Parties</th><th>Distance (m)</th><th>Direction</th></tr>
<tr><td>64710</td><td>2250 KL</td><td>LOT 2 ON PLAN 69382; LOT 1 ON PLAN 69382</td><td>Salamone, Sam</td><td>0</td><td>south-east</td></tr>
<tr><td>64710</td><td>2250 KL</td><td>LOT 2 ON PLAN 69382; LOT 1 ON PLAN 69382</td><td>Salamone, Sam</td><td>0</td><td>onsite</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td rowspan="5">Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park
Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128</td><td>City of Wanneroo</td><td>176</td><td>west</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td>City of Wanneroo</td><td>255</td><td>south-west</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td>City of Wanneroo</td><td>353</td><td>south-east</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td>City of Wanneroo</td><td>403</td><td>south-east</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td>City of Wanneroo</td><td>403</td><td>south-east</td></tr>
<tr><td>155312</td><td>1178070 KL</td><td>Lot 2 On Plan 17906 Volume/Folio 1912/302 Lot 2 Santiago Pwy Ocean Reef Beaumaris Primary School; Crown Reserve 34755 Lot 9649 Merivale Wy Greenwood Greenwood Primary School; Crown Reserve 33615 Lot 9356 Gosse Rd Padbury Bambara Primary School; Cr</td><td>Department of Education</td><td>439</td><td>south-west</td></tr>
<tr><td>159997</td><td>1566155 KL</td><td>Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park
Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128</td><td>City of Wanneroo</td><td>543</td><td>south-east</td></tr>
</table>

53171	14000 KL	Lot 5 On Diagram 23859 Volume/Folio 1929/832 Lot 5 Gnangara Rd Landsdale	Westleaf Holdings Pty Ltd	548	north-east
172845	16000 KL	Lot 78 On Diagram 57255 Volume/Folio 1555/35 Lot 78 Gnangara Rd Landsdale	Holcim (Australia) Pty Ltd	575	north-west
111245	9300 KL	Lot 20 on Diagram 18075 Volume/Folio 1983/238 Lot 20 Denman Gdns Landsdale	Continibali, Salvatore, Seragusana, Frank Peter	577	south-east
98906	2000 KL	Lot 2 On Diagram 23859 Volume/Folio 1313/456 Lot 2 Gnangara Rd Landsdale; Lot 101 On Diagram 65412 Volume/Folio 1655/892 Lot 101 Madeley St Landsdale	Holcim (Australia) Pty Ltd	593	north-east
159997	1566155 KL	Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128	City of Wanneroo	597	south-west
159997	1566155 KL		City of Wanneroo	598	south-west
150767	6150 KL	Lot 21 On Diagram 18075 Volume/Folio 1243/292 Lot 21 Denman Gdns Landsdale	Lantzke, Bruce John	608	south-east
171349	1000 KL	Lot 80 On Diagram 57257 Volume/Folio 1559/832 Lot 80 Gnangara Rd Landsdale	Boral Resources (WA) Ltd	609	north-west
98906	2000 KL	Lot 2 On Diagram 23859 Volume/Folio 1313/456 Lot 2 Gnangara Rd Landsdale; Lot 101 On Diagram 65412 Volume/Folio 1655/892 Lot 101 Madeley St Landsdale	Holcim (Australia) Pty Ltd	626	north-east
155312	1178070 KL	Lot 2 On Plan 17906 Volume/Folio 1912/302 Lot 2 Santiago Pwy Ocean Reef Beaumaris Primary School; Crown Reserve 34755 Lot 9649 Merivale Wy Greenwood Greenwood Primary School; Crown Reserve 33615 Lot 9356 Gosse Rd Padbury Bambara Primary School; Cr	Department of Education	631	south-west
159991	350045 KL	LOT 9005 MOTIVATION DRIVE WANGARA 6065; LOT 240 WILLESPIE DRIVE PEARSALL 6065; Road Reserve - Pin 11036426; LOT 13390 ON PLAN 23077 - Volume/Folio LR3114/164 - Lot 13390 LOTHERTON WAY HOCKING; CROWN RESERVE 47967; 14843, EXCELLENCE DR, WANGARA; LOT 756 S	City of Wanneroo	711	north-west
159997	1566155 KL	Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128	City of Wanneroo	770	east
159997	1566155 KL		City of Wanneroo	771	east
159997	1566155 KL		City of Wanneroo	792	north-east
159997	1566155 KL		City of Wanneroo	817	south-west
159997	1566155 KL	Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128	City of Wanneroo	840	west
151236	6000 KL	Portion of Swan Location 1599 and being Lot 16 the subject of Diagram 25334 and being the whole of the land comprised in Certificate of Title Volume 1234 Folio 681 Lot 16 Gnangara Road Wangara; Lot 16 On Diagram 25334 Volume/Folio 1234/681 Lot 16 Gnang	Roads 2000 Pty Ltd	843	north-west

151236	6000 KL	Portion of Swan Location 1599 and being Lot 16 the subject of Diagram 25334 and being the whole of the land comprised in Certificate of Title Volume 1234 Folio 681 Lot 16 Gnangara Road Wangara; Lot 16 On Diagram 25334 Volume/Folio 1234/681 Lot 16 Gnang	Roads 2000 Pty Ltd	843	north-west
155905	27000 KL	Lot 58 On Diagram 19511 Volume/Folio 1232/361 Lot 58 Landsdale Rd Landsdale	Department of Education	871	south-east
155312	1178070 KL	Lot 2 On Plan 17906 Volume/Folio 1912/302 Lot 2 Santiago Pwy Ocean Reef Beaumaris Primary School; Crown Reserve 34755 Lot 9649 Merivale Wy Greenwood Greenwood Primary School; Crown Reserve 33615 Lot 9356 Gosse Rd Padbury Bambara Primary School; Cr	Department of Education	871	north-east
64833	5050 KL	Lot 4 On Diagram 30763 Volume/Folio 329/117a Lot 4 Sydney Rd Wangara	Maitland Love, Ross	956	north-east
177920	12000 KL	Lot 119 On Diagram 25161 Volume/Folio 1417/486 Lot 119 Kingsway Landsdale	Stoneridge Nominees Pty Ltd	959	south-east
64710	2250 KL	LOT 2 ON PLAN 69382; LOT 1 ON PLAN 69382	Salamone, Sam	0	south-east
64710	2250 KL	LOT 2 ON PLAN 69382; LOT 1 ON PLAN 69382	Salamone, Sam	0	onsite
159997	1566155 KL	Lot 14692 On Plan 33903 Volume/Folio Lr3129/739 Lot 14692 Winston Wy Madeley Winston Park; Crown Reserve 34721 Lot 9641 Nannatee Wy Wanneroo Nannatee Park Crown Reserve 34721 Lot 9715 Nan; Lot 11288 On Plan 16862 Volume/Folio Lr3012/785 Lot 1128	City of Wanneroo	176	west
159997	1566155 KL		City of Wanneroo	255	south-west

Table 2.1.1. Groundwater Bore Details

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
61603515	Stock and Domestic	30-06-68	16.46	0				0.00	onsite
61610811	Monitoring	26-06-74	22.43	22.43				157.25	north-east
61609843	Unknown	11-04-00	24	24				461.41	south-east
61604143	Irrigation	03-03-94	21	21				510.32	north-west
61603509	Stock and Domestic	01-01-00	4.57	0				596.90	south-east
61603508	Stock and Domestic	30-06-65	23.77	0				603.61	south-east
61604243	Unknown	15-08-94	30.48	0				617.30	south-west
61603507	Stock and Domestic	30-06-64	30.48	0				641.46	south-east
61671949	Unknown	23-08-04	34	28				728.85	west
61603513	Stock and Domestic	30-06-65	21.34	0				734.61	south-west

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
61603511	Stock and Domestic	30-06-66	30.48	0				745.11	south-west
61603506	Stock and Domestic	30-06-68	36.58	0				760.12	south-east
61603478	Stock and Domestic	01-01-00	15.24	0				807.51	north-east
61603512	Stock and Domestic	01-01-00	30.48	0				822.24	south-west
61671882	Unknown	30-01-04	57	57				824.94	south-west
61603479	Stock and Domestic	30-06-67	18.29	0				837.41	north-east
61604076	Irrigation	01-01-00	0	0				850.47	north-west
61603602	Stock and Domestic	30-06-69	9.14	0				874.24	north-west
61671948	Unknown	30-07-04	35	25				896.48	west
61670427	Unknown	01-01-00	42	42				913.40	north-west
61670431	Unknown	01-01-00	30	30				933.27	north-west
61671022	Unknown	01-12-98	60	59				933.97	south-west
61603464	Stock and Domestic	30-06-68	13.72	0				942.72	north-west
61603514	Stock and Domestic	30-06-69	30.48	0				967.61	south-west
61603465	Stock and Domestic	30-06-69	25.6	0				970.95	north-west
61671021	Unknown	19-03-00	68	67.59				985.17	south-west
61603510	Stock and Domestic	30-06-63	37.19	0				998.82	south-east

Table 2.1.2. Groundwater Bore Driller Lithology Details

Groundwater Bore ID	From Depth (m)	To Depth (m)	Lithology Description	Distanc e (m)	Direction
61609843	0	1	Top overburden	461.41	south-east
61609843	1	6	Beige sands	461.41	south-east
61609843	6	8	Light coffee sands	461.41	south-east
61609843	8	11	Light brwon sands medum sands	461.41	south-east
61609843	11	24	Off white sands medium to fine	461.41	south-east
61604143	0	4	Yellow sand	510.32	north-west
61604143	4	12	Grey sand	510.32	north-west
61604143	12	14	Band of clay	510.32	north-west
61604143	14	21	Grey clean sand	510.32	north-west

61604243	0	0.15	Not logged.	617.30	south-west
61604243	0.15	13.41	Well liners/yellow sand.	617.30	south-west
61604243	13.41	30.48	White sand.	617.30	south-west
61671949	0	1	Top Overburden	728.85	west
61671949	1	8	DIRTY ORANGE SANDS	728.85	west
61671949	8	13	TEMPLATE	728.85	west
61671949	13	24	GREY SAND: Med to fine. Small grey clay layer. Sands have light clay content	728.85	west
61671949	24	34	LIGHT GREY SANDS: Med to fine clean looking. Light clay content getting onto a much heavier clay content (Dirty water)	728.85	west
61671882	0	18	Yellow sand	824.94	south-west
61671882	18	57	White sand	824.94	south-west
61671948	0	1	Top overburden	896.48	west
61671948	1	5	YELLOW SANDS	896.48	west
61671948	5	12	BEIGE SANDS	896.48	west
61671948	12	16	LIGHT BEIGE SANDS: Standard grain	896.48	west
61671948	16	26	LIGHT COLOURED SANDS: Medium grain	896.48	west
61671948	26	35	LIGHT GREY SANDS: Becoming darker in colour with clay content	896.48	west
61670427	0	14	Yellow sand	913.40	north-west
61670427	14	19	Light yellow sand	913.40	north-west
61670427	19	21	Light yellow sand; medium	913.40	north-west
61670427	21	22	Grey clay	913.40	north-west
61670427	22	28	Grey sand; medium	913.40	north-west
61670427	28	30	Grey sand; medium to coarse	913.40	north-west
61670427	30	42	Grey sand; medium	913.40	north-west
61670431	0	1	Fill	933.27	north-west
61670431	1	14	Yellow sand; fine	933.27	north-west
61670431	14	30	White sand; fine	933.27	north-west
61671022	0	9	Yellow sand	933.97	south-west
61671022	9	12	Soft limestone	933.97	south-west
61671022	12	24	Yellow sand	933.97	south-west
61671022	24	25.5	Clayee sand	933.97	south-west
61671022	25.5	26	Grey clay	933.97	south-west
61671022	26	32	Fine white sand	933.97	south-west
61671022	32	48	Medium fine quartz sand	933.97	south-west
61671022	48	60	Fine white sand clayee	933.97	south-west
61671021	0	1	Grey sand	985.17	south-west
61671021	1	15	Clayee yellow sand	985.17	south-west
61671021	15	22	Pale yellow sand	985.17	south-west
61671021	22	34	Fine white sand	985.17	south-west
61671021	34	35	Grey clay	985.17	south-west
61671021	35	60	Fine white sand	985.17	south-west
61671021	60	62	Coarse sand with black clay layers	985.17	south-west
61671021	62	68	Coarse grey sand; well rounded	985.17	south-west

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 5b (500m Buffer)

	On the Property?	Within Record Search Buffer?
Groundwater Contours – Minimum (mAHD)	38-39	38-40
Hydrogeologic Unit	Surficial Sediment Aquifer (porous media - unconsolidated)	Surficial Sediment Aquifer (porous media - unconsolidated)
Other known borehole investigations	Not identified	Not identified

[1] - Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.

[2] - Williamtown Groundwater Management Zones (WGMZ): Primary Management Zone – this area has significantly higher levels of PFAS detected and therefore, the strongest advice applies. Secondary Management Zone – this area has some detected levels of PFAS; Broader Management Zone – the topography and hydrology of the area means PFAS detections could occur now and into the future.

Groundwater Dependent Ecosystems

Site	On the Property?	Within Record Search Buffer?
Ecosystems that rely on the Surface expression of Groundwater	Not identified	Not identified
Ecosystems that rely on Subsurface presence of Groundwater	Not identified	Not identified

Table 2.2.1. Other known borehole investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes) (500m buffer)

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
Not identified	-	-	-	-	-	-	-

Section 3 – Environmental Registers, Licences and Incidents

3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 6 (1000m Buffer)

Contaminated Sites

Parcel ID[2]	Type	Address	Classification	Distance (m)	Direction
65505	Current	LOT 1 ON PLAN 69382	Contaminated - restricted use	0	onsite
65506	Current	LOT 2 ON PLAN 69382	Contaminated - restricted use	0	south-east
9211	Current	LOT 19 ON DIAGRAM 42421	Contaminated - remediation required	806	north-west
69558	Current	Section of road reserve Mosey St	Contaminated - remediation required	819	north-west
41407	Former	LOT 100 ON DIAGRAM 61520 (Strata Block)	Contaminated - remediation required	854	north-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former sites that have been removed from the database may are kept here for information purposes only.

Table 3.3.1. DWER Site Classification Description

EPA Site Management Class	
Contaminated – remediation required	The site is contaminated and needs to be investigated and cleaned up to ensure it does not present a risk to human health or the environment. This classification will remain until remediation is complete.
Contaminated – restricted use	The site is contaminated but suitable for limited uses (e.g. the site may be suitable for commercial use, but not residential use; or for residential use provided groundwater bores are not used and soil is not accessed).
Remediated for restricted use	The site was contaminated but has been cleaned up to a standard where it is suitable for limited uses (e.g. the site may be suitable for an apartment block, but not for a kindergarten).
Possibly contaminated – investigation required	There are grounds to indicate soil, groundwater and/or surface water at the site may be contaminated but further inquiry is needed to confirm or dismiss the possibility of contamination.
Decontaminated	The site has been remediated and is suitable for all uses. It does not pose a risk to the environment or human health.
Not contaminated – unrestricted use	After investigation, no contamination was found at the site.
Report not substantiated	There is not enough information to indicate that the site could be contaminated.

Source: DWER – Department of Water and Environmental Regulation (DWER)

3.2 POTENTIALLY CONTAMINATED AREAS

Map 6 (1000m Buffer)

Defence Sites

Site name	RCIP*	Description	Status*	Distance (m)	Direction
Not identified	-		-	-	-

*RCIP (Regional Contamination Investigation Program)

Former Gasworks Sites

Site	Location	Distance (m)	Direction
Not identified	-	-	-

PFAS Sites

Site name	Description	Source	Distance (m) *	Direction
Not identified	-	-	-	-

*2km search. If the site is not within 1km buffer, it will not be shown on the map.

3.3 LICENCES AND WORKS APPROVALS

Map 7 (500m Buffer)

Licences

Licence Nº	Licence holder	Location Name	Premise Address	Fee Based Activity	Distance (m)	Direction
L6832/1997/13	Cell 6 Pty Limited	Non Organic Disposals	Lot 1 on Deposited Plan 69382, 115 Furniss Road DARCH WA 6065	13 - Crushing building material, 62 - Solid waste depot	0	onsite
L9187/2019/1	A1 Waste Management Pty Ltd	Encore Recycling & Resource Recovery	Lot 64 on Diagram 57260, 9 Rogers Way LANDSDALE WA 6065	62 - Solid waste depot	466	North-west

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Works Approvals

Licence Nº	Licence holder	Location Name	Premise Address	Fee Based Activity	Distance (m)	Direction
Not identified		-		-	-	

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

3.4 NATIONAL POLLUTANT INVENTORY (NPI)

Map 7 (500m Buffer)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Not identified	-		-	-	-

Section 4 – Other Potentially Contaminating Activities

4.1 POTENTIALLY CONTAMINATING ACTIVITIES

Map 8a (500m Buffer)

Cattle Dip Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Dry Cleaners

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Fire Rescue Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Gas Terminals

Site name	Operator	Location	Status*	Distance (m)	Direction
Not identified	-		-	-	-

Liquid Fuel Depots/Terminals

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Mines and Quarries

Deposit Name	Method	Description	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Petrol Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Power Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Substation / Switching Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Telephone Exchanges

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Waste Management Facilities

Site name	Landfill	Location	Status*	Distance (m)	Direction
Non Organic Disposals	Landfill	50 Driver Road, Landsdale	Current	0	onsite

Wastewater Treatment Facilities

Site name	Operator	Class	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

***Status:**
Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical commercial and trade data' section in this report.

Current Commercial and Trade Data

Site name [1]	Category	Location	Status [2]	Distance (m)	Direction
kitchen professionals	Kitchen remodeler	90 Furniss Rd, Landsdale WA 6065	Current	38.9	north
Aquamonix	Irrigation equipment supplier	92 Furniss Rd, Landsdale WA 6065	Current	39.3	north
Australian Holesale	Pallet supplier	Unit 5/112 Furniss Rd, Landsdale WA 6065	Current	41.5	north
Bench Top Men	Manufacturer	1/116 Furniss Rd, Landsdale WA 6065	Current	46.9	north
World of ECo	Recycling company	100 Furniss Rd, Landsdale WA 6065	Current	47.1	north
Spill Station Australia Pty Ltd	Safety equipment supplier	104 Furniss Rd, Landsdale WA 6065	Current	51.6	north
Fire & Safety WA	Fire protection equipment supplier	96 Furniss Rd, Landsdale WA 6065	Current	64	north
EMF (WA) Pty Ltd	Mining company	108a Furniss Rd, Landsdale WA 6065	Current	65.9	north
Econ Global Pty Ltd	Plastic products supplier	124 Furniss Rd, Landsdale WA 6065	Current	67.2	north-east
Focal Energy	Solar energy equipment supplier	128 Furniss Rd, Landsdale WA 6065	Current	79.9	north-east
Forcorp Pty Ltd	Sourcing/supply service	Unit 1/9 Christable Way, Landsdale WA 6065	Current	91.7	north-west
Independent Laboratory Supplies Pty Ltd	Laboratory equipment supplier	1 Darlot Rd, Landsdale WA 6065	Current	100.2	north-east
Electrical Systems Engineering	Electrical engineer	1/14 Fallon Rd, Landsdale WA 6065	Current	103.6	north
Euroflex Australia	Cleaning products supplier	79 Furniss Rd, Darch WA 6065	Current	107	west
Lolly Warehouse	Warehouse	1/38 Fallon Rd, Landsdale WA 6065	Current	116.1	north-east
Neway Transport	Transportation	5 Darlot Rd, Landsdale WA 6065	Current	122.6	north-east
Adwest Group PTY Ltd	Steel fabricator	15 Christable Way, Landsdale WA 6065	Current	127.3	north-west
Hanson gnangarra batching plant	Concrete contractor	LOT 18 Furniss Rd, Landsdale WA 6065	Current	129.2	north-west
Customised Metal Works	Sheet metal contractor	9 Darlot Rd, Landsdale WA 6065	Current	131.5	north-east
Metal West Recycling	Scrap metal dealer	15 Darlot Rd, Landsdale WA 6065	Current	151	north-east
Renoscape	Landscaper	62A Attwell St, Landsdale WA 6065	Current	153	north-west
Northern Suburbs Automotive Centre	Car Repair Shop	2/62 Attwell St, Landsdale WA 6065	Current	161.2	north-west

Go Power Diesel Services	Truck repair shop	58 Attwell St, Landsdale WA 6065	Current	167.6	north-west
Classic Minerals Limited	Oil and gas exploration service	71 Furniss Rd, Landsdale WA 6065	Current	170.6	west

[1] Data includes categories associated with potentially contaminating activities. All negligible risk data is not reported.

[2] Status: Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the historical business section in this report.

Tanks (AST/UST)

ID	Tank type	Description	Status	Distance (m)	Direction
Not identified	-		-	-	-

Note: This is not an exhaustive list of all existing tanks.

4.3 FORMER POTENTIALLY CONTAMINATED LAND

Map 8c (500m Buffer)

Contaminated Legacy Areas

Site Name	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-

Note: This section includes known contaminated areas such as James Hardies Asbestos waste legacy areas, Pasminco Smelter and Uranium processing site.

Derelict Mines and Quarries

Site name	Method	Description	Source	Distance (m)	Direction
Derelict Quarry Darch	Unknown	Observed operation between 1974 – 1985 from historical imagery.	Aerial historical imagery	234	South-west

Historical Landfills

Site name	Description	Source	Distance (m)	Direction
Not identified	-		-	-

Unexploded Ordnance (UXO) Areas

Site name	Category	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-	-

4.4 HISTORICAL COMMERCIAL AND TRADE DATA (not mapped)

1942 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-		-	-	-

1970 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-		-	-	-

1990 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
NURSERYMEN'S SUPPLIES	Kingsway Sands	50 Driver Rd WANNEROO WA AUSTRALIA	address	150.9	south-west
SAND, SOIL & GRAVEL-RETAIL	KINGSWAY SANDS	50 Driver Rd Wanneroo Wanneroo WA AUSTRALIA	address	150.9	south-west
RECYCLING-WASTE PRODUCTS	Non Organic Disposals	50 Driver Rd LANDSDALE WA AUSTRALIA	address	150.9	south-west
WASTE REDUCTION & DISPOSAL SERVICES	NON ORGANIC DISPOSALS	50 Driver Rd Landsdale WA AUSTRALIA	address	150.9	south-west
CONCRETE READY-MIXED	NU -MIX CONCRETE PTY LTD	Furniss Rd (cnr Attwell St) Landsdale WA AUSTRALIA	street		north-west
CABINET MAKERS	Thomas Cabinet Crafts	Furniss St LANDSDALE WA AUSTRALIA	street		north

2005 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Stone Supplies & Products	Instone Natural Stone Creations	50 Driver Rd DARCH	address	151.9	south-west
Paint W'salers & Mfrs Coatings--Protective	North Shore Distributors	Unit 1/ 30 Furnis Rd LANDSDALE	address	153.4	north-east
Motor Engineers & Repairers	Northern Suburbs Transmission Centre	62 Attwell St LANDSDALE	address	157.1	north-west
Steel Fabricators & Mfrs	Simmonds Fabrications Pty Ltd	Unit 1/ 62 Attwell St LANDSDALE	address	157.1	north-west
Truck Equipment & Parts Truck & Bus Repairs	Go Power Diesel Services	Unit 4, 58 Atwell St LANDSDALE	address	168.6	north-west
Demolition Contractors & Equipment	Nu-Steel Constructions	Unit 3/ 58 Atwell St LANDSDALE	address	168.6	north-west
Lintels & Arch Bars Steel Fabricators & Mfrs	Nu-Steel Constructions Pty Ltd	Unit 3/ 58 Atwell St LANDSDALE	address	168.6	north-west
Insulation Contractors	AAA Budget Insulation	Unit 1/34 Furnis Rd LANDSDALE	address	176.1	north-east
Excavating & Earth Moving Contractors	A Tiny Bobcat Hire	54 Attwell Street LANDSDALE	address	184.8	north-west

2010 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Bus & Coach Charters & Tours	Orange Coach Charters	Unit 1/ 19 Furniss Rd LANDSDALE 6065 WA	address	9.8	north
Recyclers	Non-Organic Disposals	Lot1441/ Furniss Rd LANDSDALE 6065 WA	address	11.3	north
Boring Drilling & Excavation Services	Water Wise Bores	57 Driver Rd DARCH 6065 WA	address	36.5	west
Steel Fabrication & M/factrs	Engital Robotics	Unit 5 112 Furniss Rd LANDSDALE 6065 WA	address	51.3	north
Steel Fabrication & M/factrs	Noree Manufacturing	Unit 1 24 Furniss Rd LANDSDALE 6065 WA	address	56.2	north-east
Glass Merchants & Installation Service Glaziers	Glasskote	26 Fallon Rd LANDSDALE 6065 WA	address	100.7	north
Air Conditioning - Industrial & Commercial	Western Cooling	U4/ 34 Fallon Rd LANDSDALE 6065 WA	address	111.3	north-east
Waste Reduction & Disposal Equipment & Machinery	Cell 6 Pty Ltd	50 Driver Rd DARCH 6065 WA	address	150.9	south-west
Stone Products & Supplies	Instone Natural Stone Creations	50 Driver Rd DARCH 6065 WA	address	150.9	south-west
Importers	Bowpan Pty Ltd	44 Longford Cct DARCH 6065 WA	address	152.7	west
Window & Glass Tinting & Insulation	Glare Aware Window Tinting Pty Ltd	Unit 1 62 Atwell St LANDSDALE 6065 WA	address	155.8	north-west
Engineers - Motor & Repairers	Northern Suburbs Transmission Centre	Unit 2/ 62 Attwell St LANDSDALE 6065 WA	address	155.8	north-west
Steel Fabrication & M/factrs	Simmonds Steel & Concrete	Unit 1/ 62 Attwell St LANDSDALE 6065 WA	address	155.8	north-west
Importers	Dateline Imports Pty Ltd	15 Darlot Rd DARCH 6065 WA	address	159.2	north-east
Bus & Truck Repairs	Go Power Diesel Services	Unit 4 58 Atwell St LANDSDALE 6065 WA	address	166.7	north-west
Earth Moving &/or Excavating Contractors	A Tiny Bobcat Hire	54 Attwell Street LANDSDALE 6065 WA	address	186.9	north-west
Engineers - Motor & Repairers	Ross Urquhart's Mobile Mechanical Service	54 Atwell St LANDSDALE 6065 WA	address	186.9	north-west

Historical data positional accuracy and georeferencing results explanation

Positional accuracy	Georeferenced	Description
Address	Located to the address level	*When street address and names fully match.*
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*
Not georeferenced	Not found	*When it was not georeferenced, and address could not be found.*

Land Insight and Resources use a number of different address georeferencing methods and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When address do not contain specific street numbers or a match is not found, records identified as being in the surrounding areas are included for reference.

Section 5 - Other Environmental Constraints

5.1 FEDERAL, STATE AND LOCAL HERITAGE

Map 9 (200m Buffer)

Aboriginal Heritage Place Register (AHIS)

Site ID	Site Name	Type	Status	Distance (m)*	Direction
Not identified	-	-	-	-	-

Heritage Conservation Orders (HCO)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Municipal Inventory

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

National Heritage List (NHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Register of the National Estate (RNE)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (Local)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (SHR)*

Site ID	Site Name	Listing nº	Plan nº	Distance (m)	Direction
Not identified	-	-	-	-	-

*State Heritage Register

Commonwealth Heritage List (CHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

World Heritage Area (WHA)

Site ID	Site Name	IUCN	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

5.2 NATURAL HAZARDS

Map 10 (500m Buffer)

Bush Fire Prone Land (BLP)

Category	On the Property?	Within Record Search Buffer?
Not identified	-	-

Fire History

Category	On the Property?	Within Record Search Buffer?
Wanneroo 1985/1986	Not identified	Yes

Flood Hazard

Category	On the Property?	Within Record Search Buffer?
<3% of the map unit has a moderate to high hazard	Yes	Yes

LAND INSIGHT & RESOURCES

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Sydney NSW 2000 Australia
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E info@liresources.com.au
W www.liresources.com.au

ATTACHMENT A

Report Maps

Subject area
Sewer Gravity Pipe
Sewer Pressure Main
Water Pipe
Cadastral boundary
Sensitive receptors
Child Care/Pre-school /PrimarySchool

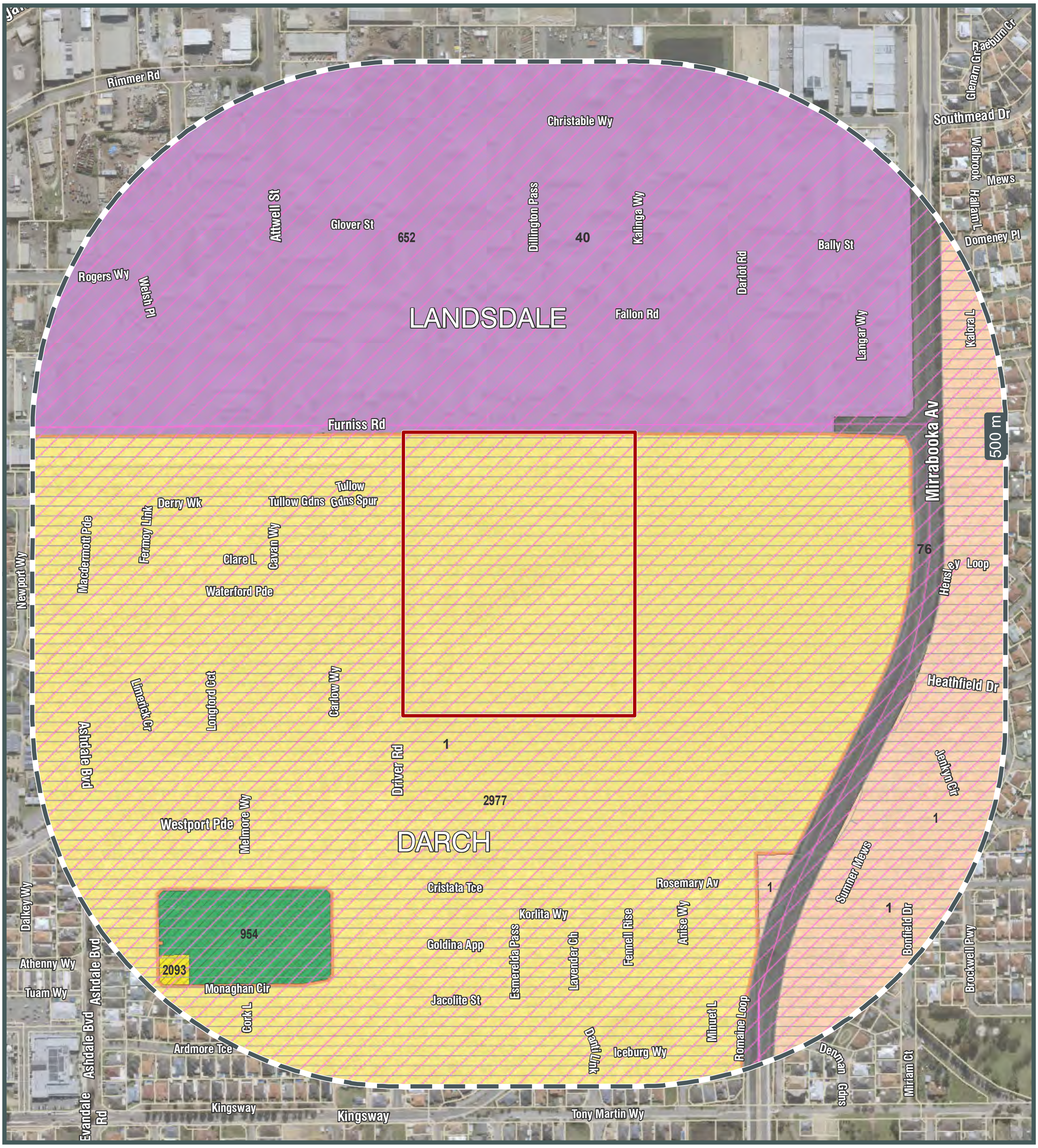
0 50 100 150 200 250m

SUBJECT AREA AND SENSITIVE RECEPTORS

LAND INSIGHT & RESOURCES

MAP 1

Due Diligence Insight



Subject area
LPS Special Areas
Structure Plan Boundaries

Local Planning Scheme
General industrial
Parks and recreation
Public use
Residential
Urban development

Metropolitan Region Scheme
Industrial
Other regional roads
Urban

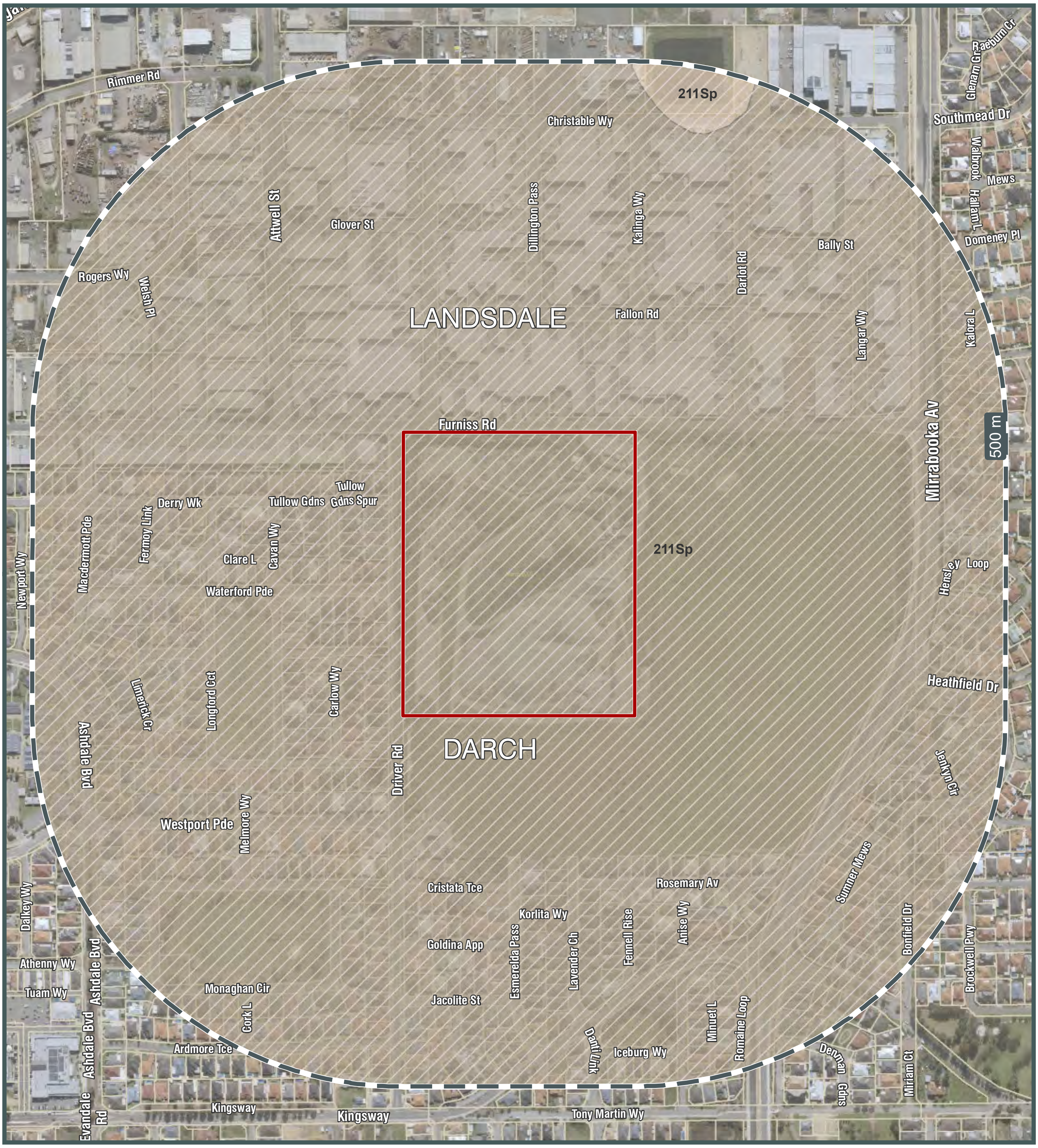
0 100 200 300 400 500m

PLANNING CONTROLS

LAND INSIGHT & RESOURCES

MAP 2

Due Diligence Insight



Subject area

Salinity Risk

<3% of the map unit has a moderate or high hazard or is presently saline

Soil Landscape Mapping

211Sp__Ky | Karrakatta Sand Yellow Phase

211Sp__Ws | Spearwood seasonal swamps Phase

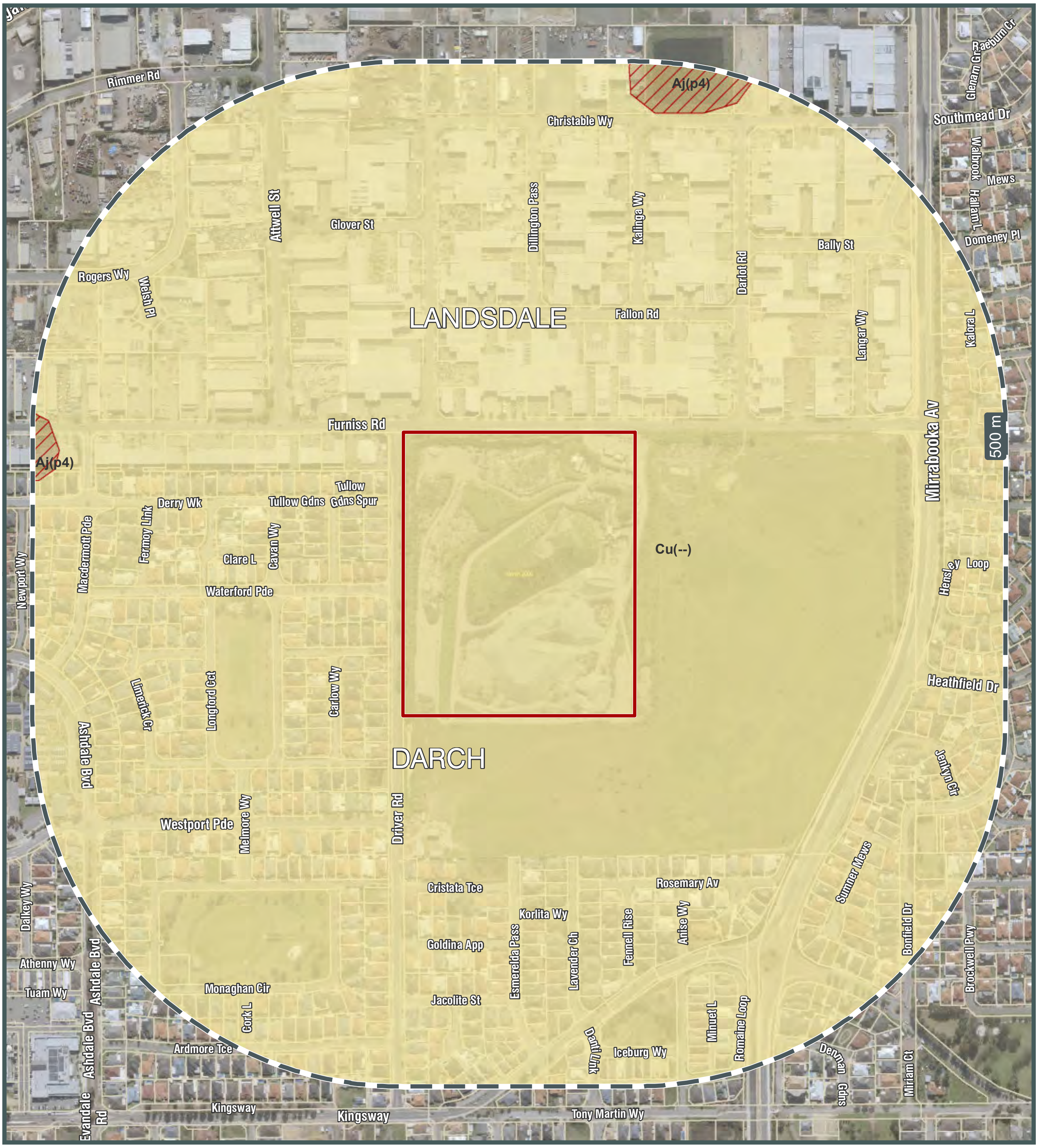
0 100 200 300 400 500m

SOIL LANDSCAPES AND SALINITY

LAND INSIGHT & RESOURCES

MAP 3a

Due Diligence Insight



Subject area

Acid Sulfate Soil Risk Map

High to moderate risk

ASRIS Atlas of Australian Sulfate Soils

Aj(p4) | ASS in sandplains and dunes

Cu(--) | unclassified

0 100 200 300 400 500m

ACID SULFATE SOILS

LAND INSIGHT & RESOURCES

MAP 3b

Due Diligence Insight

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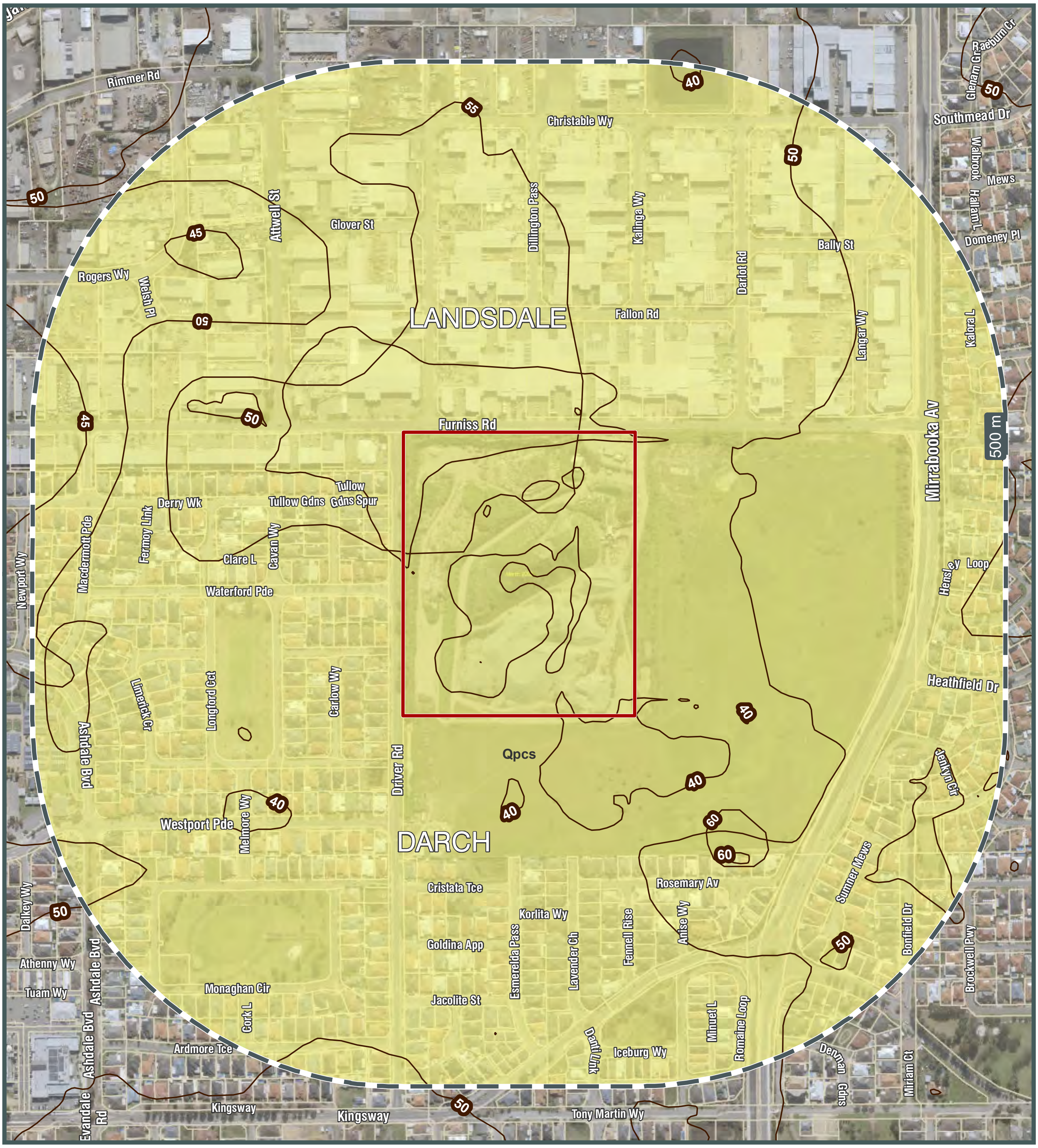

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Subject area

Topographic contour (m)

1:250 000 geological map - PERTH

Qpcs | Coastal Limestone

1:500 000 State interpreted bedrock geology

K-CY-xk-s; Coolyena Group; Chalk, greensand, glauconitic sandstone, siltstone, marl; characteristically glauconitic

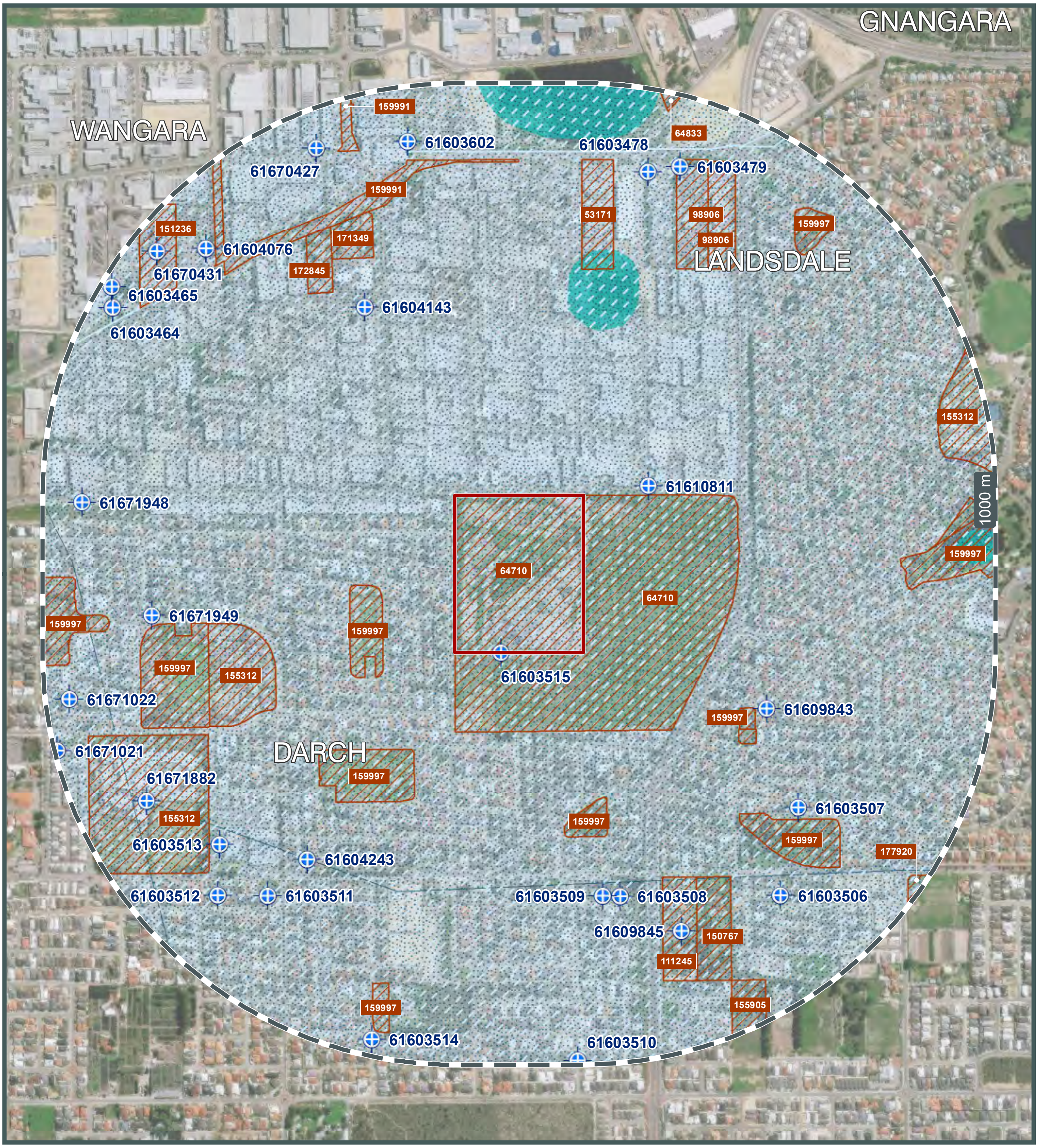
0 100 200 300 400 500m

GEOLOGY AND TOPOGRAPHY

LAND INSIGHT & RESOURCES

MAP 4

Due Diligence Insight



Subject area
Groundwater Proclaimed Areas
Consanguineous Wetlands

Water Licence
Groundwater Licence
Surface Water Licence

Aquifer Type
Porous, extensive highly productive aquifers

Groundwater bores

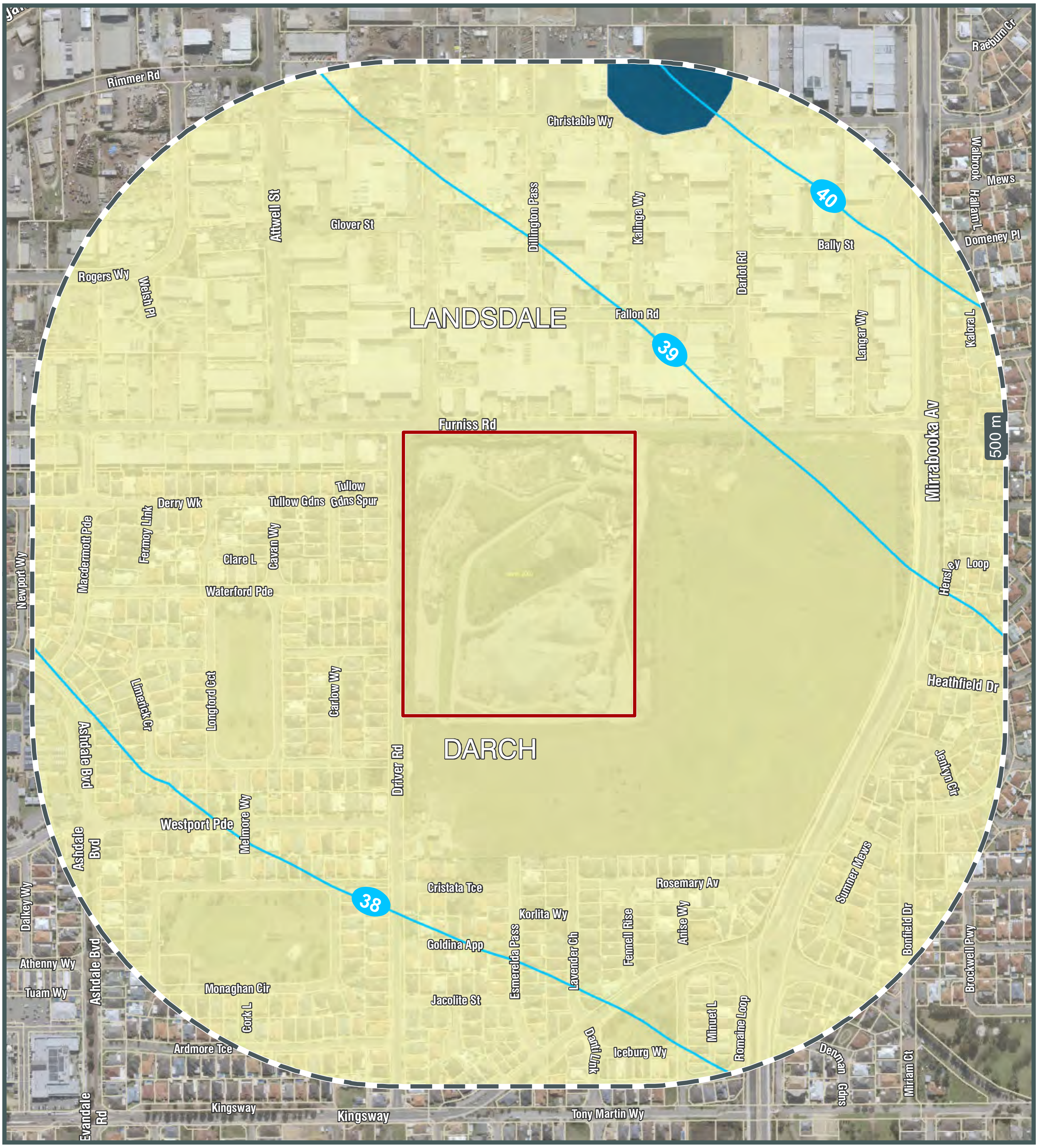
0 500 1,000 1,500 2,000 2,500m

HYDROLOGY AND GROUNDWATER BORES

LAND INSIGHT & RESOURCES

MAP 5a

Due Diligence Insight



Subject area

Other borehole/monitoring well location

10 Groundwater contour (mAHD)

Ecosystems that rely on the surface

High potential GDE - from national assessment

Hydrogeologic Unit

Surficial Sediment Aquifer (porous media - unconsolidated)

0 100 200 300 400 500m

HYDROGEOLOGY AND OTHER BOREHOLES

LAND INSIGHT & RESOURCES

MAP 5b

Due Diligence Insight

Subject area

Contaminated Sites Database (DWER)

- Contaminated - remediation required
- (Former) Contaminated - remediation required
- Contaminated - restricted use
- Remediated for restricted use

Potentially Contaminated Areas

- Defence Sites
- PFAS Sites
- Former Gasworks Sites

(DWER) The Department of Water and Environmental Regulation -Government of Western Australia

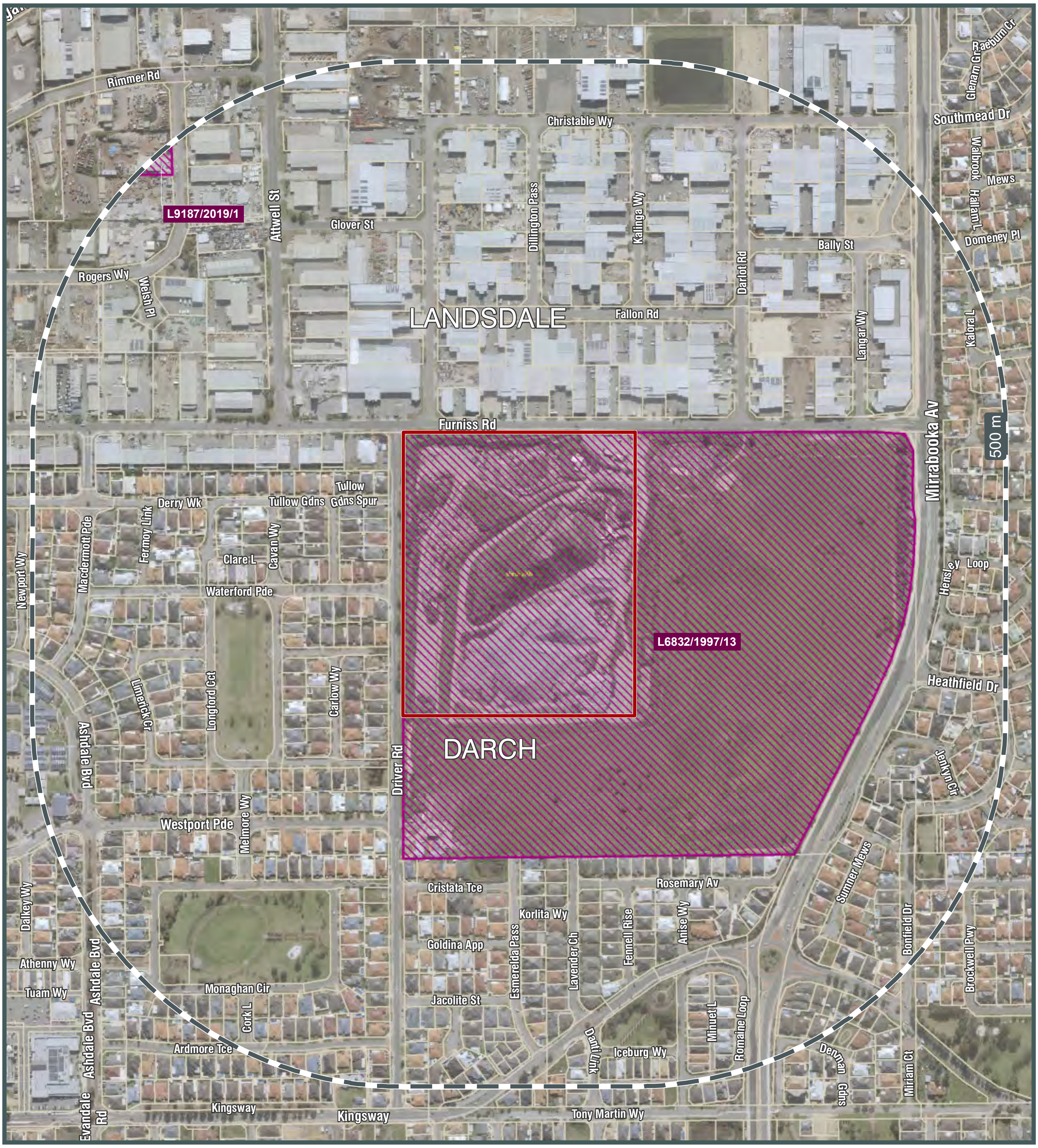
0 200 400 600 800 1,000m

CONTAMINATED LAND REGISTER AND POTENTIALLY CONTAMINATED AREAS

LAND INSIGHT & RESOURCES

MAP 6

Due Diligence Insight



Subject area
NPI Facilities

Licences and Works Approvals

Licence
Works approval

0 100 200 300 400 500m

ENVIRONMENTAL REGISTER & LICENCES AND NPI FACILITIES

LAND INSIGHT & RESOURCES

MAP 7

Due Diligence Insight

Land Insight & Resources do no warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that this company shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

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Subject area

Cattle dip/ saleyards	Gas terminals	Petrol stations	Telephone exchanges
Dry cleaners	Liquid fuel depots / terminals	Power stations	Waste management facilities
Fire Rescue sites	Mine/quarry	Substation locations	Wastewater Treatment Facility

Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 5 years will be reported in the historical business section in this report.

0 100 200 300 400 500m

POTENTIALLY CONTAMINATING ACTIVITIES

LAND INSIGHT & RESOURCES

MAP 8a

Due Diligence Insight

Subject area

Commercial & Trade Directory

- Other potentially contaminating activities
- Former potentially contaminating activities

Tanks

- Aboveground Storage Tank - Current
- Aboveground Storage Tank - Former
- Underground Storage Tank - Current
- Underground Storage Tank - Forrmer
- Unknown

*This is not an exhaustive list of all tanks.

0 100 200 300 400m

CURRENT COMMERCIAL AND TRADE DATA

LAND INSIGHT & RESOURCES

MAP 8c

Due Diligence Insight

Subject area

Contaminated Legacy Areas

- Contaminated Legacy Areas
- Derelict Mines and Quarries
- Historical (Legacy) Landfills

Unexploded Ordnance (UXO) Areas

- Defence Controlled Area
- UXO Area: Substantial Occurence
- UXO Area: Slight Occurence
- UXO Area: Other

0 100 200 300 400 500m

FORMER POTENTIALLY CONTAMINATED LAND

LAND INSIGHT & RESOURCES

MAP 8a

Due Diligence Insight

- Subject area
- Aboriginal Heritage Place Register (AHIS)
- Heritage Conservation Orders
- Municipal Inventory
- State Register (SHO)
- National Heritage List (NHL)
- Non-Aboriginal heritage item (Local)
- Non-Aboriginal heritage item (SHR)
- Commonwealth Heritage List (CHL)
- Register of the National Estate (RNE)
- World Heritage Area (WHA)

0 50 100 150 200 250m

HERITAGE

LAND INSIGHT & RESOURCES

MAP 9

Due Diligence Insight

Subject area

Fire Hazard

Fire History

Flood Hazard

Flood Risk

<3% of the map unit has a moderate to high hazard

0 100 200 300 400 500m

NATURAL HAZARDS

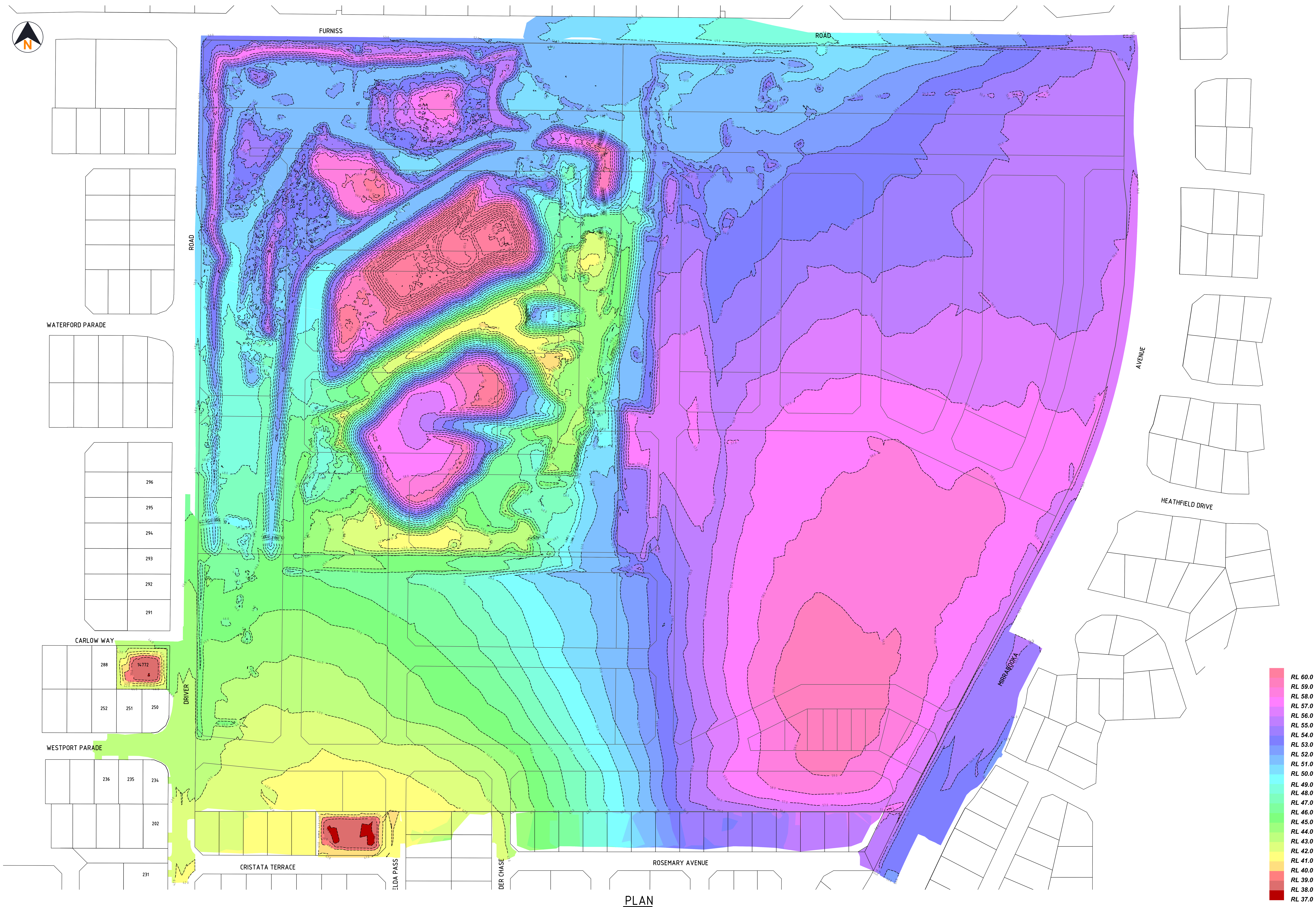
LAND INSIGHT & RESOURCES

MAP 10

Due Diligence Insight

APPENDIX K

EXISTING SITE LEVELS



PLAN
N.T.S.

Existing Ground Levels

DRAWING NUMBER 2407-SK-001

ISSUE A

TABEC
Civil Engineering Consultants

TABEC PTY LTD
ACN 090 796 204

14 Wickham Street, East Perth WA 6004
t 08 9425 5900 e info@tabec.com.au
www.tabec.com.au

SCALE

A1

Plotted By: revans   Plot Date: 23/07/19 - 09:45   Cad File: T:\Projects\2407\Design\CAD\Drawings\Sketches\2407-SK-001 Existing Ground Depth Bands.dwg

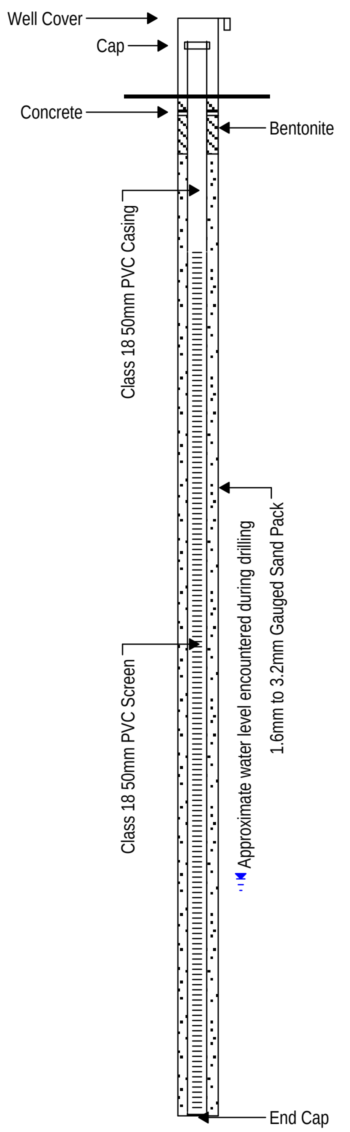
APPENDIX L

WELL CONSTRUCTION LOGS

WELL CONSTRUCTION LOG

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: DDW13			
PROJECT NO./NAME 6-08-008 - Cell 6	LOCATION 50 Driver Road, Darch		
APPROVED BY Jeff Shivak	LOGGED BY Daniel Thompson		
DRILLING CONTRACTOR Proline Drilling	DATE 17th June 2008		
DRILLING EQUIPMENT/METHOD Aircore	SIZE/ TYPE OF BIT 90mm	EASTING 391104.38	NORTHING 6480348.92
CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted; MAT Class 18 PVC; LENGTH 11 m	DIA 50mm ID	SLOT SIZE 0.5mm
ELEVATION OF: TOP OF WELL CASING 48.205mAHD	TOP & BOTTOM SCREEN 45.63 & 34.63 mAHD	GW INITIAL 10mBGL	STATIC



Depth metres	Visual Description	Sample Number	PID Values (ppmv)
0	Sand Sand Cap; Fine to medium grain size. Grey and brown. Dry.	DDW13-1	0.4
1			1.2
1.5	Fill Landfill Material; Bricks & rock with fine to medium grain size. Dark brown. Dry.	DDW13-2	0.1
3	Sand Native Sand; Fine to medium grain size. Yellow and brown. Moist.		1.1
4			1.2
5	Sand Native Sand; Fine to medium grain size. Yellow. Moist.		1.4
6			0.9
7			0.4
8	Sand Native Sand; Fine to medium grain size. Grey. Wet. End of hole and casing installed at 13mBGL.	DDW13-3	0.4
9			0.3
10			0.3
11			0.5
12			
13			
14			

WELL CONSTRUCTION LOG

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

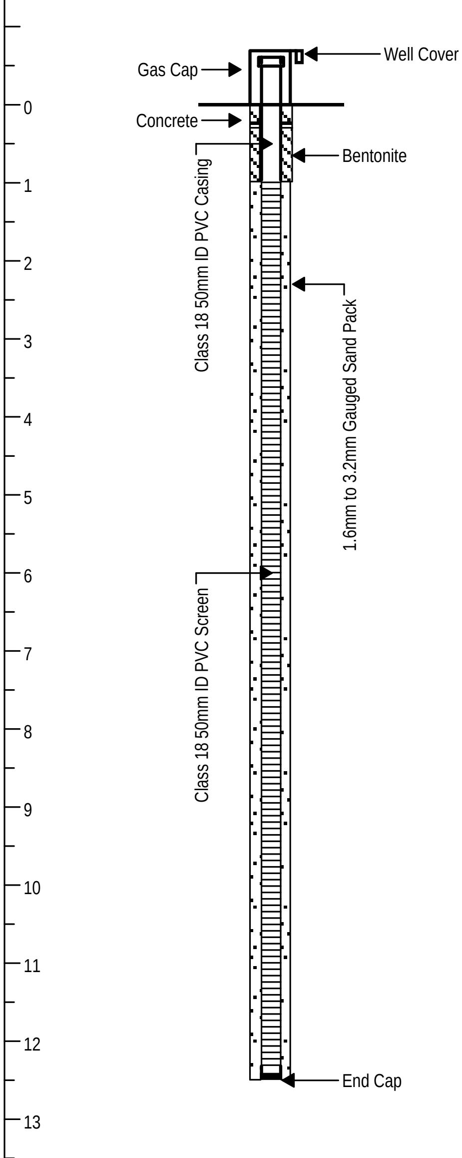
Page:

Well ID: DDW28	
PROJECT NO./NAME 6-09-002	LOCATION 50 Driver Rd, Darch
APPROVED BY Jeff Shivak	LOGGED BY Drew Byrd
DRILLING CONTRACTOR Strataprobe	DATE 16/04/2009

DRILLING EQUIPMENT/METHOD Sonic Vibration	SIZE/ TYPE OF BIT 120mm	EASTING 391097.23	NORTHING 6480253.26

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 11.5m	DIA 50mm ID	SLOT SIZE 0.5mm

ELEVATION OF: TOP OF WELL CASING 0.5m agl	TOP & BOTTOM SCREEN 1m bgl & 12.5m bgl	GW INITIAL ~ 9.5m bgl	STATIC 9.787m btoc

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
			Sonic vibration drill method did not return any drill cuttings. Well installed in native sand.		

SITE REMARKS

FILE PATH

Page:

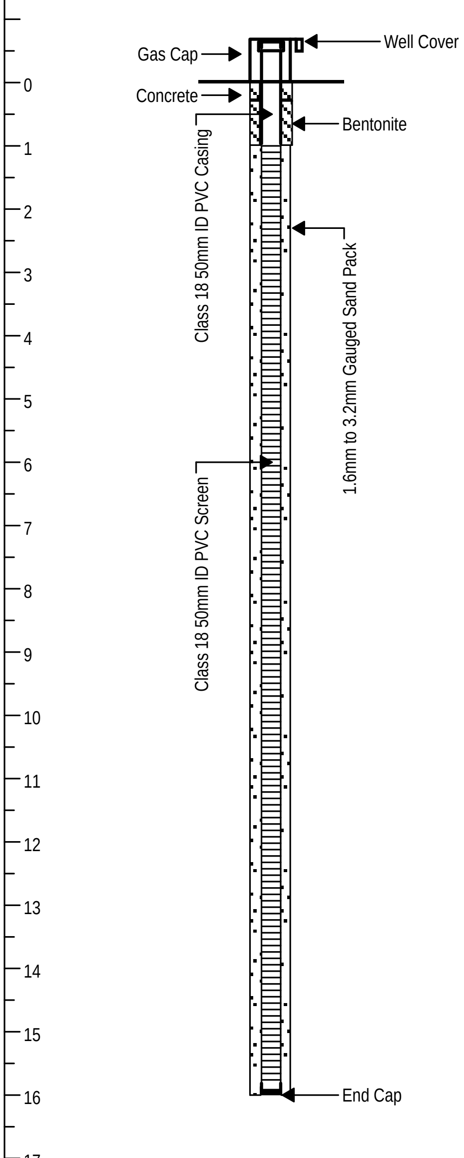
WELL CONSTRUCTION LOG

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: DDW29			
PROJECT NO./NAME 6-09-002	LOCATION 50 Driver Rd, Darch		
APPROVED BY Jeff Shivak	LOGGED BY Drew Byrd		
DRILLING CONTRACTOR Strataprobe	DATE 16/04/2009		
DRILLING EQUIPMENT/METHOD Sonic Vibration	SIZE/ TYPE OF BIT 120mm	EASTING 391079.71	NORTHING 6480452.23

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 15m	DIA 50mm ID	SLOT SIZE 0.5mm

ELEVATION OF: TOP OF WELL CASING 0.5m agl	TOP & BOTTOM SCREEN 1m bgl & 16m bgl	GW INITIAL ~ 13m bgl	STATIC 12.960m btoc

Depth (metres) / Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
		Sonic vibration drill method did not return any drill cuttings. Well installed in native sand.		

SITE REMARKS

FILE PATH

WELL CONSTRUCTION LOG

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: G30

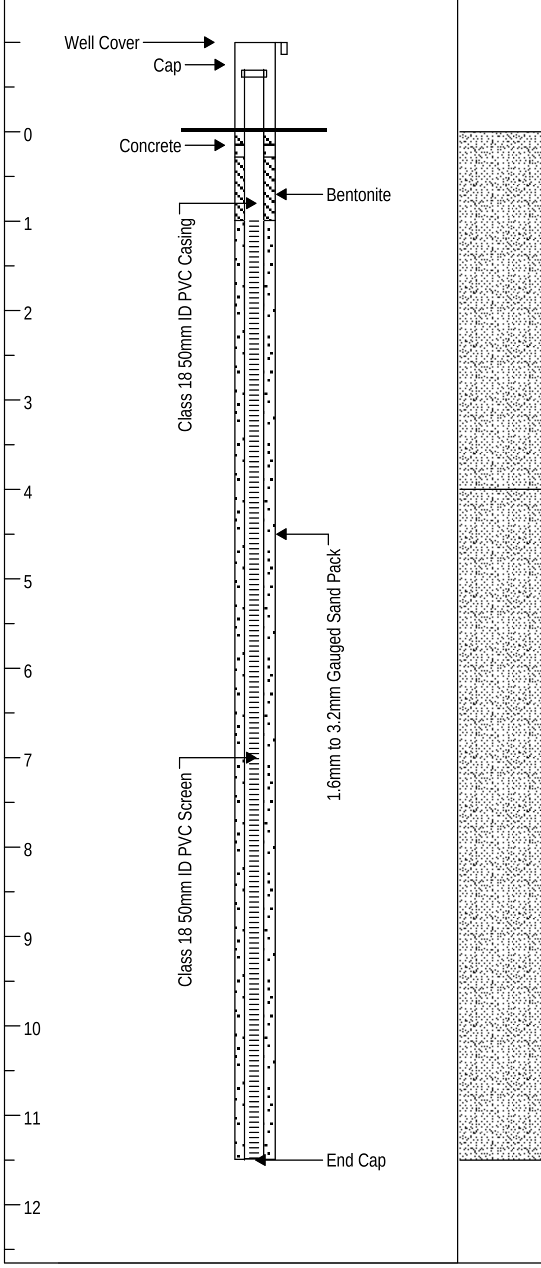
PROJECT NO./NAME 6-08-008 - Cell 6	LOCATION 50 Driver Road, Darch
APPROVED BY Jeff Shivak	LOGGED BY Daniel Thompson
DRILLING CONTRACTOR Waterwise Drilling	DATE 16th September 2008

DRILLING EQUIPMENT/METHOD Air Core	SIZE/ TYPE OF BIT 100mm	EASTING	NORTHING

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 10.5m	DIA 50mm ID	SLOT SIZE 0.5mm

ELEVATION OF: TOP OF WELL CASING 0.5 magl	TOP & BOTTOM SCREEN 1 & 11.5 mbgl	GW INITIAL NA	STATIC NA

Depth metres	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)



Fill
Landfill Material.
Sand present within landfill material is fine to medium grain size. Brown. Dry.

Fill
Landfill Material.
Sand present within landfill material is fine to medium grain size. Dark brown. Moist. End of hole and casing installation is 11.5mBGL

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

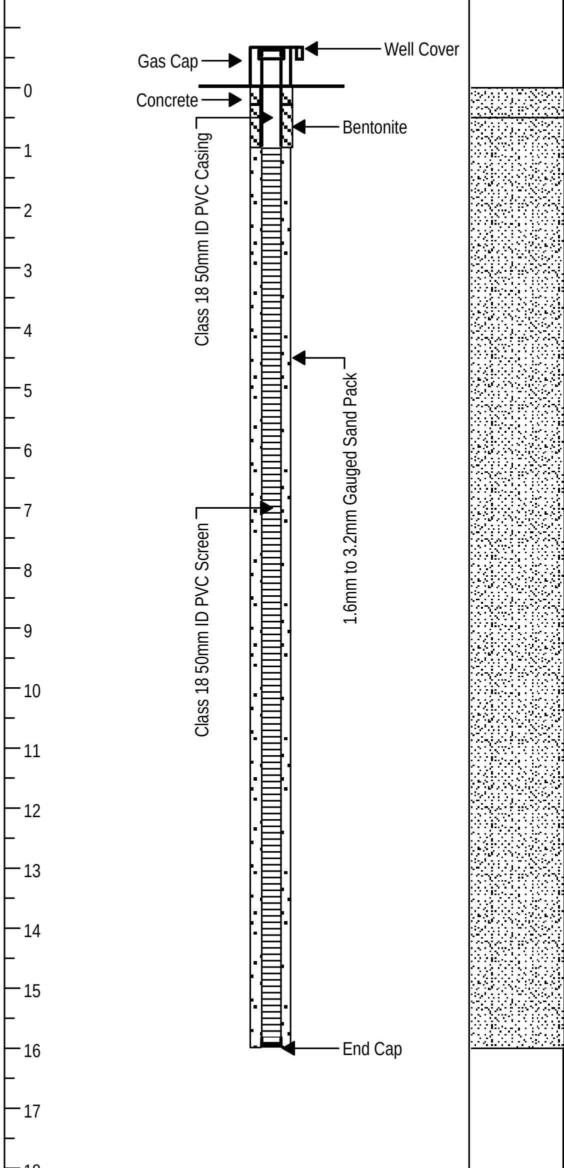
Page:

WELL CONSTRUCTION LOG

Well ID: G31			
PROJECT NO./NAME 6-09-002	LOCATION 50 Driver Rd, Darch		
APPROVED BY Jeff Shivak	LOGGED BY Drew Byrd		
DRILLING CONTRACTOR Direct Push Probing	DATE 20/04/2009		
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 225mm	EASTING 391093.43	NORTHING 6480614.21

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 15m	DIA 50mm ID	SLOT SIZE 0.5mm
ELEVATION OF: TOP OF WELL CASING 0.5m agl		TOP & BOTTOM SCREEN 1m bgl & 16m bgl		GW INITIAL Dry	STATIC Dry

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)



Sand
Fine to medium grain size. Grey/brown/yellow in colour. Dry.

Sand
Medium to fine grain size. Yellow in colour. Dry becoming moist with depth.

End of hole and casing installed to 16mbgl.

SITE REMARKS

FILE PATH

Page:

WELL CONSTRUCTION LOG

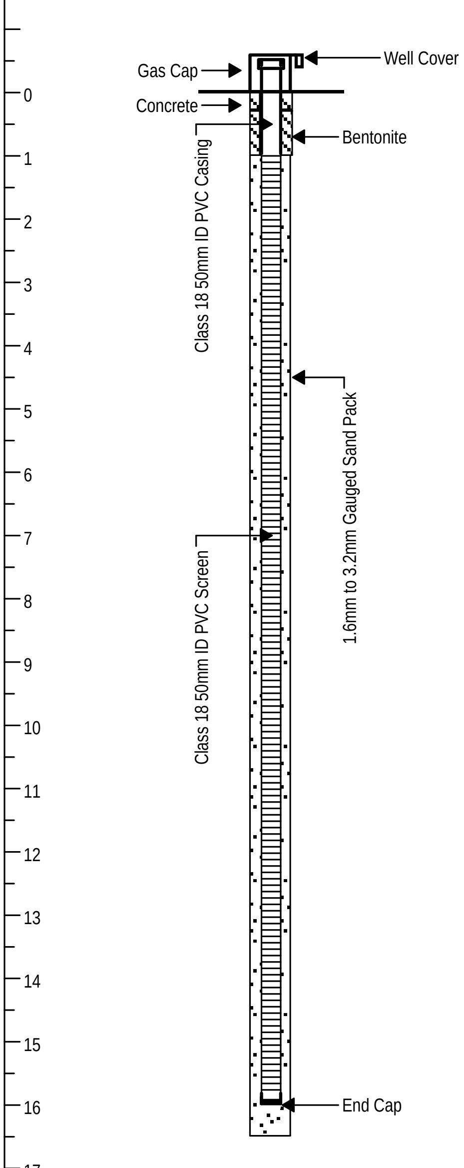
WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: G32			
PROJECT NO./NAME 6-09-002	LOCATION 50 Driver Rd, Darch		
APPROVED BY Jeff Shivak	LOGGED BY Drew Byrd		
DRILLING CONTRACTOR Landcare Drilling Services	DATE 8/04/2009		
DRILLING EQUIPMENT/METHOD Rotary Air Blast	SIZE/ TYPE OF BIT 100mm	EASTING 391191.66	NORTHING 6480612.88

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 15m	DIA 50mm ID	SLOT SIZE 0.5mm

ELEVATION OF: TOP OF WELL CASING 0.6m agl	TOP & BOTTOM SCREEN 1m bgl & 16m bgl	GW INITIAL Dry	STATIC Dry

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
			Sand Medium to fine grain size. Yellow / ight brown in colour. Dry. Organic matter present (roots).		
			Sand Medium to fine grain size. Yellow/light brown in colour. Dry becoming moist with depth. End of hole at 16.5mbgl and casing installed to 16mbgl.		



SITE REMARKS

FILE PATH

WSP Environmental
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

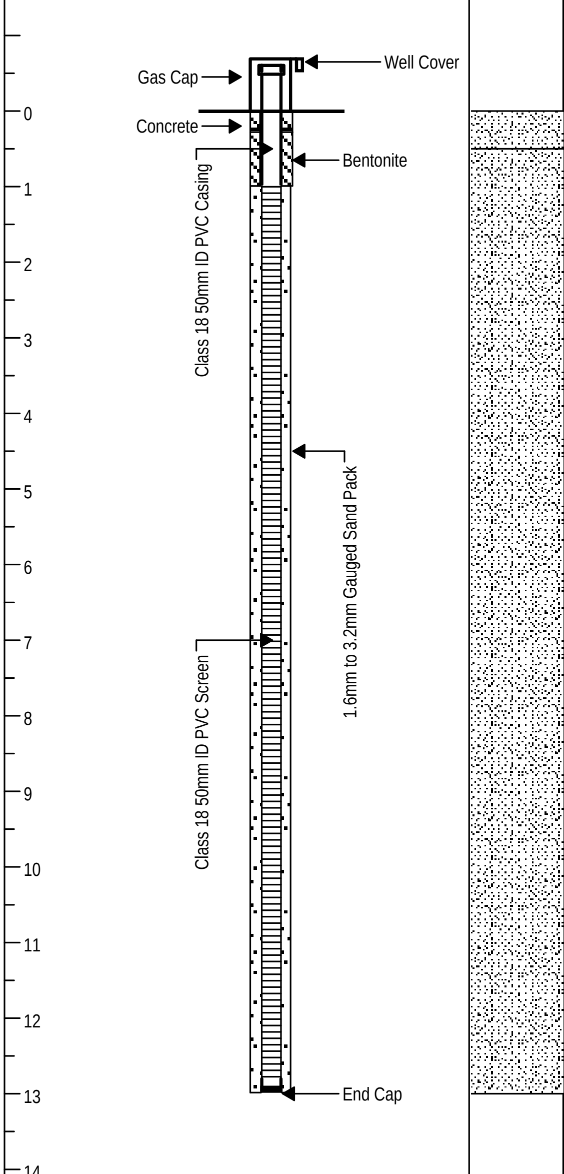
WELL CONSTRUCTION LOG

Page:

Well ID: G33			
PROJECT NO./NAME 6-09-002	LOCATION 50 Driver Rd, Darch		
APPROVED BY Jeff Shivak	LOGGED BY Drew Byrd		
DRILLING CONTRACTOR Direct Push Probing	DATE 20/04/2009		
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 225mm	EASTING 391379.67	NORTHING 6480614.21

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 12m	DIA 50mm ID	SLOT SIZE 0.5mm
ELEVATION OF: TOP OF WELL CASING 0.5m agl	TOP & BOTTOM SCREEN 1m bgl & 13m bgl	GW INITIAL Dry	STATIC Dry		

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)



Sand
Fine to medium grain size. Light brown/grey in colour. Dry.

Sand
Medium to fine grain size. Yellow in colour. Dry becoming moist with depth.

End of hole and casing installed to 13mbgl.

SITE REMARKS

FILE PATH

ENVIROTECH DRILLING

BORE LOG

Client: Non Organic Disposals
Date: 8/03/2016

Address: Lot 1441 Furniss Road
Landsdale, WA, 6065
Hole # G34

Drilling Method : Hollow Stem Auger

Drill Rig: Geoprobe 6620
Actual Total Depth to Ground Level (metres): 16.3m

Driller: Paull Italiano
SWL (metres) : 13.5m

Total Depth to Top of Screen (metres) : N/a

Rod Carried	Rod #	Rod Length (metres)	Accumulated Depth (metres)	Accumulated Depth (feet)	Comment	Sample Yes/No	Time
✓	1	1.5	**1.5**	5	**Starter Rod**	N	
✓	2	1.5	**3.0**	10	Black fine grain sand	N	
✓	3	1.5	**4.5**	15	Yellow sand medium to fine grain	N	
✓	4	1.5	**6.0**	20	Yellow sand medium to fine grain	N	
✓	5	1.5	**7.5**	25	Yellow sand medium to fine grain	N	
✓	6	1.5	**9.0**	30	Yellow sand medium to fine grain	N	
✓	7	1.5	**10.5**	34	Sand black medium to fine grain	N	
✓	8	1.5	**12.0**	39	Sand black medium to fine grain	N	
✓	9	1.5	**13.5**	44	Sand yellow to white medium to fine grain	N	
✓	10	1.5	**15.0**	49	Sand yellow to white medium to fine grain	N	
✓	11	1.5	**16.5**	54	Total depth to ground level 16.3m		
	12	1.5	**18.0**	59			
	13	1.5	**19.5**	64			
	14	1.5	**21.0**	69			
	15	1.5	**22.5**	74			
	16	1.5	**24.0**	79			
	17	1.5	**25.5**	84			
	18	1.5	**27.0**	89			
	19	1.5	**28.5**	94			
	20	1.5	**30.0**	98			
	21	1.5	**31.5**	103			
	22	1.5	**33.0**	108			
	23	1.5	**34.5**	113			
	24	1.5	**36.0**	118			
	25	1.5	**37.5**	123			

Consumables & Materials

Water Usage	0 litres	
Bentonite	0 kg	
Guar	0 kg	
Lo Loss	0	
CR650	0 kg	
50mm (threaded) Class 18 slotted	5 length(s)	Constructed from 1.3m to 16.3m
50mm (threaded) Class 18 blank	1 length(s)	Constructed from -0.6m to 1.3m
50mm class 18 end cap	1 item	1 end cap @ bottom of slotted casing
50mm lockable gripper plug	1 item	1 gripper plug @ top of blank casing (riser)
Gravel pack (fine coarse)	18 bag(s)	Constructed from 0.9m to 16.3m
Bentonite seal (1/4")	1 bucket(s)	Constructed from 0.5m to 0.9m
Back fill		Drilled cuttings used as backfill
Steel riser 1m	1 item	Constructed 0.7m above ground (safety yellow)
Concrete	1 bag(s)	Constructed from 0 to 0.5m

Special Comments

ENVIROTECH DRILLING

BORE LOG

Client: Non Organic Disposals

Date: 9/03/2016

Address: Lot 1441 Furniss Road
Landsdale, WA, 6065

Hole # G35

Drilling Method : Hollow Stem Auger

Drill Rig: Geoprobe 6620

Actual Total Depth to Ground Level (metres): 15.6m

Driller: Paull Italiano

SWL (metres) : 10.6m

Total Depth to Top of Screen (metres) : N/a

Rod Carried	Rod #	Rod Length (metres)	Accumulated Depth (metres)	Accumulated Depth (feet)	Comment	Sample Yes/No	Time
✓	1	1.5	**1.5**	5	**Starter Rod**	N	
✓	2	1.5	**3.0**	10	Black fine grain sand	N	
✓	3	1.5	**4.5**	15	Yellow sand medium to fine grain	N	
✓	4	1.5	**6.0**	20	Yellow sand medium to fine grain	N	
✓	5	1.5	**7.5**	25	Yellow sand medium to fine grain	N	
✓	6	1.5	**9.0**	30	Sand black medium to fine grain	N	
✓	7	1.5	**10.5**	34	Sand black medium to fine grain	N	
✓	8	1.5	**12.0**	39	Sand black medium to fine grain	N	
✓	9	1.5	**13.5**	44	Sand yellow to white medium to fine grain	N	
✓	10	1.5	**15.0**	49	Sand yellow to white medium to fine grain	N	
✓	11	1.5	**16.5**	54	Total depth to ground level 15.6m		
	12	1.5	**18.0**	59			
	13	1.5	**19.5**	64			
	14	1.5	**21.0**	69			
	15	1.5	**22.5**	74			
	16	1.5	**24.0**	79			
	17	1.5	**25.5**	84			
	18	1.5	**27.0**	89			
	19	1.5	**28.5**	94			
	20	1.5	**30.0**	98			
	21	1.5	**31.5**	103			
	22	1.5	**33.0**	108			
	23	1.5	**34.5**	113			
	24	1.5	**36.0**	118			
	25	1.5	**37.5**	123			

Consumables & Materials

Water Usage	0 litres	
Bentonite	0 kg	
Guar	0 kg	
Lo Loss	0	
CR650	0 kg	
50mm (threaded) Class 18 slotted	5 length(s)	Constructed from 1.6m to 15.6m
50mm (threaded) Class 18 blank	1 length(s)	Constructed from -0.6m to 1.6m
50mm class 18 end cap	1 item	1 end cap @ bottom of slotted casing
50mm lockable gripper plug	1 item	1 gripper plug @ top of blank casing (riser)
Gravel pack (fine coarse)	20 bag(s)	Constructed from 1.0m to 15.6m
Bentonite seal (1/4")	1 bucket(s)	Constructed from 0.5m to 1.0m
Back fill		Drilled cuttings used as backfill
Steel riser 1m	1 item	Constructed 0.7m above ground (safety yellow)
Concrete	1 bag(s)	Constructed from 0 to 0.5m

Special Comments

ENVIROTECH DRILLING

BORE LOG

Client: Non Organic Disposals

Date: 8/03/2016

Address: Lot 1441 Furniss Road
Landsdale, WA, 6065

Hole # G36

Drilling Method : Hollow Stem Auger

Drill Rig: Geoprobe 6620

Actual Total Depth to Ground Level (metres): 8.5m

Driller: Paull Italiano

SWL (metres) : Not recorded

Total Depth to Top of Screen (metres) : N/a

Rod Carried	Rod #	Rod Length (metres)	Accumulated Depth (metres)	Accumulated Depth (feet)	Comment	Sample Yes/No	Time
✓	1	1.5	**1.5**	5	**Starter Rod**	N	
✓	2	1.5	**3.0**	10	Black fine grain sand	N	
✓	3	1.5	**4.5**	15	Yellow sand medium to fine grain	N	
✓	4	1.5	**6.0**	20	Sand black medium to fine grain	N	
✓	5	1.5	**7.5**	25	Sand yellow to white medium to fine grain	N	
✓	6	1.5	**9.0**	30	Total depth to ground level 8.5m	N	
	7	1.5	**10.5**	34			
	8	1.5	**12.0**	39			
	9	1.5	**13.5**	44			
	10	1.5	**15.0**	49			
	11	1.5	**16.5**	54			
	12	1.5	**18.0**	59			
	13	1.5	**19.5**	64			
	14	1.5	**21.0**	69			
	15	1.5	**22.5**	74			
	16	1.5	**24.0**	79			
	17	1.5	**25.5**	84			
	18	1.5	**27.0**	89			
	19	1.5	**28.5**	94			
	20	1.5	**30.0**	98			
	21	1.5	**31.5**	103			
	22	1.5	**33.0**	108			
	23	1.5	**34.5**	113			
	24	1.5	**36.0**	118			
	25	1.5	**37.5**	123			

Consumables & Materials

Water Usage	0	litres	
Bentonite	0	kg	
Guar	0	kg	
Lo Loss	0		
CR650	0	kg	
50mm (threaded) Class 18 slotted	2.5	length(s)	Constructed from 1.5m to 8.5m
50mm (threaded) Class 18 blank	1	length(s)	Constructed from -0.6m to 1.5m
50mm class 18 end cap	1	item	1 end cap @ bottom of slotted casing
50mm lockable gripper plug	1	item	1 gripper plug @ top of blank casing (riser)
Gravel pack (fine coarse)	9	bag(s)	Constructed from 1.0m to 8.5m
Bentonite seal (1/4")	1	bucket(s)	Constructed from 0.5m to 1.0m
Back fill			Drilled cuttings used as backfill
Steel riser 1m	1	item	Constructed 0.7m above ground (safety yellow)
Concrete	1	bag(s)	Constructed from 0 to 0.5m

Special Comments

ENVIROTECH DRILLING

BORE LOG

Client: Non Organic Disposals

Date: 9/03/2016

Address: Lot 1441 Furniss Road
Landsdale, WA, 6065

Hole # G37

Drilling Method : Hollow Stem Auger

Drill Rig: Geoprobe 6620

Actual Total Depth to Ground Level (metres): 14.0m

Driller: Paull Italiano

SWL (metres) : 10.2m

Total Depth to Top of Screen (metres) : N/a

Rod Carried	Rod #	Rod Length (metres)	Accumulated Depth (metres)	Accumulated Depth (feet)	Comment	Sample Yes/No	Time
✔	1	1.5	**1.5**	5	**Starter Rod**	N	
✔	2	1.5	**3.0**	10	Black fine grain sand - landfill present	N	
✔	3	1.5	**4.5**	15	Landfill present	N	
✔	4	1.5	**6.0**	20	Landfill present	N	
✔	5	1.5	**7.5**	25	Landfill present	N	
✔	6	1.5	**9.0**	30	Landfill present	N	
✔	7	1.5	**10.5**	34	Sand black medium to fine grain	N	
✔	8	1.5	**12.0**	39	Sand black medium to fine grain	N	
✔	9	1.5	**13.5**	44	Sand yellow to white medium to fine grain	N	
✔	10	1.5	**15.0**	49	Total depth to ground level 14.0m		
	11	1.5	**16.5**	54			
	12	1.5	**18.0**	59			
	13	1.5	**19.5**	64			
	14	1.5	**21.0**	69			
	15	1.5	**22.5**	74			
	16	1.5	**24.0**	79			
	17	1.5	**25.5**	84			
	18	1.5	**27.0**	89			
	19	1.5	**28.5**	94			
	20	1.5	**30.0**	98			
	21	1.5	**31.5**	103			
	22	1.5	**33.0**	108			
	23	1.5	**34.5**	113			
	24	1.5	**36.0**	118			
	25	1.5	**37.5**	123			

Consumables & Materials

Water Usage	0 litres	
Bentonite	0 kg	
Guar	0 kg	
Lo Loss	0	
CR650	0 kg	
50mm (threaded) Class 18 slotted	4.5 length(s)	Constructed from 1.5m to 14.0m
50mm (threaded) Class 18 blank	1 length(s)	Constructed from -0.6m to 1.5m
50mm class 18 end cap	1 item	1 end cap @ bottom of slotted casing
50mm lockable gripper plug	1 item	1 gripper plug @ top of blank casing (riser)
Gravel pack (fine coarse)	18 bag(s)	Constructed from 1.0m to 15.6m
Bentonite seal (1/4")	1 bucket(s)	Constructed from 0.5m to 1.0m
Back fill		Drilled cuttings used as backfill
Steel riser 1m	1 item	Constructed 0.7m above ground (safety yellow)
Concrete	1 bag(s)	Constructed from 0 to 0.5m

Special Comments

ENVIROTECH DRILLING

BORE LOG

Client: Non Organic Disposals

Date: 10/03/2016

Address: Lot 1441 Furniss Road
Landsdale, WA, 6065

Hole # G38

Drilling Method : Hollow Stem Auger

Drill Rig: Geoprobe 6620

Actual Total Depth to Ground Level (metres): 13.0m

Driller: Paull Italiano

SWL (metres) : Not recorded

Total Depth to Top of Screen (metres) : N/a

Rod Carried	Rod #	Rod Length (metres)	Accumulated Depth (metres)	Accumulated Depth (feet)	Comment	Sample Yes/No	Time
✓	1	1.5	**1.5**	5	**Starter Rod**	N	
✓	2	1.5	**3.0**	10	Black fine grain sand - landfill present	N	
✓	3	1.5	**4.5**	15	Landfill present	N	
✓	4	1.5	**6.0**	20	Landfill present	N	
✓	5	1.5	**7.5**	25	Landfill present	N	
✓	6	1.5	**9.0**	30	Landfill present	N	
✓	7	1.5	**10.5**	34	Sand black medium to fine grain	N	
✓	8	1.5	**12.0**	39	Sand yellow to white medium to fine grain	N	
✓	9	1.5	**13.5**	44	Total depth to ground level 13.0m	N	
	10	1.5	**15.0**	49			
	11	1.5	**16.5**	54			
	12	1.5	**18.0**	59			
	13	1.5	**19.5**	64			
	14	1.5	**21.0**	69			
	15	1.5	**22.5**	74			
	16	1.5	**24.0**	79			
	17	1.5	**25.5**	84			
	18	1.5	**27.0**	89			
	19	1.5	**28.5**	94			
	20	1.5	**30.0**	98			
	21	1.5	**31.5**	103			
	22	1.5	**33.0**	108			
	23	1.5	**34.5**	113			
	24	1.5	**36.0**	118			
	25	1.5	**37.5**	123			

Consumables & Materials

Water Usage	0 litres	
Bentonite	0 kg	
Guar	0 kg	
Lo Loss	0	
CR650	0 kg	
50mm (threaded) Class 18 slotted	4 length(s)	Constructed from 1.5m to 13.0m
50mm (threaded) Class 18 blank	1 length(s)	Constructed from -0.6m to 1.5m
50mm class 18 end cap	1 item	1 end cap @ bottom of slotted casing
50mm lockable gripper plug	1 item	1 gripper plug @ top of blank casing (riser)
Gravel pack (fine coarse)	15 bag(s)	Constructed from 1.0m to 13.0m
Bentonite seal (1/4")	1 bucket(s)	Constructed from 0.5m to 1.0m
Back fill		Drilled cuttings used as backfill
Steel riser 1m	1 item	Constructed 0.7m above ground (safety yellow)
Concrete	1 bag(s)	Constructed from 0 to 0.5m

Special Comments

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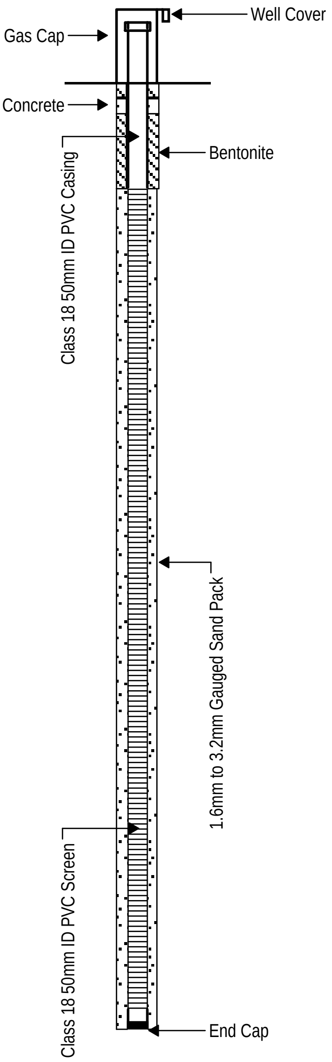
WELL CONSTRUCTION LOG

WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODG01			
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch		
APPROVED BY Drew Byrd	LOGGED BY Jacob King		
DRILLING CONTRACTOR Envirotech Drilling	DATE 23/04/2011		
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm	EASTING 391379.67	NORTHING 6480614.21
CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 11m
DIA 50mm ID	SLOT SIZE 0.4mm		
ELEVATION OF: TOP OF WELL CASING 0.5m agl	TOP & BOTTOM SCREEN 1m bgl & 8.9m bgl	GW INITIAL Dry	STATIC Dry

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0			Sand Grey/brown in colour fine grain. Debris0.5-1.5mm diameter (wood, plastic, small brick pieces)		
0.5			Sand Black sand fine grain. 0.5-1.5mm diameter. no debris		
1			Sand Medium to fine grain size. Yellow in colour. Dry becoming moist with depth. End of hole and casing installed to 8.9mbgl.		
2					
3					
4					
5					
6					
7					
8					
9					

SITE REMARKS

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WELL CONSTRUCTION LOG

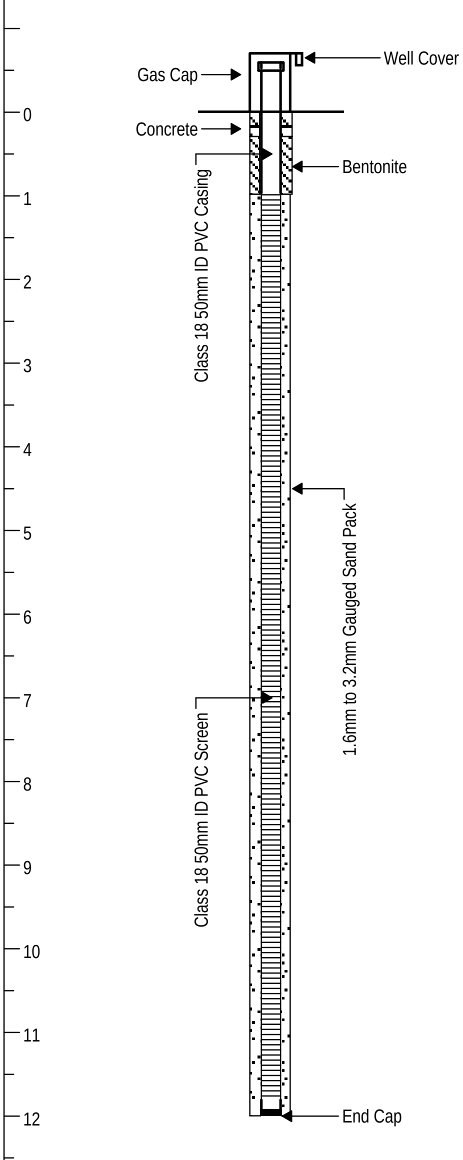
WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODG02

PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch		
APPROVED BY Drew Byrd	LOGGED BY Jacob King		
DRILLING CONTRACTOR Envirotech Drilling	DATE 23/04/2011		
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm	EASTING 391379.67	NORTHING 6480614.21

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 11m	DIA 50mm ID	SLOT SIZE 0.4mm

ELEVATION OF: TOP OF WELL CASING 0.5m agl	TOP & BOTTOM SCREEN 1m bgl & 12m bgl	GW INITIAL Dry / STATIC Dry

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0–1.5			Sand Fine to medium grain size. Light brown/grey in colour. Dry.		
1.5–12			Sand Medium to fine grain size. Yellow in colour. Dry becoming moist with depth. End of hole and casing installed to 12mbgl.		

SITE REMARKS

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WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW01

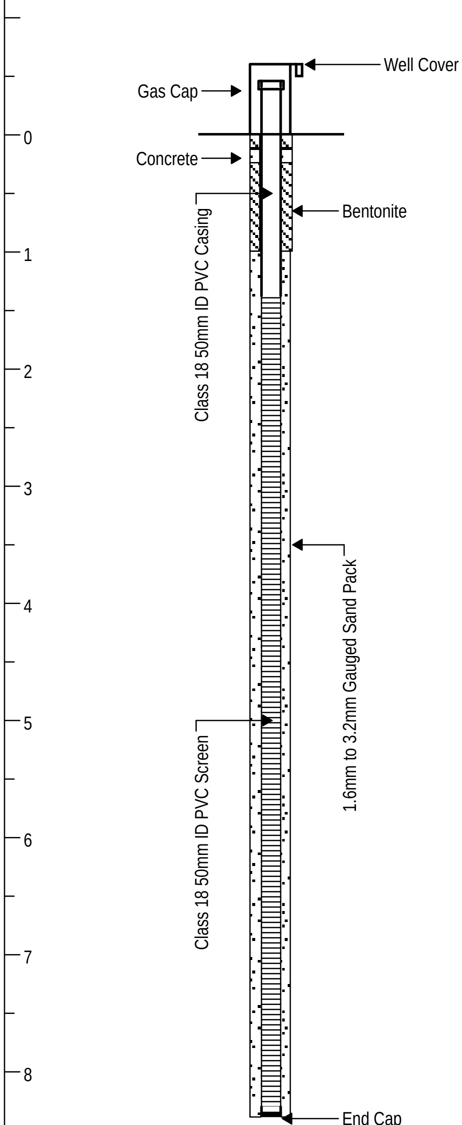
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch
APPROVED BY Drew Byrd	LOGGED BY Jacob King
DRILLING CONTRACTOR Envirotech Drilling	DATE 15/02/2011
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm

EASTING NORTHING

CASING MAT/DIA 50mm PVC | SCREEN TYPE Horizontal Slotted | MAT Class 18 PVC | LENGTH 7m | DIA 50mm ID | SLOT SIZE 0.4mm

ELEVATION OF: TOP OF WELL CASING 0.4m agl | TOP & BOTTOM SCREEN 1.4m bgl & 8.4m bgl | GW INITIAL ~ 6.23m bgl | STATIC 6.517m btoc

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0 – 4			Sand Poorly sorted sand. Medium to fine grain size. Dark grey in colour. Dry, loosely packed. Chipped brick and limestone observed in drill cuttings. Foam (matress / insulation) enciountered at 3 - 4m.		
4 – 5.5			Sand Poorly sorted sand. Medium to fine grain size. Dark grey to black in colour. Dry, loosely packed.		
5.5 – 8.4			Sand Poorly sorted sand. Medium to fine grain size. Dark grey to black in colour. Moist becoming wet at 6m, loosely packed.		



SITE REMARKS Soil logged from auger returns, and may not be precise. No odour observed in soil profile. agl: above ground level. bgl: below ground level. btoc: below top of casing.

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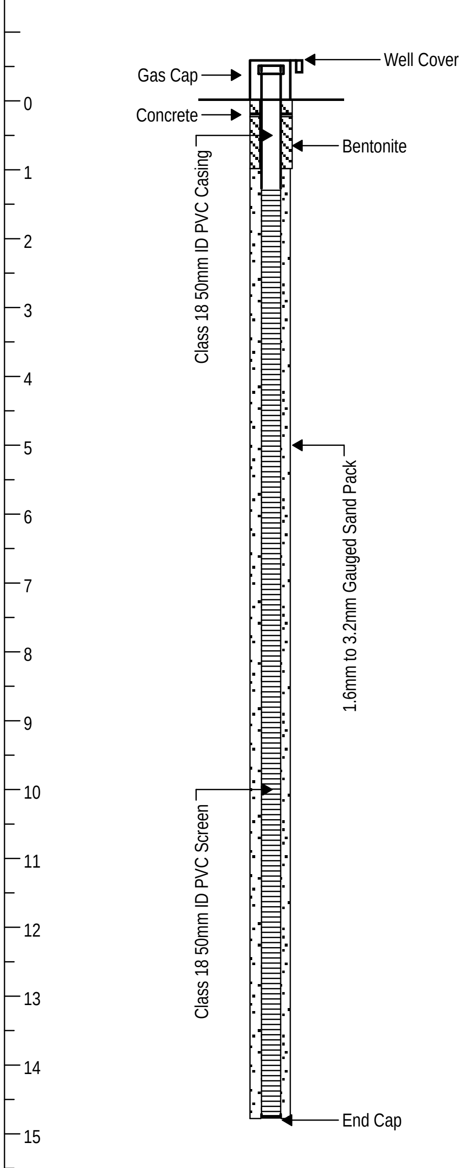
WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW02			
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch		
APPROVED BY Drew Byrd	LOGGED BY Jacob King		
DRILLING CONTRACTOR Envirotech Drilling	DATE 15/02/2011		
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm	EASTING	NORTHING

CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 13.5m	DIA 50mm ID	SLOT SIZE 0.4mm

ELEVATION OF: TOP OF WELL CASING 0.4m agl	TOP & BOTTOM SCREEN 1.3m bgl & 14.8m bgl	GW INITIAL ~ 13.05m bgl STATIC 13.547m btoc



Depth (metres)	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0 – 3		Sand Poorly sorted sand. Medium to fine grain size. Brown to grey in colour. Dry, loosely packed. Chipped brick, concrete and limestone, rubber, etc (some glass) observed in drill cuttings.		
3 – 12		Sand Poorly sorted sand. Medium to fine grain size. Black to dark grey in colour. Dry, loosely packed. Chipped brick, concrete and limestone, rubber, etc (some glass) observed in drill cuttings.		
12 – 14.8		Sand Poorly sorted sand. Medium to fine grain size. Black to dark grey in colour. Moist becoming wet at 13m, loosely packed.		

SITE REMARKS Soil logged from auger returns, and may not be precise. No odour observed in soil profile. agl: above ground level. bgl: below ground level. btoc: below top of casing.

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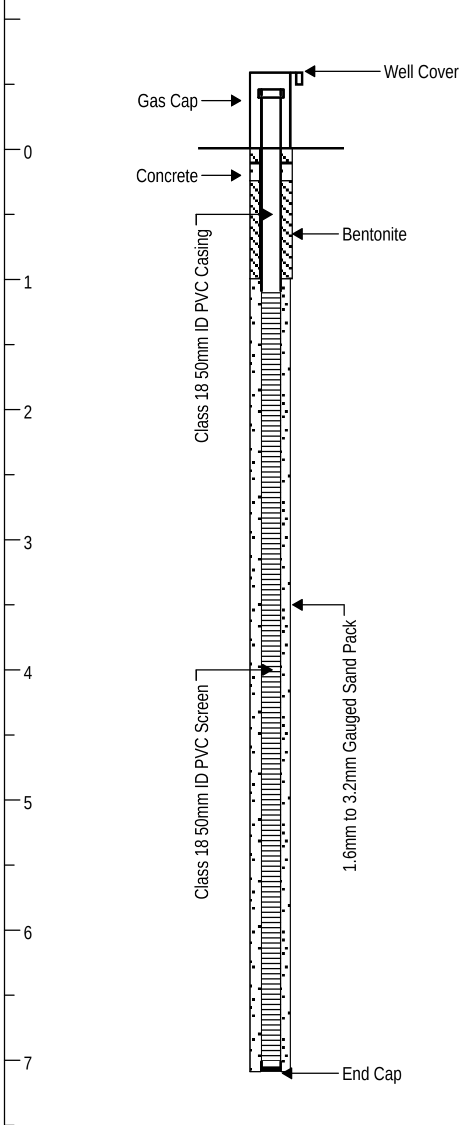
WELL CONSTRUCTION LOG

WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW03		
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch	
APPROVED BY Drew Byrd	LOGGED BY Jacob King	
DRILLING CONTRACTOR Envirotech Drilling	DATE 15/02/2011	
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm	EASTING NORTHING
CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted MAT Class 18 PVC LENGTH 6m	DIA 50mm ID SLOT SIZE 0.4mm
ELEVATION OF: TOP OF WELL CASING 0.4m agl	TOP & BOTTOM SCREEN 1.1m bgl & 7.1m bgl	GW INITIAL ~ 5.1m bgl STATIC 5.373m btoc

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0 – 1			Sand Poorly sorted sand. Medium to fine grain size. Dark grey to black in colour. Dry, loosely packed. Wood, chipped brick and limestone, and rubber observed in drill cuttings.		
1 – 3			Sand Poorly sorted sand. Medium to fine grain size. Black in colour. Dry, loosely packed. Wood, chipped brick and limestone, and rubber observed in drill cuttings. Slight decomposing odour at 2 - 3m.		
3 – 4.5			Sand Poorly sorted sand. Medium to fine grain size. Black in colour. Dry, loosely packed.		
4.5 – 7.1			Sand Poorly sorted sand. Medium to fine grain size. Dark grey in colour. Loosely packed.Moist , becoming wet at 5m.		

SITE REMARKS Soil logged from hollow flight auger returns, and may not be precise. agl: above ground level. bgl: below ground level. btoc: below top of casing.

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WELL CONSTRUCTION LOG

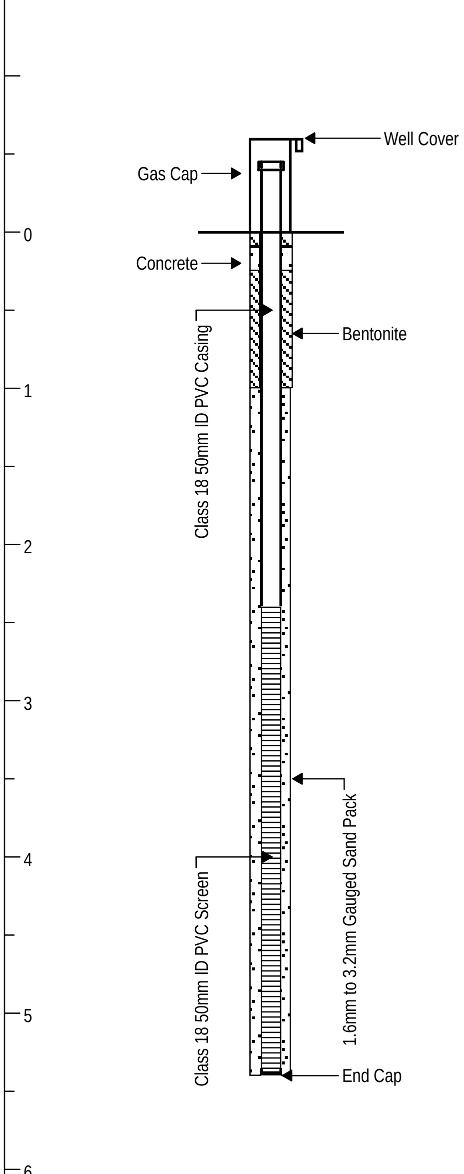
WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW04

PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch
APPROVED BY Drew Byrd	LOGGED BY Jacob King
DRILLING CONTRACTOR Envirotech Drilling	DATE 15/02/2011
DRILLING EQUIPMENT/METHOD Hollow Flight Auger	SIZE/ TYPE OF BIT 165mm; EASTING; NORTHING

CASING MAT/DIA 50mm PVC | SCREEN TYPE Horizontal Slotted | MAT Class 18 PVC | LENGTH 3m | DIA 50mm ID | SLOT SIZE 0.4mm

ELEVATION OF: TOP OF WELL CASING 0.4m agl | TOP & BOTTOM SCREEN 2.4m bgl & 5.4m bgl | GW INITIAL ~ 2.9m bgl | STATIC 3.178m btoc



Depth (metres)	Graphic	Visual Description	Sample Number	PID Values (ppmv)
0 – ~0.3		Limestone Limestone/roadbase.		
~0.3 – 2		Sand Poorly sorted sand. Medium to fine grain size. Black in colour. Dry, loosely packed.		
2 – 3		Sand Poorly sorted sand. Medium to fine grain size. Dark grey in colour. Dry, loosely packed.		
3 – 4		Sand Poorly sorted sand. Medium to fine grain size. Brown in colour. Moist, loosely packed.		
4 – 5.4		Sand Poorly sorted sand. Medium to fine grain size. Dark brown in colour. Wet, loosely packed.		

SITE REMARKS Soil logged from auger returns, and may not be precise. No odour observed in soil profile. agl: above ground level. bgl: below ground level. btoc: below top of casing.

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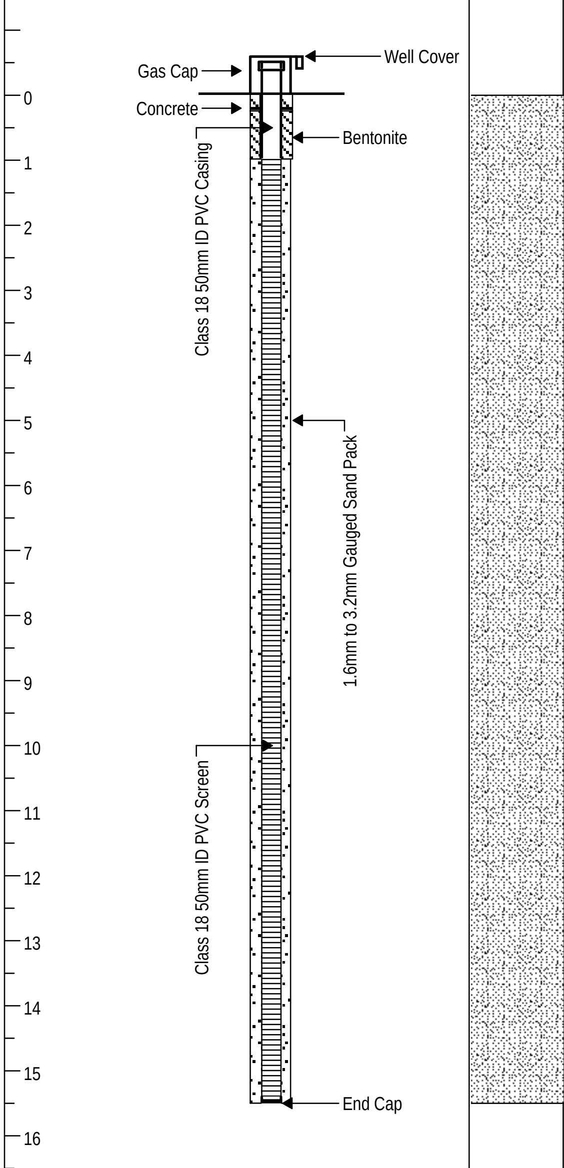
WELL CONSTRUCTION LOG

WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW05			
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch		
APPROVED BY Drew Byrd	LOGGED BY Jacob King		
DRILLING CONTRACTOR Envirotech Drilling	DATE 16/02/2011		
DRILLING EQUIPMENT/METHOD Mud Rotary	SIZE/ TYPE OF BIT 100mm	EASTING	NORTHING
CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted MAT Class 18 PVC	LENGTH 14.5m	DIA 50mm ID SLOT SIZE 0.4mm
ELEVATION OF: TOP OF WELL CASING 0.4m agl	TOP & BOTTOM SCREEN 1m bgl & 15.5m bgl	GW INITIAL ~ 12.9m bgl	STATIC 13.527m btoc

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)



Sand
Poorly sorted sand. Medium to fine grain size. Yellow in colour becoming white to grey at approximately 12 - 12.5m.

Due to mud rotary method of drilling, returns could not be accurately logged.

Approximately 2Ltr of Biovis drilling mud additive was used during the drilling of NODGW05.

SITE REMARKS Soil logged from mud returns, and may not be precise. No odour observed in soil profile. agl: above ground level. bgl: below ground level. btoc: below top of casing.

FILE PATH

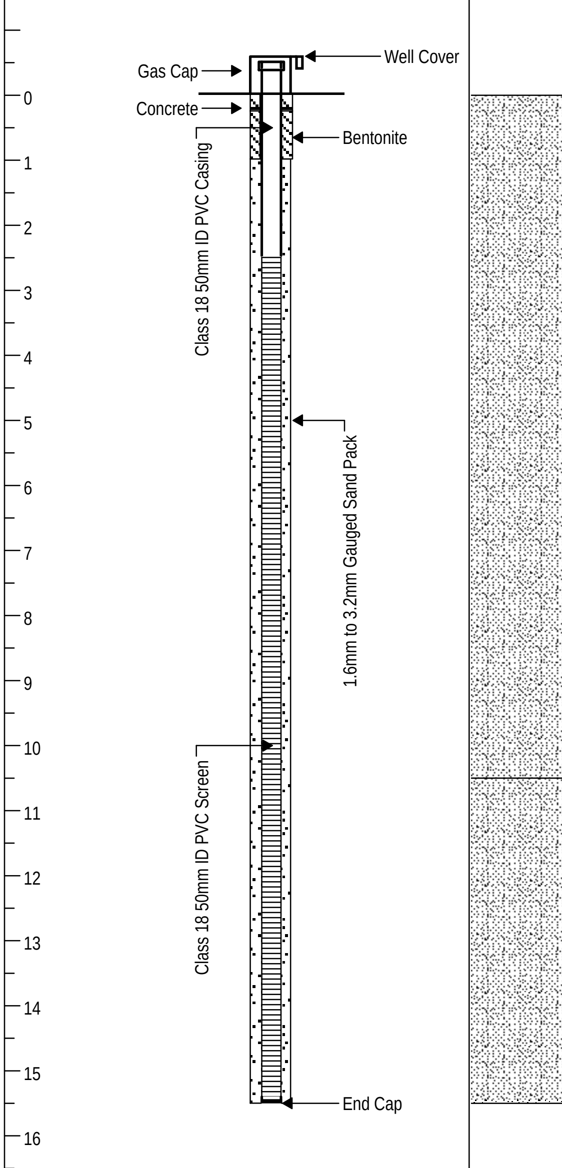
WELL CONSTRUCTION LOG

WSP Environment and Energy
29 Catherine Street
Subiaco WA 6008
Tel: (08) 9489 4300

Well ID: NODGW06	
PROJECT NO./NAME 10542	LOCATION 50 Driver Rd, Darch
APPROVED BY Drew Byrd	LOGGED BY Jacob King
DRILLING CONTRACTOR Envirotech Drilling	DATE 16/02/2011
DRILLING EQUIPMENT/METHOD Mud Rotary	SIZE/ TYPE OF BIT 100mm

EASTING	NORTHING				
CASING MAT/DIA 50mm PVC	SCREEN TYPE Horizontal Slotted	MAT Class 18 PVC	LENGTH 13m	DIA 50mm ID	SLOT SIZE 0.4mm
ELEVATION OF: TOP OF WELL CASING 0.4m agl	TOP & BOTTOM SCREEN 2.5m bgl & 15.5m bgl	GW INITIAL ~ 10.5m bgl	STATIC 12.047m btoc		

Depth (metres)	Well Completion Details	Graphic	Visual Description	Sample Number	PID Values (ppmv)



Depth (metres)	Visual Description
0 – ~10.5	Sand Poorly sorted sand. Medium to fine grain size. Brown to dark grey to black in colour. Brick, limestone, styrofoam, concrete, etc observed in drill cuttings.
~10.5 – 15.5	Sand Poorly sorted sand. Medium to fine grain size. Brown to dark grey to black in colour. Due to mud rotary method of drilling, returns could not be accurately logged. Approximately 5Ltr of Biovis drilling mud additive was used during the drilling of NODGW06.

SITE REMARKS Soil logged from mud returns, and may not be precise. No odour observed in soil profile. agl: above ground level. bgl: below ground level. btoc: below top of casing.

FILE PATH

Gas Bore Logs – GA1

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 10 m; Water level approximately 10 m.
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 9.0	SAND; dark grey, medium grained with rubble (inert material)
	9.0 – 10.0	SAND; white, fine to medium grained with no rubble
		END of BOREHOLE at 10.0 m

Gas Bore Logs – GA2

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 9.5 m; Water level approximately ?? – refusal at 9.5 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 9.5	SAND; dark grey to black, medium grained with rubble (inert material)
		END of BOREHOLE at 9.5 m

Gas Bore Logs – GA3

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 11.5 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 10.5	SAND; dark grey, medium grained with rubble (inert material)
	10.5 – 11.5	SAND; grey, medium grained with no rubble
		END of BOREHOLE at 11.5 m

Gas Bore Logs – GA4

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 10 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 9.0	SAND; dark grey, medium grained with rubble (inert material)
	9.0 – 10.0	SAND; grey/white, fine to medium grained with no rubble
		END of BOREHOLE at 10.0 m

Gas Bore Logs – GA5

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 10 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 9.0	SAND; dark grey, medium grained with rubble (inert material)
	9.0 – 10.0	SAND; grey, medium grained with no rubble
		END of BOREHOLE at 10.0 m

Gas Bore Logs – GA6

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 8 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 8.0	SAND; dark grey, medium grained with rubble (inert material) – refusal at 8.0 m due to concrete
		END of BOREHOLE at 8.0 m

Gas Bore Logs – GA7

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 11 m; Water level approximately 9.9 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 2.5	SAND; brown, fine to medium grained
	2.5 – 10.0	SAND; dark grey, medium grained with rubble (inert material)
	10.0 – 11.0	SAND; grey, medium grained (wet)
		END of BOREHOLE at 11.0 m

Gas Bore Logs – GA8

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 9.5 m;
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 1.0	SAND; black, fine to medium grained
	1.0 – 2.4	SAND; grey, medium grained
	2.4 – 9.5	SAND; grey, medium grained with rubble (inert material)
		END of BOREHOLE at 9.5 m

Gas Bore Logs – GA9

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 8.5 m; Water level approximately 5.5 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 8.0	SAND; grey, fine to medium grained
	8.0 – 8.5	SAND; white, fine to medium grained
		END of BOREHOLE at 8.5 m

Gas Bore Logs – GA10

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 12.5 m; Water level approximately 12.5 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 3.0	SAND; grey, fine to medium grained
	3.0 – 12.5	SAND; dark grey with some rubble (inert material) – minimal amount of rubble
		END of BOREHOLE at 12.5 m

Gas Bore Logs – GA11

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 6 m; Water level approximately 2.1 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 2.5	SAND; grey with some rubble (inert material)
	2.5 – 12.5	SAND; white, fine to medium grained (wet)
		END of BOREHOLE at 6.0 m

Groundwater/Gas Bore Logs – GW1

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 14.0 m; SWL at 21 July 2020 was 11.629 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 10.0	SAND; dark grey with some rubble (inert material)
	10.0 – 14.0	SAND; white, fine to medium grained
		END of BOREHOLE at 14.0 m

Groundwater/Gas Bore Logs – GW2

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 13.5 m; SWL at 21 July 2020 was 12.751 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 11.5	SAND; dark grey with some rubble (inert material)
	11.5 – 13.5	SAND; white, fine to medium grained
		END of BOREHOLE at 13.5 m

Groundwater/Gas Bore Logs – GW3

115 Furniss Road, Darch – Client: Newsquare Nominees atf The Driver Road Trust – J020–003 – Driller: South Western Drilling; Constructed from 22 to 25 June 2020 with Hollow Stem Augers
Screen (slotted pipe) placed at 1 to 12.5 m; SWL at 21 July 2020 was 9.320 m
NB: All bores gravel packed, sealed with 0.5 m bentonite, backfilled and concreted in place

BORE CONSTRUCTION	DEPTH (m)	SOIL MATERIAL/FIELD DESCRIPTION
	0 – 9.5	SAND; grey with some rubble (inert material)
	9.5 – 12.5	SAND; grey/white, fine to medium grained
		END of BOREHOLE at 12.5 m

APPENDIX M

SMEC SAMPLING AND ANALYSIS PLAN

Non Organic Disposals

Sampling and Analysis Plan

For: Cell 6 Pty Ltd

14 July 2009

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LIST OF TABLES

1 Introduction

SMEC Australia Pty Ltd (SMEC) has been commissioned by Cell 6 Pty Ltd, the operators of Non Organic Disposals (NOD) - a licensed Class I inert waste landfill, to develop a sampling and analysis plan to validate fill material screened on-site as 'clean' (i.e. posing no actual or potential risk to human health and/or the environment) for re-use off-site. This document has been compiled in accordance with the guidelines of the Department of Environment (DoE, now Department of Environment and Conservation (DEC)) *Contaminated Sites Management Series*; National Environment Protection Council (NEPC) Measure, (1999, *Assessment of Site Contamination*), including all relevant schedules, and the Department of Health (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia.*

1.1 Objectives

The primary aims and objectives are to develop an appropriate sampling and analysis plan to statistically validate the hypothesis that the arithmetic mean concentration of contaminants, if present, is less than DEC Ecological Investigation Levels (EIL) at a 95% upper confidence level to meet 'not contaminated' and off-site 'fill' criteria posing no actual or potential risk to human health and/or the environment.

1.2 Scope of Work

SMEC has undertaken the following:

- informal discussions with the DEC Contaminated Sites Section and DEC/Environmental Protection Authority (EPA) licensing officer;
- review of relevant legislation, guidelines and standards; and
- review of site operations and information.

This document details the:

- Sampling and Analysis Plan (SAP); and
- Environmental and Health Risk Assessment.

1.3 Relevant Legislation, Guidelines And Standards

Currently there are no guidelines or regulations (2006) under the *Contaminated Sites Act, 2003* or the *Environmental Protection Act, 1986* (*EP Act*) that provide for the assessment of clean fill originating from a disturbed site.

Generally the *EP Act* provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment including incidental matters. Therefore any reuse of fill material should include an assessment of the potential adverse environmental or human health impacts from the use (placement) of the fill material.

The DEC *Landfill Waste Classification and Waste Definitions guide* (1996, as amended in 2005) defines clean fill material as… "material that will have no harmful effects on the environment and which consists of rocks or soils arising from the excavation of undisturbed material. For material not from a clean excavation, it must be validated to have contaminants below relevant ecological investigation levels (as defined in the document *Assessment Levels for Soil, Sediment and Water*, Department of Environment, 2003)(DEC, 2005)".

Legislative requirements, guidelines for categorising material and standards for sampling fill material have been listed below in Table 1. These documents have been considered in developing the sampling and analysis plan for the site.

Table 1: Relevant legislation, guidelines and standards for the sampling and analysis plan.

WA Legislation
Contaminated Sites Act, 2003 and Regulations, 2006.
Guidelines
Department of Environment, Contaminated Sites Management Series: Assessment Levels for Soil, Sediment and Water – Draft for Public Comment, Version 3, November 2003.
Department of Environment, Contaminated Sites Management Series: Development of Sampling and Analysis Programs.
Department of Environment, Landfill Waste Classification and Waste Definitions, 1996 (as amended, 2005).
Department of Health, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, May 2009.
National Environment Protection Council, National Environmental Protection (Assessment of Site Contamination) Measure, Schedule B(3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, 1999.
EPA New South Wales, Contaminated Sites – Sampling Design Guidelines, September 1995.
EPA Victoria, publication 441, A Guide to the Sampling and Analysis of Waters, Wastewaters, Soils and Wastes, March 2000.
EPA Victoria, publication 448, Classification of Wastes, May 2007.
EPA Victoria, publication 722, Environmental Guidelines for Reducing Greenhouse Gas Emissions from Landfills and Wastewater Treatment, November 2000.
EPA Victoria, publication 1178, Soil Sampling Guideline (Off-site Management and Acceptance to Landfill), November 2007.
Standards
AS1141:3.1–1996, Methods for Sampling and Testing Aggregates, Method 3.1: Sampling-aggregates.
AS 4482.1-2005, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 1: Non-volatile and Semi-volatile compounds.
AS 4482.2-1999, Guide to the Sampling and Investigation of Potentially Contaminated Soil. Part 2: Volatile Substances.
AS4964-2004: Method for the Qualitative Identification of Asbestos in Bulk Samples.
Main Roads Western Australia, MRWA 100.1: Sampling Procedures for Soil and Manufactured Granulated Materials.

2 Site identification

Non Organic Disposals (the site) is located on Lot 8005 on Plan 36178 Driver Road, Darch, WA, 6065. The site is a licensed premise (Licence No. 6832/1997/11) within Schedule 1 of the *Environmental Protection Regulations, 1987* for the operation of an inert landfill. Activities at the premise include, but are not limited to:

- operation of an inert landfill site - building material, i.e. concrete, sand, bricks etc.;
- storage and screening of excavated lawn; and
- crushing of building material and storage in stockpiles for sale or disposal.

The site is prescribed under the categories shown in Table 2, taken from the *Environmental Protection Regulations, 1987*:

Table 2: Categories prescribed to the site under the Environmental Protection Regulations, 1987.

Category Number	Category Name	Description
13	Crushing of building material.	Premises on which waste building or demolition material is crushed or cleaned.
62	Solid waste disposal.	Premises on which waste is stored, or sorted, pending final disposal or re-use.
63	Class 1 inert landfill site.	Premises on which waste (as determined by reference to the waste types set out in Landfill Waste Classification and Waste Definitions (DoE, 2005) is accepted for burial.

The site occupies 11.953 hectares (119,530 m^2) subdivided as 'Proposed Lot 1" in the north-western corner of Lot 8005 Driver Road (36.668 hectares) and is bound to the north by Furniss Road and west by Driver Road. "Proposed Lot 2" borders the site to the east and the south and is currently vacant. However "Proposed Lot 2" is under future plans for residential development. NOD's landfill activities occur on Proposed Lot 1.

Present and proposed infrastructure and resources at the site include:

- Picking belt;
- Site office;
- Isuzu service truck;
- Komatsu excavator and grab;
- 2 x Terex dump truck TA 40;
- 2 x light vehicle wagons;
- 4 x Komatsu wheel loaders;
- Hyundai wheel loader;
- 2 x Terex Finlay 883 screens;
- Rangerscreen mobile conveyor and screen;
- Ingersol roller;
- Shaetec CS5X Diesel Shredder;
- Caterpillar water cart; and
- Extec C-13 Impactor.

3 Site Operation

3.1 Historical Operations

Currently the site is zoned as a Landfill Precinct under the City of Wanneroo District Structure Plan No.2 - Zoning Plan (CoW, 2008). A search of the DEC's Contaminated Sites Database for the site returned no matches (DEC, 2009). The site has historically been used for sand mining since the 1960s, introducing filling activities in the late 1980s. Surrounding land uses have included native bush land and market gardens prior to redevelopment into residential and industrial/ commercial areas.

A timeline of land use at the site is given in Table 3. Information has been collated through discussions with the previous site owner and historical aerial photographs:

Table 3: Timeline of land use at the site.

Year	Land Use
Pre 1960s	Native bush land.
1960s	Sand mining commenced on the western section of the site.
Late 1960s	A residence was constructed in the southwest corner of the site.
1970s	Sand mining continued to the northern and eastern sections of the site.
1987	Uncontrolled land filling commenced.
1990s	Sand mining and land filling activities occurred concurrently.
2003	Sand mining operations ceased.
2003 to present	The site has operated as a Class I inert landfill, being filled from the eastern edge of the site heading in a westerly direction.

3.2 Current Operations

Cell 6 Pty Ltd, trading as Non Organic Disposals (NOD) took over operations 17 April 2009. The site receives between 200,000 and 300,000 cubic metres (m^3) of Class I building and demolition waste each year. Inert waste received has been layered and compacted in 500 millimetre (mm) layers. The waste received at the site can be categorised in grades as shown in Table 4:

Table 4: Grades of waste received at the site.

Grades of Waste					
Grade 1 (G1)	Clean fill.				
Grade 2 (G2)	Sand, gravel, limestone, road materials (<50mm).				
Grade 3 (G3)	Bricks, tiles, sand and concrete.				
Grade 4 (G4)	Loads with reinforced concrete, steel and iron sheeting.				
No wood, green waste or grass allowed in Grades 1-4.					
Grade 5 (G5)	Mixed Loads.				
Grade 6 (G6)	Lawn/Grass.				
Not accepted on Site:					
Asbestos	Household Rubbish	Fibreglass	Tyres	Liquid	Car Bodies
Chemicals	Trees & stumps	Motor Oils	Plastic	Carpet	
Food waste	Office Waste	Wire Fencing			
NOTE: Lawn and grass received (Grade 6) has never been buried on site, it is used to cover completed areas to approx 200mm thick.					

Superceded See Risk Matrix

3.3 Proposed Operations

Based on current operations it is proposed to implement a process to crush and screen all suitable incoming waste, removing organics and other light weight waste from the fines and crushed aggregates for on-selling with the unsuitable waste being disposed to landfill off-site. Testing by NOD on site has indicated that less than 3% weight for weight (w/w) of unsuitable waste will need to be disposed from clean fill and construction material.

It is proposed that incoming waste will be stockpiled prior to processing according to five different types of material:

1. Construction waste – for screening, testing and re-sale;
2. Demolition waste – sand scalped for screening, testing and re-sale;
3. Grade 1 (clean fill) – for screening, testing and re-sale;
4. Grade 2 (road materials) – for crushing to form road base; and
5. Grade 6 (lawn) – to be used for rehabilitation purposes (surface cover).

Grade 1, Grade 2 and construction wastes will be tested against clean fill criteria for re-sale as a fill material. Grade 1 waste is clean fill from virgin ground and is considered as having a low risk of containing contaminants, i.e. heavy metals. Grade 1 material is also expected to be asbestos free, due to the absence of previous demolition and construction activities. asbestos. Grade 2 material consists of road materials such as sand, gravel, road base and bitumen and is considered as having a medium risk of containing elevated contaminated levels, i.e. hydrocarbons. Construction waste is also considered to have a medium risk of elevated contaminant levels and potential for asbestos presence, primarily due to construction in established suburbs (i.e. in renovation projects).

Demolition waste will be initially screened, with material passing the smallest screen (sands) removed and considered as a high risk material for testing and potential sale. Demolition waste retained on the smallest screen will be crushed and then disposed on site as landfill. It will not be tested for re-sale, due to the higher potential risk of it containing contaminants exceeding relevant clean fill criteria and the potential presence of asbestos from older buildings.

Existing waste on site (approximately 550,000 tonnes) will be treated as demolition waste.

Lawn will be used to cover completed areas of the site for rehabilitation.

The objective is to fill the site with screened material, allowing future beneficial use of the site. The City of Wanneroo Agreed Local Structure Plan shows proposed subdivisions and residential development as the end land use (CoW, 2008b).

4 Potential Contaminants

In accordance with requirements set by Licence No. 6832/1997/11, no contaminated materials are to be accepted/disposed of at the site. However, potential exists for some contaminated material to be introduced. Potentially contaminating material entering the site is expected to be associated with construction/demolition waste from off-site and uncontrolled waste from historical landfill activities on-site. Potentially contaminating material may include:

- asbestos;
- tyres and wood;
- pre-1980's fill;
- demolition waste from old sites where a higher potential exists for contamination by metals, pesticides, hydrocarbons and asbestos; and
- building waste, including from domestic storages/workshops (i.e. fertilisers, pesticides, oil, paint and grease).

Common indicators of contamination associated with building (demolition) waste include metals, hydrocarbons, pesticides and asbestos. Sources of the common indicators (contaminants) include, but are not limited to:

- metals – fragments from building waste, paints,
- hydrocarbons – oil and grease used in garages and/or sheds;
- pesticides – used around the house and stored in sheds;
- asbestos – used in asbestos-cement products in house construction for ceilings and fences until 1984,with chrysotile asbestos being used until 1987 (DoH, 2009); and
- acid sulfate soils – widespread around coastal regions of Western Australia and are also locally associated with freshwater wetlands and saline sulfate rich groundwater in some agricultural areas (DEC, 2009).

5 Sampling and analysis plan

The Sampling and Analysis Plan has been developed in accordance with the documents listed in Table 1 (section 1.3) of this document. The aim of the sampling and analysis plan is to obtain representative and accurate data to adequately assess any potential health and environmental risks associated with the fill material.

5.1 Soil Matrices

Step 1: Separate high, medium and low risk material types based on origin

To reduce the suite of analytes that are tested and to reduce the risk of blending potentially contaminated material with clean fill it is recommended that soil is quarantined and managed based on its origin. For example, it is considered that demolition waste from a well established suburb, such as Fremantle, would pose a greater risk of containing contaminants (i.e. asbestos, pesticides, hydrocarbons) than construction waste from a new (undisturbed) suburb (i.e. Ellenbrook). Because of this risk the sand scalped from demolition waste is characterised as high risk material.

The number and frequency of trucks arriving at the facility from sites across Perth makes separating soil by individual sites problematic, due to potential space requirements.

By keeping soils of similar origin together it is also expected that the material will be relatively homogenous and pose less risk of containing skewed (log-normal) results. Homogenous material is advantageous as it produces more accurate results from laboratory analysis. Statistical means such as the co-efficient of variation (CV) will be used to measure the relative homogeneity or heterogeneity of a distribution following laboratory analysis. The co-efficient of variation is described in Section 9.

On entry to the site a visual inspection of the truck should be conducted and a quick delivery record should be completed by the driver to determine the origin and type of material (G1 - G6). A second visual inspection at the tipping face is also recommended. Material not meeting the criteria of the landfill licence and/or suspected of containing asbestos should not be accepted on site.

To keep soil of the same origin together the delivery record should aim to provide information on the origin, history, and nature of material/contaminants. An example of the proposed delivery record is shown in Appendix C and the Operational Management Plan. The final stockpiles, ranging from 1000 tonnes (t) and not exceeding 5000t in size, should be kept in the same designated risk category (high/medium/low) during all stages of operations.

Recording the origin of the material, i.e. selecting the site type (construction or demolition), will assist in identifying high risk material as early indicators of potentially contaminated material.

High, medium and low risk material should be separated into risk categories to determine if the material is to be tested for on-selling. As stated in Section 3.3, incoming waste will be stockpiled into five material types, depending on its origin. These five material types are:

1. Construction waste – for screening, testing and re-sale;
2. Demolition waste – sand scalped for screening, testing and re-sale;
3. Grade 1 (clean fill) – for screening, testing and re-sale;
4. Grade 2 (road materials) – for crushing to form road base; and
5. Grade 6 (lawn) for rehabilitation and surface cover.

The five material types fit into the three risk ratings in a manner shown in Table 5. Sand will be removed (scalped) from selected demolition waste and considered as a high risk material for testing against clean fill criteria for potential re-sale. Demolition waste retained on the smallest screen will be crushed and put to landfill on site, not to be tested or sold. Medium and low risk material will be tested from the conveyor against clean fill criteria for potential re-sale.

Table 5: Recommended risk ratings for the five proposed material types.

High Risk	• Demolition waste • Grade 6 (lawn)
Medium Risk	• Construction waste • Grade 2 (road materials)
Low Risk	• Grade 1 (clean fill)

It is recommended that stockpiles be sorted based upon material type and origins into high, medium and low risk to improve material homogeneity and reduce the risk of blending potentially contaminated material with potentially clean material.

5.1.1 Organics

Large volumes of material containing organics have the potential to generate significant quantities of methane gas. Methane gas generation in buried material could potentially move laterally within the soil. Laterally moving methane can become trapped and accumulate in buildings at concentrations hazardous to human health and higher than lower explosive limit (LEL). Methane is flammable at concentrations between the LEL of 5% volume for volume (v/v) and the upper explosive limit (UEL) of 15% v/v (USEPA, 1993). In severe cases of methane accumulation, asphyxiation or explosion could occur (EPA, 2000).

All organic material should be removed to prevent methane generation. Methane is a greenhouse gas with 21 times the warming potential of carbon dioxide (VIC EPA, 2000). On-site testing has shown that it requires only 2-3% weight for weight (w/w) organics in material to generate methane at a concentration of 40% v/v in the soil strata. Areas not producing methane were found to typically have an organic content below 1% w/w. Screening and crushing trials conducted by NOD on site has delivered fines with organic content below 0.5% w/w, indicating processes on site will adequately manage organic content and potential methane generation.

5.1.2 Blending

During the screening process, stockpiles classified as high risk should not be blended with medium or low risk material. Blending stockpiles will significantly increase the risk of introducing contaminants into the final fill material to be sold. Another by-product of blending stockpiles is an increased probability of undetected contaminant hotspots existing within the blended fill material.

Blending is also likely to increase material heterogeneity. Statistical analyses for contaminants, i.e. the 95% Upper Confidence Level for average concentration (95% $UCL_{average}$), are more suited to homogenous material (VIC EPA, 2007). The 95% $UCL_{average}$ demonstrates with 95% confidence that the true site average of a contaminant is at or below the stated concentration levels.

The 95% $UCL_{average}$ has been defined by the Environmental Professionals of Connecticut (EPOC) as a statistical tool for acknowledging uncertainties and variability within an environmental set of data without presenting an unacceptable risk to human health or the environment (2000). The 95% $UCL_{average}$ should be used when only one single sample concentration exceeds twice the applicable concentration (EPOC, 2000).

Where the material is heterogeneous, it may be necessary to take larger sample numbers to enable the calculation of a more accurate 95% $UCL_{average}$ (VIC EPA, 2007). This is due to a higher coefficient of variation (CV) compared with homogenous (CV < 1.2) material. Heterogeneous fill material possesses a CV greater than 1.2 and uses a different (logarithmic) equation to homogenous fill for calculating the 95% $UCL_{average}$. For any particular analyte, a heterogeneous material will require a lower average concentration when compared with homogenous material to meet acceptance criteria, due to a higher standard deviation and $UCL_{average}$ of results. This will lead to an increased sampling frequency in many cases.

Step 2: Collect representative samples of potential fill material

To collect representative samples for assessment against clean fill criteria, unbiased samples need to be collected from the finished product. A sampling and analysis plan must therefore be designed and implemented. The main aspect of the sampling and analysis plan is the sampling procedure, which includes:

- the sampling design, which determines the frequency of sampling;
- the sampling pattern, which determines where samples will be taken from; and
- sampling techniques, which determine sampling methodology for unbiased sampling and proper Quality Assurance/Quality Control (QA/QC).

5.1.3 Sampling Design

For classifying waste, the Victorian EPA recommends a minimum of three samples to be taken from stockpiles with a volume of 200m^3 or less, with one sample per 25m^3 minimum for volumes between 75m^3 and 200m^3 (VIC EPA, 2007). Stockpile volumes at the site are expected to exceed 200m^3.

For soil volumes greater than 200m^3, the sample frequency may be reduced by comparing the 95% $UCL_{average}$ for soil contaminants with acceptance criteria (VIC EPA, 2007). The recommended minimum sample number for use of the 95% $UCL_{average}$ is 10 samples. This minimum sample number guarantees an accurate result by minimising uncertainty in the variation of contaminants. Subsequently, there is more confidence that the true mean of contaminant concentrations within the material body has been accurately identified. For soil volumes above 2500m^3 the minimum sampling rate should not be less than one sample per 250m^3 for analysis using the 95% $UCL_{average}$ (NSW EPA 1995; VIC EPA 2007).

This sampling frequency is considered appropriate for classifying waste. Table 6 overleaf has been adapted from VIC EPA (2007) and shows minimum sample numbers required for proposed clean fill stockpiles of varying volumes.

Table 6: Sample numbers required by VIC EPA (2007) for the classification of waste

Soil mass (t) (based on dry density of 1.40	Soil volume (m^3)	Minimum No. of samples at 1:25m^3	Minimum No. of samples using 95% $UCL_{average}$ for waste classification
420	300	12	10
560	400	16	10
700	500	20	10
840	600	24	10
980	700	28	10
1,120	800	32	10
1,260	900	36	10
1,400	1,000	40	10
2,100	1,500	60	10
2,800	2,000	80	10
3,500	2,500	100	10
4,200	3,000	120	12 (1:250m^3)
5,600	4,000	160	16 (1:250m^3)
6,300	4,500	180	18 (1:250m^3)
7,200	5,000	200	20 (1:250m^3)
>7,200	>5,000	1:25 m^3	1:250m^3

The sampling design for assessing asbestos differs from that described above. The Department of Health (2009) recommends one sample per 70m^3 (approximately 100t) or 14 samples per 1000m^3 for sampling asbestos from building waste or waste without a defined origin where a conveyor has been used in the screening process. This is approximately four times the sampling frequency for waste classification for other contaminants, i.e. metals. This sampling frequency shall be adopted for asbestos testing of high and medium risk material.

Based upon the suggested sample frequencies for metals and asbestos, together with a production rate of 210t per hour (150m^3 per hour based upon a dry density of 1.40t/m^3), the frequency of sampling per unit time can be calculated. Each day of production at NOD will be treated as one batch, with the one type of material (high, medium or low risk)) screened per day. The maximum volume of material to be produced in one day, based upon a 10-hour production shift is 2,100t or 1,400m^3. The licence conditions set for operations at the site limit hours of operation to 0700 – 1700 daily to meet noise criteria, making production times in excess of 10 hours impossible.

From Table 6, it can be concluded that ten samples will need to be taken for waste classification per day of production, regardless of the production time. It is therefore more cost-effective for daily production times to be maximised. Asbestos will need to be sampled for high and medium risk stockpiles at a frequency of one sample per 28 minutes of production or approximately twice hourly to meet its 1:70m^3 sample frequency recommendation for material off a conveyor process (DoH, 2009). Low risk material does not need to be tested for asbestos, however it is suggested that initial testing of low risk material should involve some sampling and testing for asbestos to validate that it is asbestos free.

Table 7 shows the sampling frequency based upon varying production times from six to 12 hours.

Table 7: Sample frequency for waste classification based upon production time in hours.

Production time in hours	Volume produced (t) at 210t/hr	Volume produced (m^3) at 210t/hr	Sampling frequency for waste classification per volume (m^3)	Sampling frequency for waste classification in hours and minutes
6	1,260	900	1:90m^3	0 hours 36 min
7	1,470	1,050	1:105m^3	0 hours 42 min
8	1,680	1,200	1:120m^3	0 hours 48 min
9	1,890	1,350	1:135m^3	0 hours 54 min
10	2,100	1,500	1:150m^3	1 hour 0 min
11	2,310	1,650	1:165m^3	1 hour 6 min
12	2,520	1,800	1:180m^3	1 hour 12 min

It is recommended a minimum of 10 samples are collected or a sampling frequency of 1:250m^3 is used for volumes exceeding 3,500t except asbestos, where a 4:1 sampling ratio (1 sample per 70m^3) should be implemented for high and medium risk stockpiles. Analysis should be conducted using the 95% $UCL_{average}$ for all contaminants.

5.1.4 Sampling Pattern

At the site, crushed building waste is screened and sorted before being stockpiled for sale. Stockpiles will range from 1,000t to a maximum of 5,000t (715m^3 to 3,570m^3).

The sampling pattern describes where and when samples are to be taken from a conveyor belt or stockpile. Sampling may be systematic (uniform/grid) or random. Random sampling may also be stratified to minimise potential bias. Methods for sampling from conveyor belts and stockpiles are described in AS1141.3.1-1996 (SA, 1996). Stratified random sampling is described in AS1289.1.4.2-1998 (SA, 1998).

Sampling from the conveyor belt is recommended by Australian Standards (1996) and Department of Health (2009) as it is easier to obtain a more accurate and representative sample. Sampling may be conducted whilst the conveyor is moving or stopped, depending on accessibility, safety and production factors. Sampling from a moving conveyor minimises potential bias in sampling and maximises production, however it comes with inherent safety hazards and potential manual labour risks. For this reason, sampling from a stopped conveyor is the recommended option for the sampling pattern, however sampling from a moving conveyor may be performed if potential hazards and risks can be adequately minimised.

There are two options for unbiased sampling of soils from the conveyor belt. Depending on site conditions, either sampling pattern has its own advantages and disadvantages. Options for sampling include:

- Systematic sampling off the conveyor, i.e. at specific time intervals based on volume; or
- Random sampling off the conveyor, i.e. at random time intervals. When sampling for asbestos, the Department of Health recommends that random time interval sampling is conducted off the conveyor (DoH, 2009).

Random sampling is used primarily to eliminate the potential for bias in sampling. Random sampling should be performed in a stratified manner so that samples are taken throughout the entire day. Stratified sampling divides the sampling up into a number of segments based upon the number of samples to be taken and the time of production.

For example, if the production time is eight hours and ten samples need to be taken, the sampling frequency (Table 7) is 48 minutes. Therefore, instead of randomly taking ten samples throughout the day at any time and potentially having several samples taken within close proximity of each other, one sample will be taken randomly in each 48 minute segment.

For operational and accuracy reasons, sampling from a stopped conveyor belt is recommended at random (stratified) time intervals. This can be achieved by the use of a sampling frame. Sampling frames are described in AS1141.3.1-1996.

It is recommended that stratified random sampling from a stopped conveyor belt is adopted as it provides an accurate method of sampling whilst posing minimal risks to safety.

5.1.5 Sampling Technique

The sampling technique describes the methodology for each sampling pattern. For accuracy and operational reasons, sampling from conveyor belts is considered to be the most appropriate sampling technique. For safety reasons, sampling should be performed on a stopped conveyor. The most advantageous sampling technique for a conveyor belt depends on a number of factors, namely:

- conveyor belt accessibility and height
- conveyor width; and
- the mass and volume of sample increments to be collected.

The main focus of the sampling procedure is to gain a representative sample, i.e. a sample that is considered to be similar in physical and chemical properties to the entire material body (SA, 1996). Therefore, sampling techniques should be adhered to so the representativeness and integrity of the sample is maximised. Techniques for the aforementioned sampling patterns have been briefly described below.

Sampling off Conveyor Belts

Sampling off conveyors is considered more accurate than sampling from stockpiles, due to the ability to sample the entire cross-section of the material body more easily and eliminating factors that decrease accuracy in stockpile sampling, such as settling. The aim of sampling from conveyor belts is to gain a representative sample by obtaining a full cross-section of the conveyor, i.e. full width by a pre-determined length. Sampling can be performed on moving or stopped conveyor belts, each with their inherent advantages and disadvantages.

A cross-section of material can be obtained from a stopped conveyor by using a sampling frame as described in AS1141.3.1-1996 (SA, 1996). A sampling frame is basically a metal frame that fits on the belt to separate the sample increment from all other material. It should be full width of the belt by a predetermined length, i.e. 300mm. The full amount of material should be removed from inside the sampling frame, taking care to collect all of the fines. The advantages of stopping the conveyor belt are maximised accuracy and reduced safety hazards. However, production is disrupted by stopping the conveyor belt.

Sampling from a moving conveyor belt, if done correctly, can minimise safety hazards whilst minimising disruption to productivity. Obtaining a full cross-section of material from a moving conveyor belt, i.e. from the point of discharge, helps to minimise potential bias. Sampling from a moving conveyor should be performed using an extendable sampling pole with a sturdy container attached to the end. The container should be large enough to obtain a sample from the entire cross-section of material without creating manual handling and/or safety issues. If necessary, the sample may be taken in more than one increment to decrease individual sample masses. Using a pole to sample from the point of discharge eliminates safety issues arising from working at heights and potentially falling objects. It is important to note that OH&S procedures such as Personal Protective Equipment (PPE) will need to be implemented and adhered to prior to commencement of sampling.

It is recommended that sampling is performed from a stopped conveyor belt using a sampling frame or similar device to isolate the sample increment.

5.1.6 Suite Of Analytes

The suites of analytes are based on the likely ‘common indicators’ or potential contaminants from a Class I inert landfill comprising of building materials. Initial samples should be selectively analysed for:

- Metals: Arsenic (As), Cadmium (Cd), Total Chromium (Cr), Copper (Cu), Mercury (Hg), Lead (Pb), Nickel (Ni) and Zinc (Zn);
- Total Petroleum Hydrocarbons (TPH);
- Organochlorine (OC) pesticides;
- Total Organic Carbon (TOC); and
- Asbestos.

Potential acid sulfate soils (PASS) are not to be accepted by the Class I facility. Where material is suspected of containing potentially acid forming soils/materials additional sampling and analysis will need to be undertaken in accordance with DEC guidelines.

It is expected that analysis of an individual sample of high or medium risk material (with one asbestos sample) by a NATA accredited laboratory for the parameters described above would cost around $200. However, additional asbestos samples may need to be analysed at around $50 each to comply with the 1:70m^3 recommended frequency. An individual low risk sample will cost around $150 to test by the same laboratory.

Total and leachable concentrations, where required, should be measured against DEC (WA) Ecological (EIL) Investigation Levels (full NEPM suite) NEPC investigation levels should be used if there are no investigation levels set by DEC for an analyte.

5.1.7 Leachate Analysis

Leachate analysis is not required when the total concentration of all samples for an analyte (i.e. zinc) is less than the leachate analysis threshold. The leachate analysis threshold is For example, if zinc is measured to be 5000 mg/kg, and the Australian Standard Leaching Procedure (ASLP) for zinc is 300 mg/kg, then leachate analysis is required if concentrations are greater than 6000 mg/kg (20 x 300).

Therefore, if zinc is 5000mg/kg, it is less than 6000mg/kg and does not require leachate analysis. The leachable concentration threshold and leachate analysis concentration threshold for the analytes to be tested are given overleaf in Table 8.

Table 8: Threshold for leachate analysis as described by DoE (2005).

Analyte	Leachate analysis threshold (CT x 20) in mg/kg	ASLP test required
Arsenic, As	500	concentration x 20 > 500
Cadmium, Cd	100	concentration x 20 > 100
Chromium (hexavalent), Cr VI	500	concentration x 20 > 500
Copper, Cu	5% by weight	
Mercury, Hg	75	concentration x 20 > 75
Lead, Pb	1500	concentration x 20 > 1500
Nickel, Ni	3000	concentration x 20 > 3000
Zinc, Zn	5% by weight	
C_6-C_9	2800	concentration x 20 > 2800
C_6-C_{35} (aromatics)	450	concentration x 20 > 450
C_{10}-C_{35} (aliphatics)	28000	concentration x 20 > 28000
Organochlorine (OC) pesticides	50	concentration x 20 > 50

Laboratory testing should include as a minimum the standard 8 metal suite (As, Cd, Cr, Cu, Hg, Pb, Ni, Zn); Total Petroleum Hydrocarbons; organochlorine (OC) pesticides and Total Organic Carbon, with asbestos testing required for high and medium risk material.

It is also recommended that one sample is tested for the full NEPM suite as per Schedule B(3) of the National Environmental Protection (Assessment of Site Contamination) Measure (1999) Series per sampling batch on high and medium risk stockpiles.

5.1.8 Asbestos

Asbestos sampling design and testing should be performed for high and medium risk material proposed for on-selling in accordance with Section 4.1.6 of the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (DoH, 2009). Low risk material is not considered to contain asbestos material.

The minimum sampling frequency for asbestos is 14 samples per 1000m^3, or approximately 1:70m^3 for material coming off a conveyor process. Suspect material should be targeted during sampling. This is called justified sampling.

Asbestos sampling and testing in accordance with Department of Health (2009) is two-fold:

For asbestos-containing material (ACM) and fibrous asbestos (FA), a ten (10) Litre (L) sample is taken at each sampling point and screened through a 7mm sieve or spread out for inspection on a contrasting colour fabric. Particles retained on the sieve are inspected for ACM. The colour fabric is useful for identifying both ACM and FA. Identified ACM and FA is weighed for each sample and calculated for asbestos concentration, as described overleaf and in Section 4.1.7 of the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (DoH, 2009).

$$\%\ \text{Soil Asbestos} = \frac{\%\ \text{Asbestos Content} \times \text{ACM (kg)}}{\text{Soil Volume (L)} \times \text{Soil Density (t/m}^3)}$$

Where:

- Asbestos Content is 15% (for asbestos cement materials);
- Soil Volume is 10L per sample; and
- Soil Density is 1.40 t/m^3 (from geotechnical testing of fill material).

For asbestos fines (AF), the Department of Health (2009) suggests one wetted 500mL sample is taken from a different sampling point to ACM/FA and submitted to a NATA accredited laboratory for analysis by phase-contrast microscopy (PCM) or polarised-light microscopy (PLM) in accordance with *AS4964-2004*: *Method for the Qualitative Identification of asbestos in bulk samples*.

NATA accredited laboratories often recommend a 250g bagged sample is supplied for asbestos presence/absence testing by PLM (asbestos identification) and PCM (fibre count), together with qualitative identification as per *AS4964-2004*.

ACM, FA and AF investigation criteria are shown in Table 9, adapted from DoH (2009).

Table 9: Soil asbestos investigation criteria, dependant on end usage, as per DoH (2009).

DoH (2009) Soil asbestos investigation criteria	Site uses
0.001 % w/w asbestos for FA and AF	All site uses.
0.01 % w/w asbestos for ACM	Residential use, day care centres, preschools, etc.
0.04 % w/w asbestos for ACM	Residential, minimal soil access.
0.02 % w/w asbestos for ACM	Parks, public open spaces, playing fields, etc.
0.05 % w/w asbestos for ACM	Commercial/Industrial.

If asbestos of any form is above investigation criteria, the material will be treated as contaminated and proceedings for detailed investigation and management of asbestos contamination must commence in accordance with:

- Department of Health (2009): Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia; and
- Department of Environment (2003): Contaminated Sites Management Series.

If ACM concentrations are found to be below investigation criteria set by both DoH (2009) and NEPM (1999) and no free fibres or FA are found in the stockpile, then the stockpile may be considered asbestos-free and in compliance with clean fill criteria.

It is recommended sampling is conducted in accordance with Department of Health (2009) and laboratory analysis by a NATA laboratory by phase-contrast microscopy (PCM) and polarised light microscopy (PLM) in accordance with AS4964-2004. This should be in addition to visual inspection of stockpiles and delivery trucks for asbestos presence.

6 Field Quality Assurance/Quality Control (QA/QC)

Procedures to adopt during field sampling of clean fill material include:

- Personal Protective Equipment (PPE) should be worn by staff when sampling. This includes disposable latex gloves, helmet, high visibility vest, safety glasses and any other appropriate PPE (i.e. dust mask).
- All soil samples are to be collected using clean equipment decontaminated between sampling points using a brush and/or water with laboratory grade detergent.
- One duplicate and one blank sample are to be taken for analysis per batch or per 20 samples, whichever is most frequent. Duplicate samples measure the variation in analytes between two samples taken from the same location, as well as measuring variation potentially from sampling techniques. Blank samples measure contamination of samples from transportation, storage, containers and/or laboratory analysis;
- Clean solvent washed glass jars provided by a NATA laboratory are to be used to retain the samples, stored on ice in an esky prior to delivery the same day or refrigerated overnight, prior to delivery the following day to SGS laboratories.
- Holding times must not be exceeded. The analyte with the shortest maximum holding time is total organic carbon (TOC), with a maximum holding time of seven days. Maximum holding times are described by NEPM (1999), VIC EPA (2000) and in AS4482.1-2005. Holding times are shown in Table 10.
- Containers should be clearly labeled with sample identification details, sampling date and sampler initials. This will aid sample traceability.
- A register of sample data should be kept to track the samples and the corresponding stockpiles and location of sampling points within each stockpile, (i.e. a grid reference).
- Chain of custody should be upheld, as per Section 6.1.

Split samples are part of best practice and will aide sample QC. However, it may not be necessary for waste classification. During further analysis, where contaminants are known to be present and could potentially be above EILs, one split sample should be taken per 20 samples or one per sample batch, whichever is more frequent. Split samples measure the variation in results between two laboratories using the same test methods for the same analytes, with variation potentially due to natural variation in material or differences in laboratory preparation/accuracy.

Table 10: Maximum holding times for analytes in soil samples as described by AS4482.1-2005, unless otherwise stated.

Analyte	Maximum Holding Time in days as per AS4482.1-2005
Metals and metalloids other than mercury(i.e. As, Cd, Cr, Cu, Ni, Pb, Zn)	180
Mercury (Hg)	28
Pesticides, organochlorines (OC)	14
Petroleum Hydrocarbons, Total (TPH)	14
Organic Carbon, Total (TOC)[1]	7
Asbestos	14

1 – Source: NEPC (1999).

6.1 Chain Of Custody

Chain of Custody forms should be provided by the receiving NATA laboratory on delivery/collection of sample containers. The chain of custody details the collection and transportation of samples. An example chain of custody form is given in Appendix B. It is primarily used to aide sample traceability. The minimum criteria for a chain of custody form, described in *Development of Sampling and Analysis Programs* (DEP, 2001) include:

- the name of the people transferring and receiving the samples;
- the time and date the samples were taken and received at the laboratory;
- condition of the samples (temperature) and the use of ice bricks etc;
- name and contact details of the client;
- analytes to be measured;
- details of the sample matrix;
- required limits of reporting (detection limits);
- criteria to be compared against, i.e. Ecological Investigation Levels; and
- any additional notes or comments.

Adherence to all described QA/QC methods listed in Section 6, with an emphasis on sample traceability (chain of custody), sample integrity and the use of QC samples to validate sampling methods is recommended.

7 Laboratory QA/QC

Laboratory analysis should be undertaken by a NATA registered laboratory and is therefore fully compliant with ISO:9001. NATA accredited laboratories will have in-house QA and QC systems and detailed procedures to maximise the accuracy of testing and integrity of results.

Limits of reporting (LOR) from test methods performed should be appropriate to this SAP. Testing by a NATA accredited laboratory will have LORs similar to the preliminary testing shown and should meet the same criteria for QA/QC. Common LORs and test methods, compared against EILs for the analytes to be tested are shown in Table 11.

The surrogate spikes and matrix spikes, together with their percentage recoveries, should be appropriate for the purposes of this SAP. Surrogate and matrix spikes are QC procedures used to test the accuracy of laboratory methods by adding a known amount of an analyte (i.e. Zinc) to a blank sample and measuring its concentration. The measured concentration is compared with the predicted or known concentration and given as a percentage.

Further inspection of laboratory reports, considering that most analytes are expected to be present in concentrations below their LOR (detection limits), should reveal that appropriate measures were taken to satisfy the requirements for proper QA/QC.

Table 91: Comparison of test procedure LORs to EIL.

Analyte	Limit of Reporting in mg/kg	Ecological Investigation Level in mg/kg (DoE, 2003)	Test Method
Arsenic, As	5	20	AN045-AN321
Cadmium, Cd	0.4	3	AN045-AN321
Chromium, Cr	5	50	AN045-AN321
Copper, Cu	5	60	AN045-AN321
Mercury, Hg	0.05	1	AN045-AN321
Nickel, Ni	4	60	AN045-AN321
Lead, Pb	5	300	AN045-AN321
Zinc, Zn	5	200	AN045-AN321
Total Organic Carbon (TOC)	0.01%	N/A	CSA03V
Organochlorine Pesticides (OC)	0.1 – 0.2	1	PEO-100
C_6-C_9	20	100	AN403
C_{10}-C_{14}	20	500	AN403
C_{15}-C_{28}	45	1000	AN403

Laboratory QA/QC procedures such as matrix spikes in analysis results should be checked to ensure analysis methods are providing accurate and comparable results.

8 QA/QC data evaluation

Australian Standard 4482.1:2005 suggests that the typical relative percent difference (RPD) can be calculated to evaluate the quality control of samples. Typical RPD should be within the range of 30% to 50% of the mean concentration of each analyte. That is to say, the difference between duplicate or split sample concentrations is within 30 to 50% of the analyte's mean concentration.

However, for low concentrations of analytes, especially where the limit of reporting is close to investigation levels, a higher variation can be expected. Variation is also expected to be higher for organic samples (SA, 2005). Acceptable criteria for duplicate (blind) samples, split samples and blank samples are given in Table 12:

Table 12: Acceptable criteria for QC samples, including typical RPD, adapted from AS4482.1-2005.

QC Sample	Minimum No. of Samples	Typical RPD for QC Samples
Duplicate sample	One for every 20 samples or batch* collected.	30-50% of the mean concentration of the analyte.
Split sample	One for every 20 samples or batch* collected during further analysis.	30-50% of the mean concentration of the analyte.
Blank sample	One per matrix per piece of equipment per day.	The significance of the blank analysis will need to be evaluated with respect to each field samples.

* If the number of samples in one batch is less than 20.

Typical RPD can be calculated using:

$$\textbf{Relative Percent Difference (RPD)} = \frac{\textbf{Result No. 1} - \textbf{Result No. 2}}{\textbf{Mean Result}} \times 100$$

For example, if two measured concentrations for Zinc from duplicate samples are 30mg/kg and 20mg/kg, with the mean concentration being 25mg/kg, the RPD of Zinc in the sample would be 40%. This is considered an acceptable result.

The concentration of contaminants in clean fill material should generally be below the LORs of the test procedures. Low concentrations can decrease the effectiveness of RPD as a QC evaluation tool. Therefore, RPD may not be applicable or of particular relevance/significance due to the large effect on typical RPD by an incremental increase in the concentration of an analyte. Also, where analytes have concentrations below LORs, direct comparison with concentrations above LORs may not be accurate, due to the unknown concentration of the contaminants below LORs.

A review of the laboratory Quality Control Data should reveal that QA/QC procedures, data quality and reporting objectives have been met therefore the results can be considered representative, accurate, reliable and comparable.

9 Basis for adoption of assessment levels

For the purposes of this SAP, clean fill acceptance criteria will need to be met, with all contaminants at concentrations lower than investigation levels and contaminant thresholds.

The assessment of clean fill should adopt the Ecological Investigation Levels (EILs) in consideration of the proposed use of the fill material. Clean fill should not contain material with contaminant concentrations, using the 95% $UCL_{average}$ exceeding either EILs or HILs (DoE, 2005). HIL Category A, the most stringent Health Investigation Level, sets concentration levels higher than EILs therefore as long as concentrations are below EILs then HILs will not exceed investigation levels.

Investigation Levels are not available for some contaminants, such as total organic carbon.

Investigation levels are considered appropriate to ensure there is no risk to humans or the environment associated with using material as clean fill for commercial purposes.

9.1 Investigation Levels

The following investigation levels for contaminants (Table 13), in milligrams per kilogram (mg/kg) should be adopted for analysis of laboratory results.

Table 13: Investigation levels for contaminants as per DoE (2003), unless otherwise stated.

Analyte	Ecological Investigation Level (EIL) (mg/kg)
Metals	
Arsenic, As	20
Cadmium, Cd	3
Chromium, Cr (total)	50
Copper, Cu	60
Mercury, Hg	1
Nickel, Ni	60
Lead, Pb	300
Zinc, Zn	200
Hydrocarbons	
C_6-C_9	100
C_{10}-C_{14}	500
C_{15}-C_{28}	1000
Organochlorine (OC) pesticides	1
Total Organic Carbon (TOC)	N/A

Department of Environment and Conservation's Ecological Investigation Levels should be adopted as acceptance criteria for fill material.

9.2 Statistical Analysis

The assessment of analytical results should be completed with a degree of statistical confidence, i.e. a percentage confidence level. Statistical confidence should demonstrate that a set of data has not occurred by chance and that two data sets are statistically different.

The standard deviation (σ) is a statistical tool used to measure the closeness or variation in a set of data. The standard deviation is used in statistical analysis to determine confidence in the respective data set by adding and subtracting two standard deviations (2σ) from the mean concentration (95% confidence interval). That is to say, for a normally distributed (bell-shaped) population, with most samples close to the mean concentration and little or no outliers, 95% of samples will lie within approximately 2 (1.96) standard deviations of the mean.

The coefficient of variation (CV) is the ratio of the standard deviation to the mean. It measures the relative homogeneity or heterogeneity of a data set. A CV of less than 0.05 indicates a homogenous (normal) distribution, whereas a CV greater than1.2 implies a heterogeneous and highly skewed (log-normal) distribution of results.

A confidence level, similar to the confidence interval, can be used to state that a percentage of a data set is at, below or greater than a particular concentration. Statistical analysis commonly uses a 95% confidence level as 95% is a typical level of statistical significance. A 95% confidence level equates to 5% risk, which has been adopted by state authorities for statistically measuring confidence in a data set (DoE, 2005; NSW EPA, 1995; VIC EPA, 2007).

Concentrations should be assessed against relevant EIL's using the following:

- use of the co-efficient of variation (CV) to determine relative homogeneity or heterogeneity; and
- use of the 95% $UCL_{average}$ to show statistical confidence that contaminant(s) are at or below the stated concentration (EIL), refer to Equation 1.

Using the 95% $UCL_{average}$, concentrations should be assessed against the relevant EIL. Where more than one individual sample exceeds twice the EILs concentration the 95% $UCL_{average}$, is not considered appropriate. Further sampling and analysis will be required in this instance or when 95% $UCL_{average}$ results exceed relevant EILs.

9.2.1 Equation 1: CV and 95% $UCL_{average}$ for Homogenous Data

The co-efficient of variation is given as:

$CV = \sigma/\mu$

Where σ = standard deviation of the data set; and
μ = the mean concentration of the data set.

The standard deviation is calculated as:

$\sigma = \sqrt{[\sum(x-\mu)^2/(n-1)]}$

Where σ = standard deviation of the data set;
x = an individual sample concentration;
μ = mean concentration of the data set;
n = number of samples measured in the data set;
$\sqrt{}$ = the square root of everything in brackets; and
$\sum$ = total of all deviations squared.

Procedure D of NSW EPA (1995), or Equation 1 of VIC EPA (2007b), can be used to calculate the 95% $UCL_{average}$ of a normal distribution where CV < 1.2 using preliminary results from laboratory analysis. The equation may be manually calculated or aided by computer software, i.e. ProUCL 4.00.04, developed by the USEPA (2009). The equation is given as:

$$UCL_{average} = \frac{\mu + (t_{\alpha(n-1)})(\sigma)}{\sqrt{n}}$$

Where: a = 0.05 (5% risk, 95% confidence);
μ = mean (average of all samples measured);
n = number of samples measured;
σ = standard deviation of all samples measured; and
$t_{\alpha(n-1)}$ = students t at an α level of significance and n-1 degrees of freedom.

Student's *t* scores for n samples at 95% UCL are given in Appendix 4 of VIC EPA (2007).

A worked example of equation 1 for a homogenous data set, including the CV, is shown in section 10.1, where it has been applied to results from preliminary sampling.

9.2.2 Equation 2: CV and 95% $UCL_{average}$ for Heterogeneous Data

Procedure E of NSW EPA (1995), or Equation 2 of VIC EPA (2007b), can be used to calculate the 95% $UCL_{average}$ of a heterogeneous (log-normal) distribution where CV > 1.2. The equation is given as:

$$UCL_{average} = \frac{\exp^*(y + 0.5Sy2 + SyH)}{\sqrt{n-1}}$$

Where y = arithmetic mean of the log-transformed sample measurements;
Sy2 = variance of the log-transformed sample measurements;
n = number of sample measurements;
H = a statistical constant dependant on the value of Sy and n; and
exp = exponential function, i.e. 2.7183 to the power of the value in the brackets.

To log-transform results, each measured contaminant concentration should be multiplied by the natural log function, *ln*, (i.e. 25mg/kg * *ln* = 3.218876mg/kg log-transformed). The value of *H*, dependant on *Sy* and n, is given in Appendix 5 of VIC EPA (2007).

A worked example of equation 2 for a heterogeneous data set, including the CV, is shown in section 10.1, where it has been applied to results from preliminary sampling.

Statistical analysis using Co-efficient of Variation and 95% Upper Confidence Level (ProUCL) to compare mean contaminant concentrations with relevant acceptance criteria is recommended.

9.3 Sample Results Below The Limit Of Reporting

Where the 95% $UCL_{average}$ is to be calculated for a sample that contains some results with lower concentrations than the limit of reporting (LOR), a value half of the limit of reporting is commonly used (VIC EPA, 2007). This is however unsuitable where the EIL is close to the LOR. Common LORs of test methods used by NATA accredited laboratories to measure analytes for the purpose of this SAP are described in Table 12 and show that none of the LORs for testing are close to their respective EIL. The process of halving a non-detected analyte (below the LOR) is therefore adequate for the 95% $UCL_{average}$ when analysing laboratory results.

9.4 Other Considerations For The Sampling And Analysis Plan

In addition to the contaminant levels and meeting criteria for the classification of clean fill, other aspects outside of the scope of this sampling protocol should be considered:

- geotechnical requirements of fill material (*AS2870-1996* i.e. plasticity, particle size, permeability, maximum dry density etc;
- license and works approval requirements;
- training, i.e. sampling techniques, sampling design and analysis of results; and
- tools for compliance (spreadsheet/flowchart/procedures).

Staff should be adequately trained to carry out the sampling and analysis plan.

10 Demonstrative results

An initial batch of four soil samples were taken by NOD from stockpiles at the site. The samples were analysed by SGS on 13/03/2009 for:

- metals;
- total organic carbon (TOC);
- total petroleum hydrocarbons (TPH);
- organochlorins (OC) and organophosphates (OP);
- benzene, toluene, ethyl benzene and xylene (BTEX); and
- polycyclic aromatic hydrocarbons (PAH).

Measured concentrations of contaminants did not exceed either EILs or Category A HILs. No contaminants measured were greater than 50% of their respective investigation levels. Total Organic Carbon was approximately 0.4% w/w, significantly less than levels typically attributed to significant methane generation. Asbestos forms were not measured.

Four samples are not considered a representative number of samples (minimum number of samples should be 10) therefore assessment of results in this section is for demonstrative purposes only.

10.1 Statistical Analysis Of Preliminary Testing Results

The normal distribution equation and its applicability can be shown by applying it to laboratory results from the four samples taken at the site in March, 2009:

<u>Lead EIL = 300mg/kg</u>:

Sample 1: 14mg/kg;
Sample 2: 12mg/kg;
Sample 3: 13mg/kg; and
Sample 4: 13 mg/kg.

Co-efficient of Variation (CV):
X= 13
σ = 0.8165

Therefore CV = 0.82/13 = 0.06
(> 0.05 relatively homogenous)

Table B of NSW EPA (1995), or Appendix 4 of VIC EPA (2007b) shows student's *t* scores for a particular *confidence level, a* (95%) and *n-1* (3) degrees of freedom. Therefore:

$t_{\alpha,\,n-1}$ = (0.05 x 2.353) = 0.117

95% $UCL_{average}$:

$$= 13 + \frac{(0.117)(0.816)}{\sqrt{4}}$$

= 13 + 0.047 = 13.047mg /kg

Therefore, 13.05mg/kg is less than 300mg/kg (EIL) so it is acceptable for re-use.

Zinc EIL = 200mg/kg:

Sample 1: 22mg/kg;
Sample 2: 24mg/kg;
Sample 3: 18mg/kg; and
Sample 4: 35mg/kg.

Co-efficient of Variation (CV):
X=24.75
σ = 7.27

Therefore CV = 7.27/24.75 = 0.29
(> 0.05 fairly homogenous)

95% $UCL_{average}$:
= 24.75 + (0.117)(7.27)
$\sqrt{4}$
= 24.75 + 0.425 = 25.17mg/kg

Therefore, 25.17mg/kg is less than 200mg/kg (EIL) so it is acceptable for re-use.

10.2 Ecological Risk Assessment - EIL

Concentrations measured in Section 10 (for demonstrative purposes only) using the 95% $UCL_{average}$ equation did not exceed EIL concentrations therefore the material would be considered acceptable for use as fill material off-site. Should results collected using the SAP prescribed in this document be assessed below EILs then it can be assumed there is no risk to the environment and the material can be used as fill material off-site. Should the EILs be exceeded further analysis would be required to assess the material against *Landfill Waste Classification and Waste Definitions* (DoE, 2005). Should further sampling and analysis record concentrations above EILs then the material is not considered suitable for re-use unless remediated as it poses a risk to the environment.

Adverse environmental effects from the process of screening of waste at the site to produce the fill material will be managed by procedures recommended in the Operation Management Plan.

10.3 Health Risk Assessment – Category A HIL

Concentrations measured during this assessment did not exceed or approach EILs and therefore did not approach HIL Category A concentrations. The mean concentration of each analyte was statistically different to HILs and was not deemed elevated enough to warrant further actions and/or remediation. Results obtained from preliminary sampling show no potentially adverse health effects from use of the fill material.

Asbestos is not accepted at the facility. Asbestos should therefore not be present at the site, however quantitative testing should be completed to back this up with evidence. All asbestos should be disposed at a site approved by the Environmental Protection Authority, (NOHSC:2002(2005)) and the Department of Health (2009).

Based on the results obtained and assessed during this investigation, there is no evidence to indicate a potential health risk to the future end users of the soil.

10.4 Discussion Of Demonstrative Results

Limits of reporting for the four samples were all below EILs and therefore Category A HILs. The laboratory test methods were considered to be appropriate for assessing the material's potential clean status and potential waste classification.
However, the number of samples (four) is not considered an adequate number (too low) for statistical analysis of potential contaminants from the proposed clean fill material. The 95% $UCL_{average}$ used to show confidence in the results recommends ten samples or one sample per $250m^3$, whichever is more frequent (VIC EPA, 2007b).

Asbestos was not tested. Although asbestos is not accepted for disposal at the site, asbestos containing materials (ACM) may be inadvertently added to waste piles on demolition sites that are marked for disposal at NOD. Another potential source of ACM is the deliberate placement of ACM on waste piles at demolition sites by contractors that do not want to go through asbestos disposal procedures, especially if the amount present is small. For these reasons and in compliance with DoH (2009), further sampling must feature asbestos testing and analysis.

Field QA/QC procedures were not documented, i.e. where the samples were taken from (stockpile number, GPS coordinates), sample history (origin), sampling techniques used and other details such as equipment used, sampling depth, holding times, sample preservation and sample transportation.

Field QA procedures, such as duplicate samples, split samples and blanks were not taken. This inhibited the comparison of field sampling procedures (variation in results from one sampling site), laboratory analysis procedures (between SGS and another NATA accredited laboratory) and cross contamination due to containers, storage or transportation.

Laboratory QA/QC procedures, i.e. matrix spikes and blank samples all gave adequate data and accurate results to show traceability and confidence in laboratory procedures.

11 Conclusions and recommendations

The following is recommended for the classification of the end product material as clean fill:

- stockpiles should be categorised into those posing a high, medium or low risk and should not be blended together at any time;
- the sampling design should incorporate a minimum frequency of one sample per $250m^3$, with a minimum of ten samples for stockpiles between $200m^3$ and $2,500m^3$ in volume. Time intervals for sampling should be based on hours of production divided by the number of samples to be taken (10);
- asbestos sampling should be at a 4:1 ratio ($1:70m^3$) for clean fill testing for high and medium risk material with sampling in accordance with DoH (2009). The asbestos sampling frequency should be, at minimum, twice hourly for every hour of production on high and medium risk material, assuming 210t/hr production rate;
- the sampling pattern should incorporate stratified random sampling from the conveyor belt;
- sampling techniques should incorporate engineered devices that enable efficient, accurate sampling of the entire conveyor (either stopped or moving) cross-section, with no adverse accuracy, safety and/or manual handling aspects;
- sampling for asbestos should be in accordance with DoH (2009) and tested by a NATA accredited laboratory in accordance with AS4964-2004;
- samples should be placed in provided containers (250mL glass jars) and should be filled with the sample, except for asbestos, where DoH (2009) recommends providing a 500mL wetted sample in a durable and appropriate sample bag;
- sample holding times must be kept to a minimum, ideally being immediately transported to the proposed laboratory or the next morning at latest;
- samples should be transported in eskies provided by the laboratory;
- all sample details and chain of custody forms must be kept and where appropriate given to the laboratory to aide analysis;
- contaminants should be assessed against levels given in DoE (2003) EILs and DoH (2009) to determine the classification of the material and whether it meets acceptable criteria for clean fill;
- appropriate statistical methods such as the co-efficient of variation and the 95% upper confidence level should be used to state with a level of statistical confidence that each contaminant is at or below criteria; and
- classification and analysis results should be made available to the appropriate decision making authorities and the material must not be sold until it is approved as clean fill.

12 Glossary and abbreviations

Table 10: Abbreviations and terms used in the Sampling and Analysis Plan.

Term	Definition
ACM	Asbestos Containing Material – these are usually large pieces of asbestos-cement greater than 7mm.
AF	Asbestos Fines – respirable asbestos that may become airborne.
Analyte	Any chemical compound, element or parameter as a subject for analysis.
Assessment	Study, may involve reviews of literature, reports, data and information and/or field inspections and/or investigations, to ascertain environmental status or possible and actual contamination.
Assessment Levels	Guideline concentrations of contaminants adopted by the DoE to be used as a comparison against which to assess the presence and severity of contamination at a site.
Background Concentrations	Naturally occurring ambient concentrations in the local areas of a site.
Beneficial Use	The use of the environment, or any portion thereof, which is: (a) conducive to public benefit, public amenity, public safety, public health or aesthetic enjoyment; or (b) identified and declared under Section 35(2) of the *Environment Protection Act, 1986* (as amended) to be a beneficial use to be protected under an approved policy.
Bioavailability	Availability of contaminants in a form in which organisms or biota can assimilate contaminants e.g. contaminants being in a dissolved state or capable of being solubilised once ingested.
Blank Samples	These samples provide information ensuring that there is no cross-contamination of substances from the sampling equipment used. Blank samples should be collected where the investigation level for a contaminant is near the detection limit for the contaminant. All blanks collected during the decontamination process (one blank per day, per matrix per piece of equipment) should be analysed for the analytes of interest.
Blind replicate samples	Samples used to identify the variation in analyte concentration between samples collected from the same sampling point and/or also the repeatability of the laboratory's analysis. The blind samples should be taken from a larger than normal quantity of soil collected from the same sampling point, removed from the ground in a single action, mixed as thoroughly as practicable, and divided into two replicate samples using a suitable divider.
BTEX	Benzene, toluene, ethyl benzene and xylene.
Clean Fill	Material that will have no harmful effects on the environment and which consists of soil or rock arising from excavating undisturbed material. Material not from a clean excavation must be validated to have possible contaminants below the Ecological Investigation Levels.
Composite Sample	The bulking and thorough mixing of equal quantities of soil samples collected from more than one sample location to form a single soil sample for chemical analysis.
Contaminant	A substance which has the potential to present a risk of harm to human health or any environmental value.

Term	Definition
Contaminated	In relation to soil and water, means that a substance is present in, or on or under that soil, or in that water, at a concentration that present, or has the potential to present, a risk of harm to human health or any environmental value.
Contamination	The condition of land and water where any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact.
CV	The co-efficient of variation is the ratio of the standard deviation to the mean of a data set and is a measure of the relative homogeneity or heterogeneity of the data set.
Data Quality Objective	Qualitative and quantitative statements specifying the quality of data required.
DEC	Department of Environment and Conservation (WA).
DEP	Department of Environmental Protection (WA), now DEC.
Detailed Site Investigation (Report)	A report on an investigation of a site and includes detailed information on the nature and distribution of contaminants on a contaminated, or potentially contaminated, site.
DoE	Department of Environment (WA), now DEC.
DoH	Department of Health (WA).
Ecosystem	Unit including a community of organisms, the physical and chemical environment of that community, and all the interactions among those organisms and between the organisms and their environment.
EIL	Ecological investigation level is the concentration of a contaminant below which adverse impacts upon site-specific ecological values are unlikely to occur.
EPA	Environmental Protection Authority.
FA	Fibrous asbestos – ACM that has been worn down by mechanical action.
Hazard	The intrinsic capacity of a chemical, biological, physical or social agent to produce a particular type of adverse health or ecological effect.
Health	Freedom from disease or ailment.
Heterogeneous	A material is heterogeneous, i.e. is non-uniform and has a log-normal distribution of results if the co-efficient of variation is greater than 1.2.
HIL	Health Investigation Level to assess contamination where there: (a) is no adverse impact, or little potential for any adverse impact, to the environment, or the environmental value or beneficial use of an environmental receptor; and therefore (b) the adverse impacts arising from contamination at a site are to human health only.
Homogeneous	A material is homogenous, i.e. is uniform and has a normal distribution of results if the co-efficient of variation is less than 1.2.
Landfill	In relation to the legal disposal of contaminated material, landfill means a site used for disposal of solid material by burial in the ground that is licensed under the *Environmental Protection Act, 1986*.
LEL	The Lower Explosive Limit is the lowest concentration by volume in air that a gas will burn or explode. For methane, the LEL is considered to be 5% by volume in air.
NEPC	National Environment Protection Council.

Term	Definition
NEPM	National Environmental Protection Measure.
NOD	Non organic disposals.
NSW EPA	Environmental Protection Authority of New South Wales.
PAH	Petroleum Aromatic Hydrocarbons.
PASS	Potential Acid Sulfate Soils – soils that contain pyrites and other compounds that have the potential to leach acid when disturbed.
Preliminary Site Investigation (Report)	An investigation consisting of a desk study, a detailed site inspection and, where appropriate, limited sampling. The preliminary site investigation should be of such scope as to be sufficient to indicate whether contamination is present or likely to be present and to determine whether a detailed site investigation should be conducted and to provide information for designing a detailed site investigation. A report for a phase 1 preliminary investigation of a site and includes information on the potential risks posed by a site.
Remediation	Action taken to eliminate, limit, correct, counteract, mitigate or remove any contaminant or the negative effects on the environment or human health of any contaminant.
Risk	The probability in a certain timeframe that an adverse outcome will occur in a person, a group of people, plants, animals and/or the ecology or water resources of a specific area that is exposed to a particular dose or concentration of a hazardous agent i.e. it depends on both the level of toxicity of the hazardous agent and the level of exposure.
Risk Assessment	Process of estimating the potential impact of a chemical, biological or physical agent on humans, plants, animals and the ecology.
Safety	Freedom from injury or danger.
Sample Design	The number of samples to be taken for each round of testing. This is dependent on volume and may also be called the sampling frequency.
Sample Pattern	The location of sampling points within a sampling area.
Sampling Frame	A metal frame with the same approximate width as the conveyor belt to be used to isolate a sample increment from other material with the aim of reducing bias in sampling.
Sampling Technique	A set of methods or procedures to ensure accurate and unbiased sampling of the proposed clean fill material.
Site	An area of land or underground water being investigated or assessed for contamination.
Split samples	These samples provide a check on the analytical proficiency of the laboratories. The samples should be taken from a larger than normal quantity of soil collected from the same sampling point, removed from the ground in a single action, mixed as thoroughly as practicable and divided into two replicate samples using a suitable divider. One sample from each set should be submitted to a different laboratory for analysis. The same analytes should be determined by both laboratories, using the same analytical methods.
TOC	Total Organic Carbon.
TPH	Total Petroleum Hydrocarbons.
UEL	The Upper Explosive Limit is the highest concentration by volume in air that a gas will burn or explode. For methane, the UEL is considered to be 15% by volume in air.

Term	Definition
USEPA	United States Environmental Protection Agency.
VIC EPA	Environmental Protection Authority of Victoria.
Work Area	An area affected by site investigation activities and includes the exclusion zone, decontamination zone and support zone.
95% $UCL_{average}$	The 95% Upper Confidence Level of a set of data. This states with a level of statistical confidence (95%) that the mean of the true data set is at or below the stated value.

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APPENDIX A: Laboratory results from preliminary testing

APPENDIX B – Example chain of custody form

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
COOLER SEAL (circle appropriate)	
Intact: Yes No N/A	Stockpile 123475- 14/08/09
SAMPLE TEMPERATURE	07:00 to 17:00 production
CHILLED: Yes No	

Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

NOD CoC now in use

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION						
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Heavy Metals - S-02	TPH - EP080/EP071	OC Pesticides - S-12	TOC - EP004	Notes
	L1	s	14-Aug	7:28	Jar	1	X	X	X	X	
	L2	s	14-Aug	8:17	Jar	1	X	X	X	X	
	L3	s	14-Aug	9:03	Jar	1	X	X	X	X	
	L4	s	14-Aug	10:48	Jar	1	X	X	X	X	
	L5	s	14-Aug	11:58	Jar	1	X	X	X	X	
	L6	s	14-Aug	12:14	Jar	1	X	X	X	X	
	L7	s	14-Aug	13:44	Jar	1	X	X	X	X	
	L8	s	14-Aug	14:21	Jar	1	X	X	X	X	
	L9	s	14-Aug	15:35	Jar	1	X	X	X	X	
	L10	s	14-Aug	16:12	Jar	1	X	X	X	X	

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
COOLER SEAL (circle appropriate)	
Intact: Yes No N/A	Stockpile 123475- 14/08/09
SAMPLE TEMPERATURE	07:00 to 17:00 production
CHILLED: Yes No	

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Asbestos - ASB
	LA1	s	14-Aug	7:28	Bag	1	X
	LA2	s	14-Aug	7:34	Bag	1	X
	LA3	s	14-Aug	8:11	Bag	1	X
	LA4	s	14-Aug	8:56	Bag	1	X
	LA5	s	14-Aug	9:23	Bag	1	X
	LA6	s	14-Aug	9:47	Bag	1	X
	LA7	s	14-Aug	10:05	Bag	1	X
	LA8	s	14-Aug	10:32	Bag	1	X
	LA9	s	14-Aug	11:12	Bag	1	X
	LA10	s	14-Aug	11:45	Bag	1	X
	LA11	s	14-Aug	12:16	Bag	1	X
	LA12	s	14-Aug	12:32	Bag	1	X

NOD CoC now in use

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: Cell 6 Pty Ltd	SAMPLER: Jason Y
ADDRESS / OFFICE: Lot 1441 Furniss Road, Landsdale 6065	MOBILE: 0400 000 000
PROJECT MANAGER (PM): Peter Margetic	PHONE: (08) 9300 0000
PROJECT ID: 1234	EMAIL REPORT TO: peter.margetic@mzm.com.au
SITE: Non Organic Disposals P.O. No.: 0001	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (**Date**): 21 Aug 2009 QUOTE NO.:	**ANALYSIS REQUIRED including SUITES** (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY	COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:
COOLER SEAL (circle appropriate)	
Intact: Yes No N/A	Stockpile 123475- 14/08/09
SAMPLE TEMPERATURE	07:00 to 17:00 production
CHILLED: Yes No	

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

Clean fill assessment to DEC Ecological Investigation Levels.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION														
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	Asbestos - ASB												
	LA13	s	14-Aug	13:25	Bag	1	X												
	LA14	s	14-Aug	13:58	Bag	1	X												
	LA15	s	14-Aug	14:22	Bag	1	X												
	LA16	s	14-Aug	14:40	Bag	1	X												
	LA17	s	14-Aug	15:05	Bag	1	X												
	LA18	s	14-Aug	15:58	Bag	1	X												
	LA19	s	14-Aug	16:12	Bag	1	X												
	LA20	s	14-Aug	16:36	Bag	1	X												

NOD CoC now in use

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Peter Margetic	Date: 14/08/09	Name: John X	Date: 14/08/2009	Con' Note No:
Of: Cell 6 Pty Ltd	Time: 14:00	Of: ALS	Time: 15:00	
Name:	Date:	Name:	Date:	Transport Co:
Of:	Time:	Of:	Time:	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

APPENDIX C – Delivery record

NON ORGANIC DISPOSALS

CELL 6 PTY LTD ACN 130 417 542 AS TRUSTEE FOR THE CELL 6 UNIT TRUST

LOT 1441 FURNISS ROAD, LANDSDALE WA 6065

Delivery Record

Superceded

DATE: ../ / 20 .

Name of Driver	
Company Details	
Vehicle Rego	
Site of Waste Origin	
Site / Waste Type	**Construction / Demolition / Bins / Other** **....** (please circle one)

CIRCLE WASTE CATEGORY DELIVERED THIS LOAD:

Grade 1 (G1)	Clean fill.
Grade 2 (G2)	Sand, gravel, limestone, road materials (<50mm).
Grade 3 (G3)	Bricks, tiles, sand and concrete.
Grade 4 (G4)	Loads with reinforced concrete, steel and iron sheeting.

No wood, green waste or grass allowed in Grades 1-4.

Grade 5 (G5)	Mixed Loads.
Grade 6 (G6)	Lawn/Grass.

Not accepted on Site:

Asbestos / Household Rubbish / Fibreglass / Tyres / Liquid / Car Bodies / Chemicals / Trees & stumps / Motor Oils / Plastic / Carpet / Food waste / Office Waste / Wire Fencing

Signed:

VOLUME DELIVERED [ ] M3

No 73401

Souperceded

APPENDIX N

THIRD PARTY SOIL SAMPLING VERIFICATION

Environmental Strategies WA
Trading Name of Deep South Pty Ltd
ABN 67 134 989 450

Suite 16, Ground Floor
185 High Street
FREMANTLE WA 6160
T: +61 (0)439 588 603

23 March 2012

Peter Margetic
Cell 6 Pty Ltd
Lot 1441 Furniss Road
LANDSDALE WA 6065

Our Reference: W12.006LTR01.doc

Dear Peter,

RE THIRD PARTY SOIL SAMPLING VERIFICATION – PART LOT 8005 DRIVER ROAD, DARCH

Environmental Strategies WA (ESWA) is pleased to provide Cell 6 Pty Ltd trading as Non-Organic Disposals (NOD) with the following letter, which verifies that the soil sampling methodology undertaken by NOD on 13 March 2012 is adequate for the intended purpose/s. The soil sampling observed by ESWA was indicative of the sampling methodology undertaken for internal auditing purposes at the Class I landfill and waste recycling facility located at Part Lot 8005 Driver Rd, Darch (the Site).

BACKGROUND

NOD collects samples on a regular basis from soil that is screened through a processing plant, which originates from waste that is received at the Site. The waste received at the Site complies with Prescribed Premises Category 13 and is in accordance with the *Environmental Protection Act 1986* (Licence Number 6832/1997/11) (EP Act licence). The soil samples are collected to demonstrate that the quality of soil is suitable for the proposed end use. The end use of soil generated from the process at the Site includes the following:

- Backfill at the Site itself (as authorised under Prescribed Premises Category 63 of the EP Act licence)
- Sold for re-use as backfill off-Site (as authorised under Prescribed Premises Category 62 of the EP Act licence)

To determine the suitability of the soil for the proposed end use, the soil sample results are compared against the Ecological Investigation Level (EIL) where applicable and as required by DEC (2009 and 2010). NOD have developed a model whereby the 95% upper confidence limit (UCL) of a batch of a minimum of 12 samples from any sampling period may be calculated and compared against the EIL. It is ESWA's understanding that this model was developed based on guidance outlined in the EPA Victoria Industrial Waste Resource Guideline – *Soil Sampling* (IWRG702, June 2009).

OBJECTIVE

The objective of this process was to observe and verify the adequacy of the methodology used to collect these soil samples against the relevant industry and regulatory guidelines and standards.

SOIL SAMPLING METHODOLOGY

The following table outlines the soil sampling methodology observed at the Site on 13 March 2012, which was undertaken by Peter Margetic (Guideline / Standard references are included in *Attachment A*).

Item	Description	Compliance with Applicable Guideline / Standard	Guideline / Standard Reference
Sample Collection*	Soil samples were collected from a stockpile of sand (screened soil) that resulted from the process (pending disposal / reuse), which was formed by a loader. Soil samples were collected as follows: ▪ A hollow sampling tube (metal rod) was inserted approximately 500-750mm into the base of the stockpile to obtain a representative (non-exposed) sample (*Photograph 1, Attachment B)* ▪ Soil collected in the sampling tube was transferred directly into laboratory supplied sample containers (*Photographs 2 and 3, Attachment B)* ▪ Soil sample jars were filled to the top with zero headspace to prevent the loss of any potential volatiles ▪ A total of three soil samples were collected with each soil sample being collected from a different randomly selected location at the base of the stockpile	▪ Sample collection was conducted in accordance with the applicable guidelines and standards	▪ DEP, 2001 ▪ DEC, 2009 ▪ VIC EPA, 2009 ▪ CCAA, 2006 ▪ AS 4482.1-2005 ▪ AS 4482.2-1999
Sampling Frequency	▪ According to NOD, soil samples are collected at a rate of approximately 1:250m^3 (or 260 samples/year based on an estimated throughput of 60,000-70,000m^3/year) ▪ The frequency of sample collection varies depending on the amount of material being received at the Site and the rate at which they are able to process this material	▪ The sampling rate meets the required frequency as outlined in the applicable guidelines	▪ DEC, 2009 ▪ VIC EPA, 2009
Chain-of-Custody Procedures	A chain-of-custody was filled out for the samples collected, which included the following information: ▪ Sampler name and contact details ▪ Type of sample ▪ Collection date and time ▪ Name of person transferring and receiving samples ▪ Analyses to be performed ▪ Analytical laboratory ▪ Sample relinquishment date / time ▪ Sample receipt date / time	▪ All required details were included on the chain-of-custody in accordance with the applicable standard	▪ AS 4482.1-2005
Sample Handling	▪ Soil samples were transferred directly from the sampling tube into laboratory supplied sample jars and sealable plastic bags ▪ Sample containers were clearly labeled with the sample identification and sample date and time	▪ Sample jars were appropriate for the required analyses in accordance with the applicable standard	▪ AS 4482.1-2005
Sample Preservation, Transport and Storage	▪ Samples were placed directly into an esky in the field ▪ Samples were then transferred into a refrigerator prior to being packed back into the esky for delivery to the laboratory (*Photograph 4, Attachment B*) ▪ Samples are either delivered on the same day as sampling or the following day to a NATA accredited laboratory for the selected analyses	▪ Samples were preserved and stored in accordance with the applicable standard	▪ AS 4482.1-2005
Quality Assurance / Quality Control	▪ Nitrile gloves were not worn during sample collection ▪ Decontamination of the sampling equipment was not performed between sample collection ▪ Quality assurance samples were not collected	▪ QA/QC measures were not conducted in accordance with the applicable standard	▪ AS 4482.1-2005
Analytical Suite	Each of the soil samples are analysed for the following parameters: ▪ Organochlorine (OC) pesticides ▪ Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg) ▪ Total petroleum hydrocarbons (TPH) ▪ Total organic carbon (TOC) ▪ Asbestos	▪ Additional parameters outlined in the applicable guideline may need to be considered	▪ DoE, 2004

Note**:
Sample collection was conducted from the base of a stockpile of sand that was generated from the process. According to NOD, soil samples are normally collected from the fines discharge belt of the processing plant, which was not in operation at the time of soil sampling observed by ESWA on 13 March 2012.

SAMPLING CONSIDERATIONS

The following table summarises the considerations that should be made to address non-compliance issues outlined in the above table.

Item	Non-Compliance	Considerations
Quality Assurance / Quality Control	▪ QA/QC measures were not conducted in accordance with AS 4482.1-2005	▪ A fresh pair of nitrile gloves should be worn during each sample collection to prevent potential cross-contamination between samples and from coming into contact with any residual material that may be adhered to the skin (e.g. oils, sun screen, etc.) ▪ Decontamination of the sampling equipment between sample collection in this case would be of limited value due to the following factors: o Potential for cross contamination between samples is limited o Soil samples are being collected to determine if the quality of the soil is suitable for the proposed end use and not to determine the spatial extent of contamination ▪ Quality control samples would be of limited value given the following: o The number of samples being collected (approximately 260 samples/year) o The frequency of sample collection (up to 2-3 times per week depending on throughput) o The consistent results obtained from these samples to date
Analytical Suite	▪ Additional parameters outlined in DoE, 2004 for 'landfill sites' may need to be considered	▪ Consideration should be given to the analysis of the additional parameters not currently being analysed as listed under 'landfill sites' in DoE, 2004 o To assist in determining which additional parameters should be considered from DoE, 2004 – groundwater results obtained from groundwater monitoring conducted under the EP Act licence should be reviewed to determine if there are any analytes detected in groundwater that are not currently being analysed in soil o Consultation with DEC on the full list of analytes is recommended to ensure that they are satisfied that all perceived potential contaminants are being considered / analysed ▪ In addition to OC pesticides, organophosphate (OP) pesticides should also be analysed* ▪ In addition to those analytes already being analysed and any additional parameters listed in DoE, 2004 that may be included in the analytical suite, consideration should be given to the analysis of volatile organic compounds (VOCs) ▪ Analysis of VOCs may not be required at the same frequency as all other analytes and would only be intended to rule VOCs out as potential contaminants

Note*:
OC/OP pesticides are often offered as a package by the laboratories and may not be an additional cost to the OC pesticide analysis alone, however, this would need to be confirmed with the laboratory.

FURTHER VERIFICATION

NOD has indicated that they would like ESWA to conduct independent sampling of soil generated from the process at the Site to compare to the current dataset to further verify (or otherwise) the accuracy of the soil sample results obtained to date. ESWA will conduct this independent sampling without any prior notification to NOD to ensure the representativeness of the samples.

We trust that this letter meets your requirements at this stage. Please contact the undersigned on 0439 588 603 if you have any questions or any require additional information.

Yours faithfully,

Jeff Shivak
Principal Environmental Scientist

Attachment A – *References*
Attachment B – *Photographs*

ATTACHMENT A – REFERENCES

REFERENCES

Cement, Concrete and Aggregates Australia, August 2006. *Guide to SAMPLING for the Extractive Industry* (CCAA, 2006).

Department of Environment Protection, December 2001. *Development of Sampling and Analysis Plans*, Government of Western Australia (DEP, 2001).

Department of Environment, October 2004. *Potentially Contaminating Activities, Industries and Landuses*, Government of Western Australia (DoE, 2004).

Department of Environment and Conservation, December 2009. *Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009)*, Government of Western Australia (DEC, 2009)

Department of Environment and Conservation, February 2010. *Assessment Levels for Soil, Sediment and Water* (Version 4) Government of Western Australia (DEC, 2010).

EPA Victoria, Publication IWRG702 – June 2009. *Industrial Waste Resource Guidelines – Soil Sampling* (VIC EPA, 2009).

Standards Australia, *Australian Standard – Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds* (AS 4482.1-2005).

Standards Australia, *Australian Standard – Guide to the sampling and investigation of potentially contaminated soil – Part 2: Volatile substances* (AS 4482.2-1999).

ATTACHMENT B – PHOTOGRAPHS

PHOTOGRAPHS

Environmental Strategies
PROVIDING BENEFITS

Photograph One: Hollow sampling tube is inserted into the base of the stockpile (approx. 500-750mm)

Photograph Two: Soil is transferred directly from the sampling tube into a lab supplied soil sample jar

PHOTOGRAPHS

Photograph Three: Soil is transferred directly from sampling tube into a plastic bag for asbestos analysis

Photograph Four: Soil samples are placed directly into an esky for transport to the laboratory

APPENDIX O

SUMMARY OF STOCKPILE SAMPLE RESULTS

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
14/09/09	830	6	2.5	.5	8	5	12	1	24	.05	.9	.5	99	134	5	25	50	50	25						86.8	83	83.2
14/09/09	856	7.7	2.5	.5	7	7	14	1	29	.05	1.5	.9	90.6	116	5	25	50	50	25						94.1	96.8	98.8
14/09/09	619	5.4	2.5	.5	8	5	7	1	16	.05	1.1	.7	91.4	112	5	25	50	50	25						98.1	97.2	82.3
14/09/09	672	5.8	2.5	.5	9	5	8	1	16	.05	.9	.5	88.6	104	5	25	50	50	25						93.4	95.6	79.3
25/09/09	750	5.6	2.5	.5	7	5	12	1	28	.05	1.3	.7	66	107	5	25	50	50	25						90.6	88.7	91.1
25/09/09	750	5	2.5	.5	7	7	14	1	31	.05	.8	.25	65.1	96.8	5	25	50	50	25						83.6	91	89.4
25/09/09	750	5.7	2.5	.5	7	6	10	1	28	.05	1	.6	55.5	87.4	5	25	50	50	25						86.6	95.8	91
25/09/09	750	5.8	2.5	.5	8	2.5	7	1	15	.05	.25	.25	63.5	97.9	5	25	50	50	25						104	97.2	94
25/09/09	750	5.6	2.5	.5	7	5	12	1	28	.05	1.3	.7	66	107	5	25	50	50	25						90.6	88.7	91.1
25/09/09	750	5	2.5	.5	7	7	14	1	31	.05	.8	.25	65.1	96.8	5	25	50	50	25						83.6	91	89.4
25/09/09	750	5.7	2.5	.5	7	6	10	1	28	.05	1	.6	55.5	87.4	5	25	50	50	25						86.6	95.8	91
25/09/09	750	5.8	2.5	.5	8	2.5	7	1	15	.05	.25	.25	63.5	97.9	5	25	50	50	25						104	97.2	94
5/10/09	831	5.4	2.5	.5	8	7	12	1	29	.05	.8	.25	119	72.1	5	25	50	50	25						81.3	87.7	92
5/10/09	874	2.9	2.5	.5	9	2.5	9	1	18	.05	1.3	.7	116	71.8	5	25	50	50	25						85	84.9	86.3
5/10/09	833	6	2.5	.5	7	7	14	1	27	.05	1.2	.7	118	75.8	5	25	50	50	25						90.4	86.5	90.4
8/10/09	497	5.7	2.5	.5	10	6	9	1	25	.05	.9	.5	71.1	65	5	25	50	50	25						79.2	92	103
8/10/09	540	9.1	2.5	.5	10	6	9	2	29	.05	1.4	.8	69.1	72.4	5	25	50	50	25						80.3	80.3	90.6
8/10/09	324	6	2.5	.5	8	6	12	2	46	.05	1.6	.9	80.5	76.9	5	25	50	50	25						84.7	88.4	99
19/10/09	581	3.4	2.5	.5	6	2.5	7	1	10	.05	.6	.25	128	54.7	5	25	50	50	25						80	99.2	82.6
19/10/09	469	8.5	2.5	.5	6	2.5	8	1	21	.05	1.1	.6	124	59.9	5	25	50	50	25						76.2	92.9	80.9
19/10/09	576	5.1	2.5	.5	5	2.5	8	1	13	.05	.25	.25	122	63.3	5	25	50	50	25						76.8	92.1	89.7
22/10/09	593	5	2.5	.5	9	2.5	11	1	14	.05	1.4	.8	132	106	5	25	50	50	25						80.5	94	75
22/10/09	470	4.3	2.5	.5	8	2.5	9	1	14	.05	1.2	.7	69.4	59.6	5	25	50	50	25						92.3	91.9	90.2
22/10/09	423	4.1	2.5	.5	9	2.5	7	1	15	.05	.6	.25	107	95.4	5	25	50	50	25						76	96.2	77.6
23/10/09	588	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
23/10/09	618	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
23/10/09	460	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
27/10/09	386	5	2.5	.5	6	6	14	1	34	.05	1.7	1	113	128	5	25	120	50	120						96.5	86.8	89
27/10/09	359	4.6	2.5	.5	7	2.5	14	1	26	.05	1.6	.9	102	70.5	5	25	50	50	25						107	95	95
27/10/09	409	5.2	2.5	.5	7	2.5	10	1	18	.05	1.4	.8	84.8	71	5	25	50	50	25						106	97.6	99.5
4/11/09	413	4	2.5	.5	8	2.5	8	1	16	.05	.7	.25	83	62.9	5	25	50	50	25						76	76.8	77
4/11/09	385	4.9	2.5	.5	6	6	9	1	17	.05	.7	.25	78.4	67.2	5	25	50	50	25						80.7	82.8	82.2
4/11/09	354	5	2.5	.5	6	2.5	6	1	16	.05	.7	.25	68.8	54.7	5	25	50	50	25						77.1	79.6	79.3
10/11/09	489	4.5	2.5	.5	11	2.5	6	1	11	.05	.8	.25	120	74.1	5	25	50	50	25						86.5	87.3	85.2
10/11/09	583	4.7	2.5	.5	11	2.5	8	1	13	.05	.9	.5	116	72.3	5	25	50	50	25						88.6	88.2	92.7
10/11/09	687	5.2	2.5	.5	10	2.5	5	1	14	.05	.7	.25	112	59.3	5	25	50	50	25						90.9	93.9	93.7
12/11/09	354	3.3	2.5	.5	7	2.5	2.5	1	12	.05	.7	.25	90.9	68.5	5	25	50	50	25						105	106	98.2
12/11/09	465	3.9	2.5	.5	9	6	26	1	30	.05	1.1	.6	128	105	5	25	50	50	25						107	104	108
12/11/09	616	3.9	2.5	.5	6	6	53	1	15	.05	.9	.5	91.8	93.7	5	25	50	50	25						107	110	110
16/11/09	411	3.3	2.5	.5	7	2.5	9	1	22	.05	1.5	.9	86.3	60.7	5	25	50	50	25						78.7	85.8	75.9
16/11/09	412	3.1	2.5	.5	7	6	23	1	35	.05	1	.6	129	99.2	5	25	50	50	25						78.5	86.2	76.2
16/11/09	390	4.9	2.5	.5	7	6	13	1	27	.05	1.6	.9	127	65	5	25	50	50	25						93.3	89.7	83.2
18/11/09	434	4.4	2.5	.5	8	5	7	1	19	.05	.6	.25	94	67.8	5	25	50	50	25						97.7	87.7	89.8
18/11/09	455	5.4	2.5	.5	8	6	12	1	29	.05	1.4	.8	110	68.3	5	25	50	50	25						104	90.7	87.3
18/11/09	473	6.5	2.5	.5	8	6	10	1	21	.05	.9	.5	111	70.1	5	25	50	50	25						100	88.5	94.9
23/11/09	508	.5	2.5	.5	9	10	8	2	27	.05	2.2	1.3	98.3	74	5	25	50	50	25						92	84.1	88.7
23/11/09	519	5	2.5	.5	7	7	13	1	24	.05	1.4	.8	90.5	74.2	5	25	50	50	25						91.2	82.7	84.6
23/11/09	507	25.2	2.5	.5	9	6	14	1	41	.05	1.3	.7	123	108	5	25	50	50	25						87	85.9	87.1

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
27/11/09	483	4.2	2.5	.5	8	2.5	32	1	21	.05	.25	.25	106	76.9	5	25	50	50	25						105	111	113
27/11/09	529	3	2.5	.5	4	5	24	1	38	.05	.25	.25	99.1	88	5	25	50	50	25						107	115	112
27/11/09	519	3.6	2.5	.5	6	9	18	1	32	.05	3.4	1.9	109	76.8	5	25	50	50	25						104	110	112
27/11/09	524	3.4	2.5	.5	6	2.5	12	1	25	.05	.25	.25	114	84.2	5	25	50	50	25						104	105	105
2/12/09	640	4.7	2.5	.5	7	2.5	9	1	31	.05	1.5	.9	110	104	5	25	50	50	25						92.3	83.7	86.1
2/12/09	685	4.1	2.5	.5	6	2.5	9	1	23	.05	1.6	.9	130	81.1	5	25	50	50	25						96.8	92.3	92.2
2/12/09	732	4.2	2.5	.5	7	2.5	7	1	18	.05	1.4	.8	98.4	71.2	5	25	50	50	25						101	90	90.2
8/12/09	595	4.2	2.5	.5	6	2.5	12	1	25	.05	1.2	.7	110	120	5	25	50	50	25						92.7	91.9	99.3
8/12/09	739	3.9	2.5	.5	6	6	7	1	21	.05	1.5	.9	96.5	104	5	25	50	50	25						101	95.2	101
8/12/09	680	3.8	2.5	.5	5	2.5	6	1	18	.05	1.8	1	112	120	5	25	50	50	25						95.3	84	91.3
9/12/09	666	3.4	2.5	.5	7	2.5	8	1	20	.05	1.2	.7	121	114	5	25	50	50	25						95.5	91.2	93
9/12/09	628	4.7	2.5	.5	8	6	8	1	28	.05	2	1.2	112	104	5	25	50	50	25						90.4	82.6	86
9/12/09	596	4	2.5	.5	9	2.5	2.5	1	10	.05	1.7	1	121	111	5	25	50	50	25						96.2	86.9	87.9
9/12/09	738	3	2.5	.5	6	2.5	8	1	15	.05	2.3	1.3	118	104	5	25	50	50	25						98.7	94.1	89
15/12/09	765	2.2	2.5	.5	9	7	13	1	24	.05	.8	.25	128	85.8	5	25	50	50	25						102	103	110
15/12/09	699	4.1	2.5	.5	8	2.5	8	1	16	.05	.8	.25	128	114	5	25	50	50	25						97.4	104	104
15/12/09	775	2.8	2.5	.5	8	2.5	5	1	19	.05	.5	.25	120	49.6	5	25	50	50	25						96.3	103	99.7
11/01/10	639	4.5	2.5	.5	7	7	7	1	30	.05	1.2	.7	97	76.2	5	25	50	50	25						84.6	108	118
11/01/10	720	3.2	2.5	.5	8	2.5	7	1	28	.1	.6	.25	93	78	5	25	50	50	25						82.9	106	110
11/01/10	754	3.4	2.5	.5	6	2.5	7	1	13	.05	.6	.25	96.3	77.4	5	25	50	50	25						80.5	112	118
13/01/10	693	3	2.5	.5	8	2.5	7	1	11	.05	.7	.25	79.9	71.6	5	25	50	50	25						89	98.4	92.8
13/01/10	658	4	2.5	.5	5	2.5	26	1	14	.05	.6	.25	107	74.1	5	25	50	50	25						85	92.1	84.1
13/01/10	822	3.5	2.5	.5	8	6	17	1	22	.05	.8	.25	88.4	75.1	5	25	50	50	25						86.9	94.8	89.6
19/01/10	698	3.2	2.5	.5	7	2.5	13	1	22	.05	.25	.25	114	105	5	25	50	50	25						91	95.7	94.6
19/01/10	822	2.3	2.5	.5	6	6	10	1	15	.05	.25	.25	88.5	79.7	5	25	50	50	25						88.1	95.8	92.6
19/01/10	715	3.4	2.5	.5	6	2.5	11	1	12	.05	.25	.25	102	90.1	5	25	50	50	25						91.4	95	94.1
22/01/10	840	3.2	2.5	.5	7	2.5	66	1	21	.05	.8	.25	98	94.7	5	25	50	50	25						92	97.7	90
22/01/10	778	4.2	2.5	.5	7	5	36	1	21	.05	.5	.25	111	109	5	25	50	50	25						83.8	89.8	81.5
22/01/10	815	3.5	2.5	.5	7	9	18	1	23	.05	2.4	1.4	107	108	5	25	50	50	25						93.1	99.3	86.4
28/01/10	908	3.3	2.5	.5	8	6	15	1	21	.05	.6	.25	115	92.4	5	25	50	50	25						94.8	95.2	94.2
28/01/10	812	3.2	2.5	.5	7	9	8	1	15	.05	.8	.25	95.6	125	5	25	50	50	25						96.3	100	105
28/01/10	792	4.1	2.5	.5	6	6	28	1	27	.05	.9	.5	98.2	132	5	25	50	50	25						92.7	94.3	94.9
2/02/10	864	2.6	2.5	.5	5	2.5	20	1	29	.05	1	.6	95.3	92	5	25	50	50	25						105	95.7	97.7
2/02/10	718	2.5	2.5	.5	6	2.5	17	1	21	.05	.25	.25	92.9	96	5	25	50	50	25						108	95.9	95.8
2/02/10	754	2.4	2.5	.5	7	2.5	15	1	19	.05	.25	.25	80.2	86.2	5	25	50	50	25						105	96.6	95.2
5/02/10	818	3.2	2.5	.5	6	5	13	1	36	.05	.25	.25	112	114	5	25	50	50	25						105	99.8	95
5/02/10	820	3.8	2.5	.5	7	5	11	1	23	.05	.25	.25	95.3	103	5	25	50	50	25						89.1	86.4	81
5/02/10	970	3.1	2.5	.5	6	2.5	10	1	22	.05	.25	.25	89.9	93.6	5	25	50	50	25						94.1	91.9	84.9
8/02/10	808	3.2	2.5	.5	6	2.5	12	1	18	.05	.25	.25	114	115	5	25	50	50	25						113	95.4	86.6
8/02/10	649	4	2.5	.5	6	2.5	10	1	18	.05	.25	.25	95.4	97.3	5	25	50	50	25						104	92.3	88.1
8/02/10	858	3.4	2.5	.5	6	6	15	1	22	.05	.6	.25	94.9	101	5	25	50	50	25						107	103	98.8
11/02/10	844	3.5	2.5	.5	7	6	15	1	32	.05	1.9	1.1	131	129	5	25	50	50	25						102	75.8	77.4
11/02/10	771	3.1	2.5	.5	6	2.5	5	1	11	.05	.25	.25	118	103	5	25	50	50	25						124	90.7	92.5
11/02/10	769	3.4	2.5	.5	6	2.5	11	1	27	.05	.7	.25	123	122	5	25	50	50	25						84.5	99	108
16/02/10	800	3	2.5	.5	7	2.5	20	1	27	.05	1.2	.7	63.7	60.1	5	25	50	50	25						104	96.2	99.3
16/02/10	872	2	2.5	.5	7	6	17	1	37	.05	1.4	.8	66.1	65.9	5	25	50	50	25						98.4	88.4	97.1
16/02/10	840	3.3	2.5	.5	7	6	19	1	29	.05	1.4	.8	79.4	76.4	5	25	50	50	25						100	93	97.4
18/02/10	889	2.3	2.5	.5	8	9	14	1	25	.05	.6	.25	108	76.7	5	25	50	50	25						101	93.2	87.6

Non Organic Waste

Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
18/02/10	640	3.3	2.5	.5	5	5	17	1	25	.05	1	.6	110	94.8	5	25	50	50	25						101	94.7	89.6
18/02/10	688	3.6	2.5	.5	6	2.5	9	1	34	.05	.6	.25	114	95.7	5	25	50	50	25						96.4	99.9	92.1
22/02/10	847	3.5	2.5	.5	8	6	8	1	41	.05	1.3	.7	125	118	5	25	50	50	25						102	92	93.3
22/02/10	750	4	2.5	.5	9	2.5	5	1	2.5	.05	1.3	.7	124	104	5	25	50	50	25						89.4	111	77.4
22/02/10	746	3.9	2.5	.5	7	2.5	13	1	24	.05	1	.6	120	101	5	25	50	50	25						123	116	101
25/02/10	740	1.4	2.5	.5	6	2.5	2.5	1	2.5	.05	.25	.25	89.4	90.5	5	25	50	50	25						105	105	85.7
25/02/10	816	1.4	2.5	.5	6	2.5	6	1	2.5	.05	.25	.25	80.4	85.2	5	25	50	50	25						94.4	94.5	77
25/02/10	756	2.4	2.5	.5	10	2.5	9	1	12	.05	.25	.25	77.3	89.2	5	25	50	50	25						97.2	101	85.5
2/03/10	766	4.2	2.5	.5	6	2.5	12	1	19	.05	.25	.25	113	122	5	25	50	50	25						101	102	88.9
2/03/10	802	4.4	2.5	.5	8	11	34	1	24	.05	.25	.25	101	109	5	25	50	50	25						100	94	82.4
2/03/10	794	2.9	2.5	.5	8	2.5	13	1	18	.05	.25	.25	122	125	5	25	50	50	25						102	94.2	82.3
5/03/10	839	4.6	2.5	.5	7	8	12	1	20	.05	.25	.25	110	119	5	25	50	50	25						120	104	84.1
5/03/10	884	4	2.5	.5	6	2.5	6	1	20	.05	.25	.25	106	113	5	25	50	50	25						113	104	89.7
5/03/10	778	4.2	2.5	.5	6	7	25	1	18	.05	.8	.25	104	110	5	25	50	50	25						122	115	96
9/03/10	750	4.6	2.5	.5	5	2.5	2.5	1	8	.05	.9	.5	116	101	5	25	50	50	25						114	105	105
9/03/10	750	6	2.5	.5	6	2.5	40	1	10	.05	.9	.5	128	85.9	5	25	50	50	25						114	106	110
9/03/10	750	.5	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	80.2	77.1	5	50	50	50	50						115	106	107
12/03/10	810	4.1	2.5	.5	7	2.5	8	1	11	.05	1.2	.7	72.3	68.6	5	25	50	50	25						119	94.4	78
12/03/10	860	4.7	2.5	.5	8	6	22	1	26	.05	2.4	1.4	80.1	76.4	5	25	50	50	25						112	89.4	79.1
12/03/10	783	4.1	2.5	.5	10	2.5	17	1	20	.05	1.3	.8	93.8	87.4	5	25	140	210	350						108	87.7	76.8
16/03/10	889	2.9	2.5	.5	4	2.5	2.5	1	9	.05	1.1	.6	90.2	72.6	5	25	50	50	25						88.3	99.5	85.2
16/03/10	971	3.6	2.5	.5	5	2.5	2.5	1	8	.05	.9	.5	103	93	5	25	50	50	25						95.7	98.7	90.7
16/03/10	833	6.8	2.5	.5	8	5	14	1	21	.05	1	.6	103	91.2	5	25	50	50	25						95.5	99.1	88.7
19/03/10	750	4.6	2.5	.5	7	2.5	6	1	12	.05	.25	.25	81.7	55.2	0	0	0	0	0						0	0	0
19/03/10	750	4	2.5	.5	7	2.5	7	1	15	.05	.25	.25	84.7	73.5	5	25	50	50	25						99.3	110	86.7
19/03/10	750	8.9	2.5	.5	8	8	30	2	73	.05	.25	.25	95.1	78.3	5	25	50	50	25						102	110	85.8
25/03/10	750	5.8	2.5	.5	7	2.5	12	1	16	.05	1.3	.8	74.2	63.4	5	25	50	50	25						92.8	95.6	79
25/03/10	750	2.2	2.5	.5	7	2.5	7	1	13	.05	.9	.5	90.2	79.2	5	25	50	50	25						100	95.5	80
25/03/10	750	5	2.5	.5	6	2.5	7	1	11	.05	.6	.25	74.7	79.7	5	25	50	50	25						103	91.6	83.9
25/03/10	750	3.8	2.5	.5	5	2.5	7	1	9	.05	.9	.5	71	69.2	5	25	50	50	25						98	93.9	77.7
8/04/10	750	3.8	2.5	.5	6	5	12	1	20	.05	.6	.25	112	72	5	25	50	50	25						88.7	89.7	95.9
8/04/10	750	4	2.5	.5	7	2.5	9	1	16	.05	2.2	1.3	113	71.4	5	25	50	50	25						92	94.1	99.2
8/04/10	750	3.8	2.5	.5	7	2.5	9	1	19	.05	.9	.5	126	87.9	5	25	50	50	25						93.9	93.2	101
15/04/10	750	4.1	2.5	.5	8	2.5	2.5	1	8	.05	.25	.25	88.4	72.9	5	25	50	50	25						96.8	78.7	94.5
15/04/10	750	4.4	2.5	.5	9	6	28	1	24	.05	1.6	.9	113	94.3	5	25	50	50	25						100	82.1	92.1
15/04/10	750	4.2	2.5	.5	7	5	8	1	21	.05	.7	.25	120	83.1	5	25	50	50	25						97.5	90.3	100
23/04/10	750	3.7	2.5	.5	7	6	13	1	24	.05	1	.6	111	103	5	25	50	50	25						95.5	111	91
23/04/10	750	4.3	2.5	.5	6	5	9	1	21	.05	1.2	.7	114	108	5	25	50	50	25						97.4	113	83.4
23/04/10	750	4.4	2.5	.5	8	9	37	1	45	.05	.9	.5	132	129	5	25	50	50	25						89.3	108	83.2
29/04/10	741	5.9	2.5	.5	8	7	16	1	28	.05	1.1	.6	92	78.7	5	25	50	50	25						82.5	99.7	95.2
29/04/10	664	4.2	2.5	.5	8	52	22	1	29	.05	1.2	.7	110	61.2	5	25	50	50	25						80.5	106	104
29/04/10	676	3.7	2.5	.5	8	6	10	1	25	.05	.7	.25	87.6	81.4	5	25	50	50	25						80.2	109	102
7/05/10	750	1.6	2.5	.5	6	5	13	1	28	.05	1.1	.6	107	107	5	25	50	50	25						104	102	95.4
7/05/10	750	2.6	2.5	.5	8	5	11	1	27	.05	2.3	1.3	113	116	5	25	50	50	25						106	103	98.3
7/05/10	750	4.2	2.5	.5	6	10	24	1	55	.05	2	1.2	120	120	5	25	50	50	25						106	100	95.1
14/05/10	733	5.1	2.5	.5	7	5	11	1	19	.05	1.5	.9	79.6	90.5	5	25	50	50	25						105	92.8	104
14/05/10	946	5.1	2.5	.5	7	2.5	10	1	20	.05	2.3	.5	101	95.9	5	25	50	50	25						105	92.7	104
14/05/10	759	3.5	2.5	.5	7	2.5	10	1	20	.05	2	.8	91.2	83.4	5	25	50	50	25						105	95.5	109

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
20/05/10	730	5	2.5	.5	10	6	18	1	24	.05	1.3	.7	72	84	5	25	50	50	25						106	119	84.6
20/05/10	812	7	2.5	.5	10	8	12	2	37	.05	1.5	.9	78.3	81.2	5	25	50	50	25						91.3	105	82.8
20/05/10	879	5.8	2.5	.5	9	7	12	1	21	.05	1.9	1.1	77.2	80.2	5	25	50	50	25						87.2	106	88.5
21/05/10	750	5.6	2.5	.5	7	5	12	1	28	.05	1.3	.7	66	107	5	25	50	50	25						90.6	88.7	91.1
21/05/10	750	5	2.5	.5	7	7	14	1	31	.05	.8	.25	65.1	96.8	5	25	50	50	25						83.6	91	89.4
21/05/10	750	5.7	2.5	.5	7	6	10	1	28	.05	1	.6	55.5	87.4	5	25	50	50	25						86.6	95.8	91
21/05/10	750	5.8	2.5	.5	8	2.5	7	1	15	.05	.25	.25	63.5	97.9	5	25	50	50	25						104	97.2	94
28/05/10	850	6.3	2.5	.5	9	6	10	1	23	.05	.7	.25	129	101	5	25	50	50	25						97.4	103	84.7
28/05/10	648	6.2	2.5	.5	10	5	10	1	24	.05	1.1	.7	127	99.5	5	25	50	50	25						89.5	95.7	78.6
28/05/10	745	5.5	2.5	.5	9	5	10	1	24	.05	1.1	.6	124	94.6	5	25	50	50	25						94	99.5	76.1
4/06/10	682	4.4	2.5	.5	8	2.5	9	1	19	.05	.9	.5	82	79	5	25	50	50	25						88	90.8	78.9
4/06/10	778	4.3	2.5	.5	7	2.5	10	1	17	.05	.6	.25	76	76	5	25	50	50	25						90.9	92.6	80
4/06/10	838	4.8	2.5	.5	7	5	8	1	18	.05	1.2	.7	63	81	5	25	50	50	25						86.2	89	76.4
11/06/10	741	3.9	2.5	.5	7	2.5	8	1	20	.05	1.1	.6	96.6	120	5	25	50	50	25						78.2	93	85.1
11/06/10	780	4.2	2.5	.5	7	2.5	8	1	18	.05	1.2	.7	85.9	107	5	25	50	50	25						88.8	102	91.2
11/06/10	785	3.8	2.5	.5	6	2.5	12	1	35	.05	1	.6	86	110	5	25	50	50	25						85	93.8	84.1
18/06/10	718	5.2	2.5	.5	6	2.5	6	1	30	.05	1.1	.6	71.3	65.9	5	25	50	50	25						95.2	94	83
18/06/10	739	4.9	2.5	.5	5	2.5	7	1	17	.05	1.5	.9	70	45.7	5	25	50	50	25						108	93.3	84
18/06/10	769	4.9	2.5	.5	5	2.5	6	1	17	.05	1.6	1	64.2	44.4	5	25	50	50	25						94.2	95.9	83.5
25/06/10	750	6.9	2.5	.5	7	2.5	7	1	14	.05	1	.6	70	70.3	5	25	50	50	25						101	99.1	95.5
25/06/10	750	5.6	2.5	.5	6	2.5	5	1	10	.05	1	.6	74.7	79.5	5	25	50	50	25						100	95.4	95.6
25/06/10	750	5	2.5	.5	5	2.5	6	1	12	.05	.7	.25	90.4	95	5	25	50	50	25						101	103	98.7
2/07/10	750	5.4	2.5	.5	7	2.5	5	1	14	.05	1.9	1.1	87.5	98.1	5	25	50	50	25						105	101	89.9
2/07/10	750	4.8	2.5	.5	7	2.5	5	1	16	.05	2	1.1	99.7	92.4	5	25	50	50	25						105	96.8	87.7
2/07/10	750	5.4	2.5	.5	7	2.5	5	1	12	.05	1.9	1.1	95.4	132	5	25	50	50	25						104	96.1	88.5
9/07/10	607	8.2	2.5	.5	7	6	9	1	19	.05	1.9	1.1	92.1	97	5	25	50	50	25						106	98.5	99
9/07/10	784	9.2	2.5	.5	8	2.5	7	1	21	.05	1.8	1	100	108	5	25	50	50	25						104	95.6	97
9/07/10	917	13.8	2.5	.5	9	2.5	9	1	21	.05	2.5	1.5	105	114	5	25	50	50	25						102	92.5	94.2
16/07/10	802	7.8	2.5	.5	7	6	27	1	27	.05	1.7	1	116	123	5	25	50	50	25						93.5	97.5	97.7
16/07/10	763	7.2	2.5	.5	6	2.5	15	1	24	.05	2.2	1.3	95.2	88	5	25	50	50	25						94.9	99.8	98
16/07/10	707	6.9	2.5	.5	7	7	23	1	35	.05	4	2.3	95.3	100	5	25	50	50	25						87.5	96.6	97.8
22/07/10	782	6.9	2.5	.5	7	2.5	11	1	29	.05	1	.6	102	105	5	25	50	50	25						92.8	86.7	75.7
22/07/10	733	7.3	2.5	.5	8	2.5	8	1	18	.05	2	1.1	81.2	82.1	5	25	50	50	25						99.8	88.9	81
22/07/10	734	8.3	2.5	.5	8	2.5	17	1	24	.05	1.4	.8	83.4	89	5	25	50	50	25						104	98.3	93.3
30/07/10	709	7	2.5	.5	8	6	8	1	23	.05	1.6	.9	67.2	67.9	5	25	50	50	25						101	100	91.7
30/07/10	646	7.6	2.5	.5	8	6	11	1	26	.05	1.8	1	65.8	66.9	5	25	50	50	25						98.2	102	93.1
30/07/10	662	7.4	2.5	.5	8	6	9	1	23	.05	2.5	1.4	77.5	75.2	5	25	50	50	25						100	101	90.9
9/08/10	750	5.5	2.5	.5	8	9	36	2	61	.05	1.5	.8	103	124	5	25	50	50	25						89.5	92.1	78
9/08/10	750	4.6	2.5	.5	8	9	59	2	36	.05	1.2	.7	110	112	5	25	50	50	25						92.6	91.6	77
9/08/10	688	4.9	2.5	.5	9	8	42	2	36	.05	1.4	.8	118	116	5	25	50	50	25						92.8	90.3	79.6
16/08/10	750	6.2	2.5	.5	8	2.5	8	1	19	.05	.7	.25	99	78.3	5	25	50	50	25						70.3	88.9	81.1
16/08/10	750	6.8	2.5	.5	8	2.5	6	1	16	.05	.9	.5	103	89.1	5	25	50	50	25						73.1	88	78.6
16/08/10	750	5	2.5	.5	8	2.5	7	1	18	.05	1.3	.7	109	98.4	5	25	50	50	25						72.5	87.9	80.6
20/08/10	750	6.5	2.5	.5	8	7	39	1	17	.05	2.2	.8	114	112	5	25	50	50	25						77.5	119	91.5
20/08/10	750	6.4	2.5	.5	8	7	22	1	15	.05	1.4	1	109	88.6	5	25	50	50	25						107	113	88.5
20/08/10	750	6.9	2.5	.5	8	5	20	1	16	.05	1	.9	118	114	5	25	50	50	25						79.1	116	89.7
7/09/10	750	7	2.5	.5	7	2.5	10	1	18	.05	1.4	1.2	80.5	77.8	5	25	50	50	25						92.4	96.6	91.9
7/09/10	750	6.9	2.5	.5	7	2.5	10	1	19	.05	.8	.8	66.9	68.2	5	25	50	50	25						94.2	91.8	90

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
7/09/10	750	6.8	2.5	.5	8	6	14	1	19	.05	1	.6	75.3	75.3	5	25	50	50	25						95.6	94.3	94.1
10/09/10	750	7.5	2.5	.5	63	2.5	8	17	21	.05	2.7	.8	110	120	5	25	50	50	25						87.4	99.6	91.6
10/09/10	750	7.4	2.5	.5	20	5	11	5	20	.05	2.4	.25	92.6	104	5	25	50	50	25						96	93.4	90.7
10/09/10	750	7.4	2.5	.5	10	2.5	8	1	15	.05	2.6	.6	78.4	85	5	25	50	50	25						95	92.6	93.3
17/09/10	750	6.1	2.5	.5	10	7	16	1	54	.05	2.2	1.6	115	118	5	25	50	50	25						111	105	89.9
17/09/10	750	5.7	2.5	.5	12	7	18	1	81	.05	1.1	1.4	118	123	5	25	50	50	25						105	102	87.6
17/09/10	750	6.1	2.5	.5	10	6	16	1	57	.05	1	1.5	99.7	110	5	25	50	50	25						113	96.5	96.4
24/09/10	750	4.9	2.5	.5	7	7	14	1	22	.05	1.2	1.3	84.7	101	5	25	50	50	25						88.7	90.6	86.8
24/09/10	750	5.9	2.5	.5	8	6	15	1	32	.05	1.2	.6	123	133	5	25	50	50	25						86	90.8	90.2
24/09/10	750	5.8	2.5	.5	8	8	13	1	26	.05	1.2	.6	85.4	102	5	25	50	50	25						85.1	90.8	90.2
1/10/10	801	5.4	2.5	.5	18	6	21	1	27	.05	.5	.25	113	116	5	25	50	50	25						92.6	85	93.1
1/10/10	826	5.7	2.5	.5	21	7	19	1	30	.05	.5	.25	126	129	5	25	50	50	25						107	95	104
1/10/10	783	4.8	2.5	.5	20	6	17	1	26	.05	.6	.25	101	119	5	25	50	50	25						106	97.3	100
11/10/10	750	5.9	2.5	.5	8	7	35	1	28	.05	1.2	.7	70.5	63	5	25	50	50	25						99.5	102	105
11/10/10	750	6.1	2.5	.5	11	9	24	6	30	.05	.9	.5	77.3	72.8	5	25	50	50	25						97.8	98.9	104
11/10/10	750	4.9	2.5	.5	7	6	13	1	24	.05	1.1	.6	86.5	74.2	5	25	50	50	25						112	103	97.3
18/10/10	736	8	2.5	.5	8	7	16	1	31	.05	1.7	1	66.8	73.1	5	25	50	50	25						104	91.3	93.3
18/10/10	715	5.6	2.5	.5	10	7	16	1	29	.05	2	1.2	71.5	78.2	5	25	50	50	25						92.5	94.7	98.9
18/10/10	770	6.9	2.5	.5	9	20	19	1	34	.05	1.8	1	66.1	73.4	5	25	50	50	25						104	90.4	92.2
26/10/10	798	5.2	2.5	.5	10	6	18	2	26	.05	2.4	1.4	116	100	5	25	50	50	25						85.5	105	108
26/10/10	986	5.6	2.5	.5	8	6	25	1	26	.05	2.6	1.5	124	108	5	25	50	50	25						91	109	112
26/10/10	785	5.7	2.5	.5	8	9	16	1	38	.05	3	1.8	120	110	5	25	50	50	25						86.8	110	115
1/11/10	750	5	2.5	.5	7	6	17	1	28	.05	1.6	1	75.1	71.8	5	25	50	50	25						92.9	99.6	98.4
1/11/10	750	5.5	2.5	.5	7	6	14	1	31	.05	1.8	1	82	81.6	5	25	50	50	25						88.2	94	94.5
1/11/10	750	6.7	2.5	.5	7	9	18	1	25	.05	2.4	1.4	88.7	75.9	5	25	50	50	25						91	97	95.5
8/11/10	793	4.6	2.5	.5	8	5	15	1	24	.05	1.6	.9	72.7	68.6	5	25	50	50	25						92.3	96	88.9
8/11/10	756	5.1	2.5	.5	8	5	18	1	24	.05	1.6	1	109	91.9	5	25	50	50	25						100	88.1	80.9
8/11/10	764	5.2	2.5	.5	8	6	16	1	25	.05	1.8	1	91.1	73.6	5	25	50	50	25						84.6	87.9	81.3
15/11/10	748	4.2	2.5	.5	7	2.5	10	1	20	.05	1.1	.6	102	113	5	25	50	50	25						88.3	96.6	97.5
15/11/10	852	4.1	2.5	.5	6	2.5	8	1	19	.05	7	.25	117	92.1	5	25	50	50	25						89.8	99.4	99.2
15/11/10	773	3.9	2.5	.5	7	2.5	9	1	23	.05	.9	.5	110	118	5	25	50	50	25						99	106	108
22/11/10	796	.5	2.5	.5	5	2.5	6	1	12	.05	1.2	.7	94	77.5	5	25	50	50	25						96	106	108
22/11/10	749	1.3	2.5	.5	7	2.5	9	1	20	.05	.25	.25	79.2	77.4	5	25	50	50	25						118	115	115
22/11/10	804	6.4	2.5	.5	7	6	17	1	25	.05	1.8	1	90	79.4	5	25	50	50	25						92.5	102	102
6/12/10	866	3.9	2.5	.5	6	6	8	1	19	.05	1.2	.7	95.1	100	5	25	50	50	25						106	114	94.2
6/12/10	725	3.8	2.5	.5	7	6	9	1	23	.05	4	2.3	97.9	101	5	25	50	50	25						105	110	91.6
6/12/10	879	4.7	2.5	.5	7	6	9	1	22	.05	1.3	.8	114	113	5	25	50	50	25						107	104	99
10/12/10	841	4.3	2.5	.5	6	2.5	7	1	23	.05	1.3	.8	106	119	5	25	50	50	25						103	94.1	93.8
10/12/10	967	4.1	2.5	.5	7	6	9	1	21	.05	.9	.5	84.1	122	5	25	50	50	25						105	101	82.7
10/12/10	750	3.7	2.5	.5	7	5	10	1	19	.05	1.4	.8	74	109	5	25	50	50	25						104	111	93.2
10/12/10	817	6.7	2.5	.5	9	5	45	1	32	.05	1.6	.9	75.7	98.4	5	25	50	50	25						103	93.7	77.9
18/01/11	750	4.1	2.5	.5	6	2.5	7	1	21	.05	.5	.25	106	118	5	25	50	50	25						94.6	96.3	84.3
18/01/11	750	4	2.5	.5	9	6	35	8	19	.05	2	1.1	112	118	5	25	50	50	25						90.6	95.4	84.1
18/01/11	750	4.2	2.5	.5	7	6	9	1	17	.05	2.1	1.2	118	118	5	25	50	50	25						95.7	93.8	89.5
25/01/11	773	2.9	2.5	.5	5	11	10	1	27	.05	2.6	1.5	112	127	5	25	50	50	25						95.7	98	98.6
25/01/11	800	5.7	2.5	.5	7	7	10	1	27	.05	1.9	1.1	108	105	5	25	50	50	25						92.8	94.4	93.2
25/01/11	818	4.6	2.5	.5	7	6	12	1	38	.05	1.8	1	116	112	5	25	50	50	25						94.6	95.7	94.8
25/01/11	890	.5	2.5	.5	6	8	20	1	58	.05	2.2	1.3	0	0	5	25	4430	5800	?						86.8	101	87.9

Non Organic Waste

Soil Sampling Results

Part II

1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
25/01/11	852	3.3	2.5	.5	6	9	19	1	111	.2	6.8	3.9	0	0	5	25	7310	9800	?						85.1	104	104
25/01/11	823	2	2.5	.5	7	7	31	1	63	.05	11	6.4	0	0	5	25	5780	8000	?						81.3	103	101
1/02/11	890	4.8	2.5	.5	6	8	16	1	44	.05	1.7	1	123	114	5	25	50	50	25						120	98.9	82.5
1/02/11	852	4.5	2.5	.5	5	5	10	1	29	.05	1.5	.9	101	90.4	5	25	50	50	25						84.1	90.5	78.1
1/02/11	823	4.2	2.5	.5	5	6	13	1	30	.05	1.7	1	98.8	87.8	5	25	50	50	25						85.3	86.9	77
8/02/11	841	4.7	2.5	.5	8	8	8	1	18	.05	1.3	.7	70.6	0	5	25	50	50	25						90.6	90.3	85.4
8/02/11	882	4.3	2.5	.5	8	8	9	1	20	.05	1.3	.8	94	0	5	25	310	50	310						86.6	92.6	87
8/02/11	796	5.3	2.5	.5	8	6	13	1	25	.05	1.2	.7	98.1	0	5	25	50	50	25						92.8	92.6	92.5
15/02/11	750	3.8	2.5	.5	5	2.5	2.5	4	17	.05	.6	.6	90.7	65.8	5	25	50	50	25						92.9	88.7	87.9
15/02/11	750	4.9	2.5	.5	7	6	2.5	3	21	.05	.25	.25	70.7	61	5	25	50	50	25						95.8	90.6	92.6
15/02/11	750	4.1	2.5	.5	7	5	7	1	17	.05	.8	.8	72.6	58.2	5	25	50	50	25						90.6	90.8	90
22/02/11	750	3.7	2.5	.5	9	7	11	1	23	.05	.25	.25	81.6	75.7	5	25	50	50	25						92.4	91.8	80.6
22/02/11	750	3.8	2.5	.5	8	5	9	1	18	.05	.25	.25	96.7	89.7	5	25	50	50	25						90.4	89.8	80.9
22/02/11	750	3.7	2.5	.5	7	2.5	7	1	20	.05	.25	.25	77.7	76	5	25	50	50	25						90.3	93.8	84.3
1/03/11	750	3	2.5	.5	7	2.5	7	1	23	.05	.25	.25	82.6	84.6	5	25	50	50	25						92	85.7	86.8
1/03/11	750	3.8	2.5	.5	7	2.5	8	1	16	.05	.25	.25	78.3	85.7	5	25	50	50	25						94.2	84.4	88
1/03/11	750	3.3	2.5	.5	8	2.5	8	1	18	.05	.25	.25	72.3	75.5	5	25	50	50	25						105	96.5	93.2
22/03/11	750	3.2	2.5	.5	7	2.5	10	1	21	.05	.25	.25	94.8	91.7	5	25	50	50	25						104	81.3	75
22/03/11	750	5.2	2.5	.5	7	6	12	1	25	.05	.25	.25	107	105	5	25	50	50	25						109	87.1	81.5
22/03/11	750	3.4	2.5	.5	7	5	12	1	25	.05	.6	.6	86.6	99.8	5	25	50	50	25						109	88.5	81.4
24/03/11	750	4.5	2.5	.5	7	5	14	1	25	.05	.5	.25	104	74.6	5	25	50	50	25						77.3	108	89.7
24/03/11	750	4.5	2.5	.5	8	6	11	1	23	.05	.25	.25	76.8	92	5	25	50	50	25						93.4	95.2	96.1
24/03/11	750	4.8	2.5	.5	8	5	23	1	26	.05	.7	.25	99.1	93.4	5	25	50	50	25						98	101	99.9
31/03/11	750	3.4	2.5	.5	8	6	10	1	23	.05	1.2	.7	94.8	83.2	5	25	50	50	25						116	114	98.2
31/03/11	750	4	2.5	.5	7	6	10	1	23	.05	1.2	.7	88	100	5	25	50	50	25						98.8	100	83.1
31/03/11	750	3.5	2.5	.5	8	6	9	1	32	.05	.25	.25	95.1	88.9	5	25	50	50	25						102	102	88.1
7/04/11	750	4.8	2.5	.5	6	9	16	1	26	.05	.8	.25	65	70.8	5	25	50	50	25	5	25	50	50	25	114	108	99.8
7/04/11	750	5.5	2.5	.5	7	7	14	1	29	.05	1	.6	69.5	76	5	25	50	50	25	5	25	50	50	25	113	107	96.8
7/04/11	750	5.5	2.5	.5	7	8	12	1	24	.05	1.4	.8	74.7	79	5	25	50	50	25	5	25	50	50	25	114	108	101
12/04/11	750	4.7	2.5	.5	9	6	10	1	27	.05	1.4	.8	80.3	75.4	5	25	50	50	25	5	25	120	50	120	121	113	106
12/04/11	750	3.6	2.5	.5	8	6	11	1	24	.05	1.2	.7	62	62.8	5	25	50	50	25	5	25	50	50	25	122	109	117
12/04/11	750	3.8	2.5	.5	23	44	24	3	13	.05	1.6	.9	71.2	72	5	25	50	50	25	5	25	50	50	25	100	109	81.8
18/04/11	750	4.5	2.5	.5	6	6	11	1	22	.05	1.8	1	88.4	73.5	5	25	50	50	25	5	25	50	50	25	92.9	92	96.6
18/04/11	750	4.1	2.5	.5	6	6	20	1	22	.05	1.1	.6	95.5	84.6	5	25	50	50	25	5	25	50	50	25	92.9	93.6	94
18/04/11	750	3.6	2.5	.5	6	5	10	1	17	.05	1.4	.8	99.8	85.5	5	25	50	50	25	5	25	50	50	25	92	96.9	97.6
12/05/11	750	7.2	2.5	.5	9	7	22	1	37	.05	1.2	.7	77.2	72.8	5	25	50	50	25	5	25	50	50	25	102	92.1	85.8
12/05/11	750	7.1	2.5	.5	8	7	11	3	28	.05	1.2	.7	72	66.9	5	25	50	50	25	5	25	50	50	25	104	85.6	80.2
12/05/11	750	7	2.5	.5	8	7	12	1	32	.05	1.3	.8	88.5	63.1	5	25	50	50	25	5	25	50	50	25	101	87.2	90.8
19/05/11	750	4.2	2.5	.5	8	6	8	1	18	.05	1.4	.8	82.1	66	5	25	50	50	25	5	25	50	50	25	95.9	92.1	108
19/05/11	750	4.5	2.5	.5	8	6	9	1	18	.05	.9	.5	105	75.1	5	25	50	50	25	5	25	50	50	25	93.1	93.8	106
19/05/11	750	4.4	2.5	.5	8	6	10	1	17	.05	.8	.25	83.1	63.5	5	25	50	50	25	5	25	50	50	25	96.6	90.9	109
27/05/11	750	6.8	2.5	.5	11	5	10	1	15	.05	.25	.25	97.9	79.2	5	25	50	50	25	5	25	50	50	25	93.1	91.8	100
27/05/11	750	6.4	2.5	.5	10	6	11	1	19	.05	.25	.25	109	77.8	5	25	50	50	25	5	25	50	50	25	99.4	95.1	96.2
27/05/11	750	6	2.5	.5	10	5	8	1	13	.05	.25	.25	107	81.8	5	25	50	50	25	5	25	50	50	25	104	86.4	89.5
3/06/11	750	6.7	2.5	.5	9	5	10	1	22	.05	.25	.25	102	100	5	25	50	50	25	5	25	50	50	25	111	92.6	102
3/06/11	750	6.1	2.5	.5	10	6	11	1	24	.05	.25	.25	70	105	5	25	50	50	25	5	25	50	50	25	115	96.3	104
3/06/11	750	7.3	2.5	.5	9	2.5	10	1	21	.05	.8	.25	64.3	94.6	5	25	50	50	25	5	25	50	50	25	113	89.2	93.7
6/06/11	750	5.4	2.5	.5	8	2.5	11	1	20	.05	.5	.25	118	80.7	5	25	50	50	25	5	25	50	50	25	81.1	92.3	81.9

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
6/06/11	750	5.5	2.5	.5	7	6	13	1	22	.05	.5	.25	110	102	5	25	50	50	25	5	25	50	50	25	86.3	80.6	81
6/06/11	750	5.2	2.5	.5	8	2.5	15	2	25	.05	.5	.25	113	79.8	5	25	50	50	25	5	25	50	50	25	86.5	79.1	81.9
17/06/11	750	6.1	2.5	.5	7	14	11	1	23	.05	4	2.3	96.3	101	5	25	50	50	25	5	25	50	50	25	98.1	89.4	79.2
17/06/11	750	6	2.5	.5	7	6	12	1	28	.05	3.5	2	75	79.9	5	25	50	50	25	5	25	50	50	25	93	87.4	76.7
17/06/11	750	6	2.5	.5	8	6	14	1	31	.05	3.1	1.8	126	123	5	25	50	50	25	5	25	50	50	25	95.4	86.1	79
23/06/11	732	5.5	2.5	.5	7	6	12	1	28	.05	1.2	.7	90.3	89	5	25	50	50	25	5	25	50	50	25	90.7	88.4	90.2
23/06/11	750	5.2	2.5	.5	8	6	14	2	32	.05	1.2	.7	93.5	91.2	5	25	50	50	25	5	25	50	50	25	83.9	68.9	90.9
23/06/11	750	5.8	2.5	.5	7	7	13	1	29	.05	1.2	.7	102	78.3	5	25	50	50	25	5	25	50	50	25	86.9	85.9	109
7/07/11	750	6.2	2.5	.5	8	6	12	1	27	.05	.5	.25	96.6	74.8	5	25	50	50	25	5	25	50	50	25	96.4	101	61.2
7/07/11	750	6.7	2.5	.5	8	5	9	1	24	.05	.5	.25	87.6	68.9	5	25	50	50	25	5	25	50	50	25	92.7	96.3	93.3
7/07/11	750	6	2.5	.5	7	6	13	1	26	.05	.5	.25	84.7	65.8	5	25	50	50	25	5	25	50	50	25	95	97.7	63
14/07/11	750	3.4	2.5	.5	8	6	10	1	23	.05	1.2	.7	94.8	83.2	5	25	50	50	25						116	114	98.2
14/07/11	750	4	2.5	.5	7	6	10	1	23	.05	1.2	.7	88	100	5	25	50	50	25						98.8	100	83.1
14/07/11	750	3.5	2.5	.5	8	6	9	1	32	.05	.25	.25	95.1	88.9	5	25	50	50	25						102	102	88.1
21/07/11	750	6.8	2.5	.5	9	2.5	10	2	22	.05	1	1.1	95.8	86.6	5	25	50	50	25	5	25	50	50	25	121	106	100
21/07/11	750	8.6	2.5	.5	8	5	23	1	170	.05	.9	1.1	99.7	91.5	5	25	50	50	25	5	25	50	50	25	100	116	110
21/07/11	750	9.1	2.5	.5	8	5	18	1	32	.05	.025	.9	96.9	89.7	5	25	50	50	25	5	25	50	50	25	116	115	105
28/07/11	750	10.2	2.5	.5	8	6	17	1	46	.05	1.3	.25	111	116	5	25	50	50	25	5	25	50	50	25	96.1	94.9	87.4
28/07/11	750	9.3	2.5	.5	9	5	13	1	25	.05	1.2	.25	110	117	5	25	50	50	25	5	25	50	50	25	91.2	93.3	82
28/07/11	750	9.8	2.5	.5	7	2.5	16	1	26	.05	1.3	.25	75	77	5	25	50	50	25	5	25	50	50	25	106	102	94.4
4/08/11	750	9.5	2.5	.5	7	6	15	1	28	.05	1.9	.6	97.2	94.4	5	25	50	50	25	5	25	50	50	25	65.5	87.1	92.4
4/08/11	750	9.1	2.5	.5	7	6	13	1	27	.05	1.8	.5	91.8	86.3	5	25	50	50	25	5	25	50	50	25	86.3	84.5	90.8
4/08/11	750	8.7	2.5	.5	6	6	12	1	26	.05	1.8	.25	97.7	91.8	5	25	50	50	25	5	25	50	50	25	87.1	90	88.6
11/08/11	750	6.4	2.5	.5	8	8	19	1	35	.05	1.8	.7	105	90.1	5	25	50	50	25	5	25	50	50	25	102	102	118
11/08/11	750	6.6	2.5	.5	8	7	18	1	36	.05	1.2	.7	88.6	79.4	5	25	50	50	25	5	25	50	50	25	118	84.9	90.9
11/08/11	750	6.7	2.5	.5	8	7	19	1	38	.05	1.6	.8	101	90.1	5	25	50	50	25	5	25	50	50	25	99.2	80.6	110
18/08/11	750	7.6	2.5	.5	7	5	10	1	24	.05	1.8	.7	86.5	105	5	25	50	50	25	5	25	50	50	25	119	116	82.4
18/08/11	750	7.5	2.5	.5	7	12	11	1	24	.2	2	.7	111	106	5	25	50	50	25	5	25	50	50	25	85	94.1	99.7
18/08/11	750	7.6	2.5	.5	8	2.5	9	1	16	.05	2	.7	101	74.7	5	25	50	50	25	5	25	50	50	25	106	76.3	83
29/08/11	750	7.7	2.5	.5	6	8	21	1	39	.05	.6	1.1	71.6	75	5	25	50	50	25	5	25	50	50	25	96.1	94.9	92.6
29/08/11	750	7.4	2.5	.5	7	7	17	1	44	.05	.8	1	97.1	104	5	25	50	50	25	5	25	50	50	25	106	108	108
29/08/11	750	6.9	2.5	.5	6	10	16	1	40	.05	.9	1.1	78.6	82.4	5	25	50	50	25	5	25	50	50	25	128	98.5	107
1/09/11	750	5.6	2.5	.5	8	6	12	1	24	.05		1	91.4	80.6	5	25	50	50	25	5	25	50	50	25	102	93.3	93.9
1/09/11	750	6.1	2.5	.5	7	6	9	1	32	.05		.7	102	93.5	5	25	50	50	25	5	25	50	50	25	93.2	92.3	91.2
1/09/11	750	6.1	2.5	.5	6	5	9	1	25	.05		.9	93.6	82.5	5	25	50	50	25	5	25	50	50	25	102	95.2	94.3
9/09/11	750	6.8	2.5	.5	7	2.5	6	1	21	.05		1.1	105	72.9	5	25	50	50	25	5	25	50	50	25	75.4	75.4	73.4
9/09/11	750	6.5	2.5	.5	6	2.5	6	1	15	.05		1.1	114	71.4	5	25	1310	1300	2610	5	240	2350	300	2890	88.9	88.6	82.4
9/09/11	750	6.8	2.5	.5	7	2.5	7	1	18	.05		1.2	113	70.2	5	25	50	50	25	5	25	50	50	25	85.7	88.4	83.3
16/09/11	750	6.7	2.5	.5	8	6	10	1	28	.05		.25	92.2	87	5	25	50	50	25	5	25	50	50	25	110	103	92.3
16/09/11	750	6.7	2.5	.5	8	6	10	1	28	.05		.25	109	103	5	25	50	50	25	5	25	50	50	25	114	106	93.8
16/09/11	750	7.1	2.5	.5	8	6	9	1	27	.05		.25	99.7	95	5	25	50	50	25	5	25	50	50	25	106	104	92.5
26/09/11	750	6.8	2.5	.5	8	10	12	1	32	.05		1.4	85.8	81.5	5	25	50	50	25	5	25	50	50	25	115	94.6	105
26/09/11	750	7.1	2.5	.5	7	7	10	1	29	.05		1.4	97.1	91.7	5	25	50	50	25	5	25	50	50	25	115	95.8	102
26/09/11	750	7.7	2.5	.5	7	6	11	1	60	.05		1.1	109	108	5	25	50	50	25	5	25	50	50	25	112	93	98.7
19/10/11	750	6.3	2.5	.5	7	6	148	1	30	.05		.8	69.1	79.9	5	25	50	50	25	5	25	50	50	25	111	116	115
19/10/11	750	5.8	2.5	.5	7	9	11	1	32	.05		.9	65.6	74.2	5	25	50	50	25	5	25	50	50	25	105	111	105
19/10/11	750	6.2	2.5	.5	7	6	11	1	30	.05		.8	67.4	74.3	5	25	50	50	25	5	25	50	50	25	125	120	115
31/10/11	750	5.4	2.5	.5	7	6	12	1	25	.05		1	110	105	5	25	50	50	25	5	25	50	50	25	99.6	89.9	82.5

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
31/10/11	750	6.6	2.5	.5	7	5	11	1	23	.05		.7	97.2	110	5	25	50	50	25	5	25	50	50	25	98.3	92.4	84.3
31/10/11	750	5.2	2.5	.5	8	5	11	1	25	.05		1.2	124	87.3	5	25	50	50	25	5	25	50	50	25	99.4	97.1	85.8
21/11/11	750	10	2.5	.5	7	6	11	1	26	.05	1.5	.9	80.1	74.7		25	50	50	25		25	50	50	25			
21/11/11	750	7.5	2.5	.5	7	6	10	1	24	.05	1.3	.8	81.5	86.8		25	50	50	25		25	50	50	25			
21/11/11	750	6.2	2.5	.5	6	6	10	1	26	.05	1	.6	79.3	90		25	50	50	25		25	50	50	25			
22/11/11	750	4.8	2.5	.5	8	7	12	1	25	.05	1	.6	86.2	98.6	5	25	50	50	25	5	25	50	50	25	105	108	95.6
22/11/11	750	5.9	2.5	.5	7	5	8	1	20	.05	.9	.5	88.1	102	5	25	50	50	25	5	25	50	50	25	110	96.2	90.7
9/12/11	750	4.8	2.5	.5	7	6	10	1	22	.05		.6	92.6	101	5	25	50	50	25	5	25	50	50	25	87.4	111	94.3
9/12/11	754	4.5	2.5	.5	6	2.5	11	1	26	.05		.6	134	124	5	25	50	50	25	5	25	50	50	25	92.1	109	87.2
9/12/11	750	6.3	2.5	.5	7	6	20	1	24	.05		.5	75.9	98.8	5	25	50	50	25	5	25	50	50	25	88.1	112	95.2
23/01/12	750	7	2.5	.5	6	5	12	1	20	.05	.8	.25	91.6	66.6	5	25	50	50	25	5	25	50	50	25	89.6	94.7	88.5
23/01/12	750	6.8	5	.5	6	5	10	1	22	.05	.9	.5	75.2	86.2	5	25	50	50	25	5	25	50	50	25	91.8	86	84.9
23/01/12	619	7	2.5	.5	6	5	11	1	21	.05	.25	.25	81.7	111	5	25	50	50	25	5	25	50	50	25	89.3	87.1	83.4
10/02/12	850	3.8	2.5	.5	7	6	16	1	27	.05	1.2	.7	61.4	26	5	25	50	50	25	5	25	50	50	25	89	89.7	87.8
10/02/12	850	3.2	2.5	.5	7	6	13	1	24	.05	1.3	.8	91.2	19.4	5	25	50	50	25	5	25	50	50	25	83.6	88.2	86
10/02/12	850	4	2.5	.5	6	6	12	1	23	.05	.8	.25	74.8	21.1	5	25	50	50	25	5	25	50	50	25	84.8	89.4	87.7
21/02/12	862	9.4	2.5	.5	8	7	11	1	25	.05	.25	.25	98.1	103	5	25	50	50	25	5	25	50	50	25	89.2	99.6	78.1
21/02/12	850	8.8	2.5	.5	7	5	10	1	22	.05	1	.6	111	94.9	5	25	50	50	25	5	25	50	50	25	95.1	99.4	77.6
21/02/12	850	4.4	2.5	.5	7	6	12	1	21	.05	.6	.25	98	99.9	5	25	50	50	25	5	25	50	50	25	94.4	111	83.9
8/03/12	850	4.5	2.5	.5	8	6	11	1	46	.05	1.1	.6	125	105	5	25	50	50	25	5	25	50	50	25	107	87.9	72.2
8/03/12	850	4.3	2.5	.5	7	5	11	1	29	.05	1.1	.6	116	106	5	25	50	50	25	5	25	50	50	25	104	90.4	75
8/03/12	850	4.2	2.5	.5	8	7	23	1	49	.05	.8	.25	124	97.1	5	25	50	50	25	5	25	50	50	25	104	85.1	73.8
9/03/12	950	4.1	2.5	.5	8	6	11	1	28	.05	1.2	.7	101	107	5	25	50	50	25	5	25	50	50	25	122	82.6	77.2
9/03/12	950	5.8	2.5	.5	8	7	10	1	26	.05	.8	.25	124	106	5	25	50	50	25	5	25	50	50	25	108	91.7	76.3
9/03/12	950	2.4	2.5	.5	8	6	13	1	28	.05	.9	.5	129	106	5	25	50	50	25	5	25	50	50	25	106	88.6	75.7
13/03/12	950	3.4	2.5	.5	8	2.5	7	1	18	.05	.6	.25	87.6	92.5	5	25	50	50	25	5	25	50	50	25	111	98.1	88.9
13/03/12	950	3.2	2.5	.5	7	2.5	7	1	21	.05	.6	.25	68.1	80.1	5	25	50	50	25	5	25	50	50	25	102	97.3	81.2
13/03/12	950	3.6	2.5	.5	6	2.5	11	1	29	.05	.7	.25	93.2	99.6	5	25	50	50	25	5	25	50	50	25	99.2	96.4	77.8
28/03/12	950	4	2.5	.5	7	5	7	1	26	.05	1.6	.9	106	72.4	5	25	50	50	25	5	25	50	50	25	102	99.8	91.5
28/03/12	950	3.8	2.5	.5	6	7	7	1	30	.05	1.7	1	89.9	68.8	5	25	50	50	25	5	25	50	50	25	101	99.9	93.9
28/03/12	950	3.2	2.5	.5	7	2.5	7	1	21	.05	1.7	1	114	60.4	5	25	50	50	25	5	25	50	50	25	110	104	93.9
3/04/12	900	5.6	2.5	.5	8	10	7	1	14	.05	2	1.2	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
3/04/12	900	5.2	7	.5	11	2.5	8	1	18	.05	1.4	.8	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
3/04/12	900	4.6	2.5	.5	9	2.5	7	1	17	.05	2.2	1.3	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
13/04/12	950	2.4	2.5	.5	7	5	12	1	16	.05	.6	.25	105	97	5	25	50	50	25	5	25	50	50	25	99.9	102	89.4
13/04/12	950	4.2	2.5	.5	7	6	10	1	24	.05	1.1	.6	123	119	5	25	50	50	25	5	25	50	50	25	106	96.2	85
13/04/12	950	6	2.5	.5	7	5	15	1	18	.05	.6	.25	106	104	5	25	50	50	25	5	25	50	50	25	103	98.3	89.3
27/04/12	1053	2.8	2.5	.5	8	2.5	12	1	12	.05	.9	.5	101	97.9	5	25	50	50	25	5	25	50	50	25	100	95.5	99.5
27/04/12	1120	2.8	2.5	.5	9	7	22	1	33	.05	1.2	.7	81.9	89.6	5	25	50	50	25	5	25	50	50	25	102	94.1	101
27/04/12	1189	3.3	2.5	.5	6	6	27	1	57	.05	1.7	1	88.5	90	5	25	50	50	25	5	25	50	50	25	102	92	97.7
3/05/12	1018	3.8	2.5	.5	6	2.5	2.5	1	13	.05	.7	.25	85.6	85.8	5	25	50	50	25	5	25	50	50	25	101	95.8	91.2
3/05/12	1037	4.4	2.5	.5	7	8	2.5	1	13	.05	.9	.5	77.3	81.4	5	25	50	50	25	5	25	50	50	25	96.3	92.9	89.8
3/05/12	994	4.4	2.5	.5	6	2.5	2.5	1	10	.05	.7	.25	113	119	5	25	50	50	25	5	25	50	50	25	98.7	97.4	92.4
9/05/12	1184	2.8	2.5	.5	6	6	10	1	22	.05	.25	.25	68.5	70.3	5	25	50	50	25	5	25	50	50	25	93	89.4	78.8
9/05/12	1344	4.4	2.5	.5	6	6	14	1	37	.05	.25	.25	115	95.2	5	25	50	50	25	5	25	50	50	25	85.6	89.9	79.9
9/05/12	1260	5.3	2.5	.5	7	2.5	7	1	19	.05	.25	.25	126	91	5	25	50	50	25	5	25	50	50	25	95.9	90.9	84.4
21/05/12	1290	8.2	2.5	.5	6	6	10	1	25	.05	.8	.25	62.9	25.8	5	25	50	50	25	5	25	50	50	25	94.9	101	99.7
21/05/12	1233	4.5	2.5	.5	6	2.5	9	1	22	.05	1	.6	60.7	23.1	5	25	50	50	25	5	25	50	50	25	94.6	97.7	96.7

Non Organic Waste

Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
21/05/12	1228	5.6	2.5	.5	9	2.5	7	1	18	.05	.7	.25	64.1	23.4	5	25	50	50	25	5	25	50	50	25	96.8	99.4	97.9
24/05/12	1108	4.2	2.5	.5	8	2.5	7	1	18	.05	.6	.25	149	84.4	5	25	50	50	25	5	25	50	50	25	101	96.6	83.2
24/05/12	1066	4.2	2.5	.5	10	10	21	1	40	.05	.25	.25	103	124	5	25	50	50	25	5	25	50	50	25	90.9	89.5	83.2
24/05/12	1204	4.8	2.5	.5	9	6	18	1	35	.05	1	.6	96.4	120	5	25	50	50	25	5	25	50	50	25	103	94.1	83.1
5/06/12	1278	7.6	2.5	.5	8	5	11	1	22	.05	.7	.25	116	110	5	25	50	50	25	5	25	50	50	25	87.9	91.3	91.4
5/06/12	1260	6.1	2.5	.5	7	6	9	1	23	.05	1.2	.7	104	99.6	5	25	50	50	25	5	25	50	50	25	91.6	93.6	93.4
5/06/12	1298	7.1	2.5	.5	8	6	8	1	24	.05	.25	.25	109	107	5	25	50	50	25	5	25	50	50	25	89.8	95.5	92.5
11/06/12	1200	6.8	2.5	.5	7	2.5	9	1	15	.05	1	.6	87.9	87.5	5	25	50	50	25	5	25	50	50	25	95.7	84.7	94.6
11/06/12	1240	7.3	2.5	.5	8	2.5	6	1	14	.05	.9	.5	87	86.2	5	25	50	50	25	5	25	50	50	25	97.9	90.2	93.9
11/06/12	1270	7	2.5	.5	8	2.5	8	1	14	.05	.9	.5	88.8	89.8	5	25	50	50	25	5	25	50	50	25	92.8	123	96.2
22/06/12	1338	11	2.5	.5	7	7	23	1	54	.05	1.3	.8	78.5	71.6	5	25	50	50	25	5	25	50	50	25	96.5	106	98
22/06/12	1326	11	2.5	.5	8	7	17	1	37	.05	1.6	.9	75.1	60.1	5	25	50	50	25	5	25	50	50	25	99.4	106	99.6
22/06/12	1390	10.2	2.5	.5	7	7	25	1	30	.05	1.4	.8	73.2	61.4	5	25	50	50	25	5	25	50	50	25	103	106	104
3/07/12	1,154	5.1	2.5	.5	9	6	12	1	30	.05	1.1	.6	82.4	98.8	5	25	50	50	25	5	25	50	50	25	106	90.7	87.7
3/07/12	1,169	4.9	2.5	.5	8	5	12	1	37	.05	.9	.5	72.5	90.9	5	25	50	50	25	5	25	50	50	25	113	92.5	90.4
3/07/12	1,279	5.5	2.5	.5	9	6	11	1	31	.05	1.3	.8	74.4	107	5	25	50	50	25	5	25	50	50	25	112	90.8	85.4
17/07/12	1,268	7	2.5	.5	7	2.5	9	1	24	.05	1.1	.6	60.7	60.7	5	25	50	50	25	5	25	50	50	25	88	90.7	96.4
17/07/12	1,275	8.4	2.5	.5	7	2.5	8	1	18	.05	1	.6	63.8	60.4	5	25	50	50	25	5	25	50	50	25	106	120	115
17/07/12	1,204	7.9	2.5	.5	8	2.5	8	1	17	.05	1.1	.6	53.6	62.4	5	25	50	50	25	5	25	50	50	25	96.7	106	96.7
25/07/12	1310	6.6	2.5	.5	8	6	13	1	31	.05	1.4	.8	98.7	123	5	25	50	50	25	5	25	50	50	25	105	92.8	84.7
25/07/12	1303	6.9	2.5	.5	7	5	9	1	23	.05	1.4	.8	84.4	90.3	5	25	50	50	25	5	25	50	50	25	107	90.2	86.4
25/07/12	1306	6.7	2.5	.5	8	5	11	1	27	.05	1.4	.8	102	126	5	25	50	50	25	5	25	50	50	25	109	89.3	83
6/08/12	1277	8.2	2.5	.5	6	6	11	1	20	.05	1.4	.8	71.8	71.8	5	25	50	50	25	5	25	50	50	25	106	98.6	87.6
6/08/12	1234	8.3	2.5	.5	5	6	10	1	20	.05	1.7	1	105	100	5	25	50	50	25	5	25	50	50	25	90.9	92	79
6/08/12	1274	8.4	2.5	.5	6	5	12	1	19	.05	2	1.1	112	130	5	25	50	50	25	5	25	50	50	25	95.7	98.4	87.7
27/08/12	722	5.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
27/08/12	788	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
27/08/12	847	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
27/08/12	873	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	80	65	5	25	50	50	25						110	99.6	80
4/09/12	730	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
4/09/12	750	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
4/09/12	770	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
4/09/12	790	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
12/09/12	750	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
12/09/12	710	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
12/09/12	720	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
12/09/12	770	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
20/09/12	700	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
20/09/12	730	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
20/09/12	670	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
20/09/12	705	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
3/10/12	760	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
3/10/12	700	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
3/10/12	770	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
3/10/12	710	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
12/10/12	1072	5	2.5	.5	6	8	20	1	36	.05	1.3	.8	95.8	89.9	5	25	50	50	25	5	25	50	50	25	106	96.6	93.3
12/10/12	1165	3.8	2.5	.5	7	15	46	1	72	.05	1.6	.9	59	50.2	5	25	50	50	25	5	25	50	50	25	104	94	89.1
12/10/12	1180	3.6	2.5	.5	6	10	21	1	37	.05	1.3	.7	62.9	57.3	5	25	50	50	25	5	25	50	50	25	101	91	87.3

Non Organic Waste

Soil Sampling Results

Part II

1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
12/10/12	790	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
12/10/12	690	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
12/10/12	800	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
12/10/12	730	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
23/10/12	804	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
23/10/12	650	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
23/10/12	600	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
23/10/12	677	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
24/10/12	720	5.6	2.5	.5	7	5	7	1	27	.05	1.2	1	90.8	74	5	25	50	50	25	5	25	50	50	25	126	106	91.4
24/10/12	720	5.2	2.5	.5	7	2.5	7	1	27	.05	1.2	1	79.6	65.7	5	25	50	50	25	5	25	50	50	25	110	96.9	69.7
24/10/12	738	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
24/10/12	755	4.6	2.5	.5	7	2.5	7	1	27	.05	1.2	1	70.6	62.4	5	25	50	50	25	5	25	50	50	25	105	99.8	79.5
8/11/12	740	8.6	2.5	.5	9	6	14	1	27	.05	1.2	.7	72.1	77.8	5	25	50	50	25	5	25	50	50	25	68.9	60.6	68.7
8/11/12	755	8.7	2.5	.5	10	9	16	1	25	.05	1.4	.8	73.5	79.3	5	25	50	50	25	5	25	50	50	25	71.5	64.9	73.5
8/11/12	741	7.3	2.5	.5	10	6	13	1	22	.05	1.4	.8	84.6	79	5	25	50	50	25	5	25	50	50	25	74.2	63.3	79.1
22/11/12	1230	2.5	2.5	.5	7	6	8	1	26	.05	1.1	.6	103	82	5	25	50	50	25	5	25	50	50	25	88.8	96	91.5
22/11/12	1260	2.4	2.5	.5	6	2.5	14	1	20	.05	1.2	.7	110	78	5	25	50	50	25	5	25	50	50	25	92.2	98.9	94.4
22/11/12	1270	2.3	2.5	.5	7	2.5	12	1	23	.05	1.5	.9	127	89.3	5	25	50	50	25	5	25	50	50	25	115	122	120
30/11/12	1110	4.4	2.5	.5	6	6	8	1	20	.05	1.4	.8	89.2	73.1	5	25	50	50	25	5	25	50	50	25	118	94.2	90.1
30/11/12	1210	4.6	2.5	.5	6	9	7	1	23	.05	1.9	1.1	77.5	53.7	5	25	50	50	25	5	25	50	50	25	104	91.1	76
30/11/12	1250	5.9	2.5	.5	10	8	15	1	36	.05	2	1.2	109	87.6	5	25	50	50	25	5	25	50	50	25	96.1	75.1	75.7
6/12/12	904	4	2.5	.5	12	11	17	2	33	.05	1.2	.7	96.1	68.7	5	25	50	50	25	5	25	50	50	25	99.8	95.9	91.7
6/12/12	1160	3.8	2.5	.5	9	7	14	1	54	.05	.9	.5	70.2	58.3	5	25	50	50	25	5	25	50	50	25	102	99.2	92.5
6/12/12	1100	3.8	2.5	.5	11	6	18	1	81	.05	1.4	.8	79.7	69.6	5	25	50	50	25	5	25	50	50	25	104	93.1	93.9
15/01/13	1130	2.4	2.5	.5	7	11	21	1	50	.05	2.1	1.2	85.6	74.5	5	25	50	50	25	5	25	50	50	25	89.4	95.3	82.7
15/01/13	1160	2.4	2.5	.5	8	21	18	1	35	.05	1.2	.7	71.6	92.7	5	25	50	50	25	5	25	50	50	25	91.3	94.6	82.1
15/01/13	1100	1.3	2.5	.5	6	168	16	1	61	.05	1.4	.8	87	102	5	25	50	50	25	5	25	50	50	25	91.2	91.8	81.2
16/01/13	1160	3	2.5	.5	7	14	14	1	77	.05	1.1	.6	70	53.9	5	25	50	50	25	5	25	50	50	25	88.7	89	78.9
16/01/13	1150	1.7	2.5	.5	6	11	16	1	48	.05	1.1	.7	66.5	63.1	5	25	50	50	25	5	25	50	50	25	92.8	90.2	81.9
16/01/13	1120	1.8	2.5	.5	7	9	18	1	49	.05	1.1	.7	69.8	45.2	5	25	50	50	25	5	25	50	50	25	89.9	91.6	79.4
22/01/13	1130	1.9	2.5	.5	6	30	12	1	46	.05	1.4	.8	93.2	76	5	25	50	50	25	5	25	50	50	25	81.9	95.9	85.1
22/01/13	1130	2.5	2.5	.5	7	7	12	1	34	.05	1.9	1.1	104	111	5	25	50	50	25	5	25	50	50	25	76.2	96	92.8
22/01/13	1230	1.9	2.5	.5	8	7	14	1	52	.05	2	1.1	80.9	76.5	5	25	50	50	25	5	25	50	50	25	80.1	99.9	84.9
5/02/13	1330	4.3	2.5	.5	7	6	11	1	26	.05	1.1	.6	78.8	33.2	5	25	50	50	25	5	25	100	50	100	108	92.9	82.8
5/02/13	1020	3.1	2.5	.5	5	2.5	15	1	16	.05	.9	.5	76.1	46.2	5	25	50	50	25	5	25	50	50	25	111	90.6	79.3
5/02/13	1210	7.3	2.5	.5	8	9	17	1	38	.05	1	.6	76.9	37.9	5	25	50	50	25	5	25	50	50	25	108	91.4	85.4
7/02/13	998	3.2	2.5	.5	6	5	11	1	25	.05	.25	.25	67.1	47	5	25	50	50	25	5	25	50	50	25	109	96.4	85.4
7/02/13	1140	5.1	2.5	.5	7	6	11	1	27	.05	1.3	.8	61.5	47.5	5	25	50	100	100	5	25	120	50	120	108	90.8	81.2
7/02/13	1140	5.3	2.5	.5	8	9	20	1	47	.05	1.2	.7	60.9	41	5	25	50	50	25	5	25	50	50	25	106	95.2	84.7
21/02/13	1210	4.1	2.5	.5	4	2.5	10	1	23	.05	1.6	.9	69.9	99	5	25	50	50	25	5	25	50	50	25	94.3	95.6	97
21/02/13	1320	2.3	2.5	.5	4	5	13	1	25	.05	1.2	.7	81.9	119	5	25	50	50	25	5	25	50	50	25	85.5	94.4	97.4
21/02/13	1290	3.4	2.5	.5	6	2.5	9	1	21	.05	1.1	.6	66.3	98.9	5	25	50	50	25	5	25	50	50	25	86.3	96.3	93
1/03/13	906	3.7	2.5	.5	7	7	10	1	26	.05	1.4	.8	75.9	50.4	5	25	50	50	25	5	25	50	50	25	81.6	99.6	89.6
1/03/13	900	3	2.5	.5	6	2.5	7	1	22	.05	.25	.25	71.8	48.7	5	25	50	50	25	5	25	50	50	25	85.3	99.2	90.8
1/03/13	832	2.9	2.5	.5	7	6	9	1	24	.05	1	.6	64.2	39.6	5	25	50	50	25	5	25	50	50	25	75.4	100	87.5
7/03/13	1280	4.8	2.5	.5	7	11	26	1	35	.05	1.6	.9	60.1	49.6	5	25	50	50	25	5	25	50	50	25	106	104	99.8
7/03/13	1330	4.1	2.5	.5	6	8	16	1	31	.05	1.4	.8	57.5	48.7	5	25	50	50	25	5	25	50	50	25	128	123	119
7/03/13	1340	4.5	2.5	.5	7	7	16	1	40	.05	1.5	.9	52.8	46.2	5	25	50	50	25	5	25	50	50	25	122	99.2	109

Non Organic Waste

Soil Sampling Results

Part II

1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
21/03/13	1270	3.4	2.5	.5	6	6	14	1	35	.05	1	.6	79.2	81	5	25	50	50	25	5	25	50	50	25	96.1	101	89
21/03/13	1290	4.1	2.5	.5	6	6	12	1	27	.05	1.2	.7	134	88.8	5	25	50	50	25	5	25	50	50	25	93.6	97.4	86.8
21/03/13	1340	4.3	2.5	.5	6	6	12	1	29	.05	1	.6	130	77.4	5	25	50	50	25	5	25	50	50	25	104	95.8	88.4
22/03/13	1050	4.2	2.5	.5	7	6	7	1	21	.05	1	.6	97.1	74.6	5	25	50	50	25	5	25	50	50	25	103	91.1	86.8
22/03/13	1320	3.9	2.5	.5	6	12	25	1	21	.05	1.2	.7	98.5	84.8	5	25	50	50	25	5	25	50	50	25	97.7	94.9	86.9
22/03/13	1200	2.9	2.5	.5	8	7	5	3	21	.05	.6	.25	93.2	93.4	5	25	50	50	25	5	25	50	50	25	93.6	94.5	85.8
5/04/13	1160	8.7	2.5	.5	8	7	9	1	30	.05	.6	.25	84.5	70.3	5	25	50	50	25	5	25	50	50	25	107	101	85.8
5/04/13	1080	5.8	2.5	.5	7	6	10	1	28	.05	1.2	.7	68	55.4	5	25	50	50	25	5	25	50	50	25	123	103	94
5/04/13	1180	4.2	2.5	.5	7	7	15	1	31	.05	1.2	.7	57	60.3	5	25	50	50	25	5	25	50	50	25	126	102	89.9
5/04/13	1030	4.2	2.5	.5	7	6	23	1	38	.05	1.2	.7	75.9	41.2	5	25	50	50	25	5	25	50	50	25	118	102	101
5/04/13	1240	4.2	2.5	.5	7	9	14	1	37	.05	1.4	.8	70.3	55.6	5	25	50	50	25	5	25	50	50	25	115	93.3	91.1
5/04/13	1220	4.1	2.5	.5	8	7	17	1	32	.05	.7	.25	84.1	71.5	5	25	50	50	25	5	25	50	50	25	117	93.6	89.8
19/04/13	1180	3.4	2.5	.5	7	2.5	7	1	21	.05	1.1	.6	67	64.8	5	25	50	50	25	5	25	50	50	25	101	95.5	91.2
19/04/13	1220	3.2	2.5	.5	6	6	8	1	22	.05	1.1	.6	72.6	77.6	5	25	50	50	25	5	25	50	50	25	104	97.7	90.8
19/04/13	1160	3.3	2.5	.5	7	2.5	7	1	20	.05	.9	.5	67.3	62	5	25	50	50	25	5	25	50	50	25	108	102	98.8
19/04/13	1160	3.4	2.5	.5	7	2.5	7	1	24	.05	.8	.25	63.6	63.2	5	25	50	50	25	5	25	50	50	25	100	99.8	94.7
19/04/13	1220	3.2	2.5	.5	7	2.5	6	1	17	.05	1.2	.7	58.4	59.9	5	25	50	50	25	5	25	50	50	25	107	95.7	89.6
19/04/13	1280	3.1	2.5	.5	6	2.5	7	1	19	.05	1.2	.7	65	56.8	5	25	50	50	25	5	25	50	50	25	103	96.8	92.8
5/08/13	1300	6.2	2.5	.5	6	6	15	1	25	.05	2	1.1	84.1	78.4	5	25	50	50	25	5	25	50	50	25	99.5	97.2	72.8
5/08/13	1140	6.8	2.5	.5	6	6	13	1	28	.05	.25	.25	88.5	82.7	5	25	50	50	25	5	25	50	50	25	105	87.2	70.1
5/08/13	1370	7.8	2.5	.5	6	2.5	9	1	22	.05	1.7	1	88	80.5	5	25	50	50	25	5	25	50	50	25	92.6	90.7	77.9
5/08/13	1370	7.2	2.5	.5	6	6	12	1	26	.05	1.7	1	93.3	83.2	5	25	50	50	25	5	25	50	50	25	97.9	93.2	79.1
5/08/13	1250	7.3	2.5	.5	6	5	11	1	24	.05	1.4	.8	85.4	79.5	5	25	50	50	25	5	25	50	50	25	96.6	93.7	70.5
5/08/13	1430	6.8	2.5	.5	6	6	12	1	27	.05	1.9	1.1	84.9	79.6	5	25	50	50	25	5	25	50	50	25	97.7	98.2	74
5/08/13	1370	7.2	2.5	.5	7	6	12	1	25	.05	.9	.5	77.6	73.1	5	25	50	50	25	5	25	50	50	25	95.2	100	76.2
5/08/13	1370	8.4	2.5	.5	7	2.5	7	1	20	.05	1.2	.7	77.6	72	5	25	50	50	25	5	25	50	50	25	99	81.1	61.3
5/08/13	1390	7.4	2.5	.5	6	6	16	1	30	.05	1	.6	81.8	76.6	5	25	50	50	25	5	25	50	50	25	97.3	94.9	71.5
1/10/13	901	7	2.5	.5	9	7	11	1	19	.05	1.3	.7	75.4	71.9	5	25	50	50	25	5	25	50	50	25	88.8	88.7	83.6
1/10/13	1070	9.4	2.5	.5	9	2.5	7	1	16	.05	1.6	.9	78.3	77.3	5	25	50	50	25	5	25	50	50	25	98.8	87	82.4
1/10/13	973	6.7	2.5	.5	8	2.5	6	1	14	.05	1.6	.9	82.2	82	5	25	50	50	25	5	25	50	50	25	98.5	85.8	79
7/10/13	1330																										
7/10/13	1360																										
7/10/13	1450																										
7/10/13	1410																										
7/10/13	1340																										
7/10/13	1220																										
17/10/13	1360																										
17/10/13	1360																										
17/10/13	1360																										
17/10/13	1480	6.3	2.5	.5	9	10	14	1	34	.05	1.6	.9	78.8	87.3	5	25	50	50	25	5	25	50	50	25	92.7	92.8	97.2
17/10/13	1440	5.3	2.5	.5	7	9	30	1	50	.05	.6	.25	74.1	80.5	5	25	50	50	25	5	25	50	50	25	99.1	96.8	101
17/10/13	1410	5.5	2.5	.5	7	7	35	1	33	.05	1.1	.6	72.6	80.6	5	25	50	50	25	5	25	50	50	25	99.7	98.3	103
24/10/13	1560																										
24/10/13	1620																										
24/10/13	1640																										
24/10/13	1660	2.6	2.5	.5	7	2.5	6	1	17	.05	.6	.25	87.9	62.2	5	60	50	50	60	5	60	50	50	60	116	84.9	90.7
24/10/13	1610	3.4	2.5	.5	6	5	11	1	25	.05	1.5	.9	92.2	72.5	5	25	50	50	25	5	25	50	50	25	99.9	106	124
24/10/13	1610	3.3	2.5	.5	6	6	17	1	23	.05	.25	.25	95.1	72	5	25	50	50	25	5	25	50	50	25	115	89.1	87.8

Non Organic Waste

Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
12/11/13	1590																										
12/11/13	1580																										
12/11/13	1660																										
12/11/13	1680																										
12/11/13	1570																										
12/11/13	1540																										
12/11/13	1590																										
12/11/13	1470																										
12/11/13	1460																										
12/11/13	1500	4.3	2.5	.5	13	7	5	2	17	.05	.8	.25	87.6	69.8	5	25	190	180	370	5	25	320	130	450	77.6	74	67.6
12/11/13	1610	5.5	2.5	.5	16	6	7	3	25	.05	.7	.25	90.1	73.4	5	25	50	50	25	5	25	50	50	25	78.9	77.9	72.8
12/11/13	1620	5.8	2.5	.5	11	2.5	2.5	1	13	.05	.25	.25	80.5	64.6	5	25	50	50	25	5	25	50	50	25	75.3	73.1	64.5
22/11/13	1530	3.6	2.5	.5	7	6	15	1	37	.05	1.4	.8	126	84.8	5	25	50	50	25	5	25	50	50	25	101	95.4	80.3
22/11/13	1740	4.1	2.5	.5	7	6	7	1	25	.05	1.3	.8	111	81.4	5	25	50	50	25	5	25	50	50	25	100	92.9	81.1
22/11/13	1680	5	2.5	.5	7	6	12	1	30	.05	1.8	1.1	118	81.7	5	25	50	50	25	5	25	50	50	25	107	96.1	81.3
22/11/13	1590																										
22/11/13	1570																										
22/11/13	1580																										
21/01/14	1580	2.6	2.5	.5	6	6	20	4	31	.05	1.8		91.4	95.3	5	25	50	50	25	5	25	110	110	220	92.9	99.7	92.4
21/01/14	1650	3	2.5	.5	8	2.5	6	3	14	.05	1.1		89.8	85.5	5	25	50	50	25	5	25	50	50	25	89	95.1	92.7
21/01/14	1680	2.6	2.5	.5	7	7	11	1	20	.05	1.5		78.1	78.6	5	25	50	50	25	5	25	50	50	25	93.3	100	93.9
21/01/14	1630																										
21/01/14	1630																										
21/01/14	1660																										
28/01/14	1480																										
28/01/14	1550																										
28/01/14	1810																										
28/01/14	1700																										
28/01/14	1680																										
28/01/14	1820																										
4/02/14	1810	1.9	2.5	.5	6	2.5	2.5	1	14	.05	.9	.5	80.9	58.5	5	25	50	50	25	5	25	50	50	25	101	94.5	96.3
4/02/14	1780	1.4	2.5	.5	9	2.5	2.5	1	7	.05	.8	.25	93.7	60.9	5	25	50	50	25	5	25	50	50	25	101	100	99.2
4/02/14	1750	2.1	2.5	.5	6	2.5	2.5	1	14	.05	1.3	.7	94.6	60.7	5	25	50	50	25	5	25	50	50	25	99	98.1	96
4/02/14	1780																										
4/02/14	1740																										
4/02/14	1750																										
11/02/14	1610																										
11/02/14	1650																										
11/02/14	1820																										
11/02/14	1650																										
11/02/14	1830																										
11/02/14	1660																										
18/02/14	1680	2.2	2.5	.5	8	2.5	2.5	1	13	.05	.6	.25	72.8	61.8	5	25	50	50	25	5	25	50	50	25	121	103	89.9
18/02/14	1680	2	2.5	.5	8	2.5	6	1	10	.05	1	.6	87	47.8	5	25	50	50	25	5	25	50	50	25	105	107	95
18/02/14	1600	3.1	2.5	.5	6	5	8	1	16	.05	1	.6	68.4	55.7	5	25	50	50	25	5	25	50	50	25	103	105	94.6
18/02/14	1700																										
18/02/14	1700																										
18/02/14	1810																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
25/02/14	1680																										
25/02/14	1660																										
25/02/14	1650																										
25/02/14	1630																										
25/02/14	1570																										
25/02/14	1610																										
25/02/14	1600	5.8	2.5	.5	18	10	6	4	19	.05	.6	.25	89.4	79	5	25	50	50	25	5	25	50	50	25	92.8	110	112
25/02/14	1600	5.4	2.5	.5	16	9	7	4	25	.05	1	.6	105	82.4	5	25	50	50	25	5	25	50	50	25	89.2	109	110
25/02/14	1600	5.9	2.5	.5	25	8	7	4	31	.05	1	.6	86.5	85.9	5	25	50	50	25	5	25	50	50	25	90.9	108	107
25/02/14	1600	1.9	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
25/02/14	1600	1.4	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
25/02/14	1600	2.1	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	1.9	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	1.4	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	2.1	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	1.9	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	1.4	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
4/03/14	1600	2.1	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	1.9	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	1.4	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	2.1	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	1.9	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	1.4	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
11/03/14	1600	2.1	2.5	.5	1	2.5	2.5	1	2.5	.05	.25	.25	.1	.1	5	25	50	50	25	5	25	50	50	25	.1	.1	.1
18/03/14	1590	1.4	2.5	.5	5	2.5	5	1	9	.05	.25	.25	85.3	102	5	25	50	50	25	5	25	50	50	25	100	106	96.2
18/03/14	1540	2.5	2.5	.5	6	2.5	7	1	17	.05	.8	.25	100	126	5	25	50	50	25	5	25	50	50	25	97.8	99.4	93.6
18/03/14	1780	2.9	2.5	.5	6	5	8	1	22	.05	.25	.25	88.6	82.6	5	25	50	50	25	5	25	50	50	25	98.9	94.8	87.6
18/03/14	1820																										
18/03/14	1780																										
18/03/14	1760																										
24/03/14	1860																										
24/03/14	1760																										
24/03/14	1750																										
24/03/14	1530																										
24/03/14	1740																										
24/03/14	1680																										
11/04/14	1760																										
11/04/14	1780																										
11/04/14	1840																										
11/04/14	1730																										
11/04/14	1750																										
11/04/14	1690																										
15/04/14	1690																										
15/04/14	1600																										
15/04/14	1460																										
15/04/14	1550																										
15/04/14	1530																										
15/04/14	1640																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
1/05/14	1480	6	2.5	.5	8	5	6	1	28	.05	1	.6	87.3	81.9	5	25	50	50	25	5	25	100	50	100	88.3	88.1	85.9
1/05/14	1560	5.5	2.5	.5	4	2.5	5	1	15	.05	1.2	.7	81.1	76.3	5	25	50	50	25	5	25	130	50	130	84.9	93.8	89.6
1/05/14	1610	5.2	2.5	.5	7	6	8	1	28	.05	2.1	1.2	96.7	85.8	5	25	50	50	25	5	25	50	50	25	91.2	87.7	86.6
1/05/14	1580																										
1/05/14	1580																										
1/05/14	1570																										
9/05/14	1630																										
9/05/14	1730																										
9/05/14	1600																										
9/05/14	1500																										
9/05/14	1450																										
9/05/14	1460																										
16/05/14	1690	6.6	2.5	.5	7	2.5	6	1	27	.05	1.2	.7	85.6	85.1	5	25	50	50	25	5	25	110	50	110	87	85.5	79.4
16/05/14	1650	6.5	2.5	.5	6	8	9	3	26	.05	1	.6	89.7	93	5	25	50	50	25	5	25	50	50	25	86.7	86.6	81
16/05/14	1780	6.6	2.5	.5	7	2.5	11	1	28	.05	1.1	.6	96.9	103	5	25	50	50	25	5	25	50	50	25	89.2	87	81.4
16/05/14	1820																										
16/05/14	1600																										
16/05/14	1800																										
29/05/14	1500																										
29/05/14	1620																										
29/05/14	1690																										
29/05/14	1660																										
29/05/14	1660																										
29/05/14	1740																										
4/06/14	1690																										
4/06/14	1590																										
4/06/14	1640																										
4/06/14	1660																										
4/06/14	1670																										
4/06/14	1730																										
4/06/14	1560																										
4/06/14	1660																										
4/06/14	1700																										
4/06/14	1600																										
4/06/14	1620																										
4/06/14	1580																										
6/06/14	1500																										
6/06/14	1520																										
6/06/14	1520																										
6/06/14	1640																										
6/06/14	1620																										
6/06/14	1620																										
6/06/14	1550																										
6/06/14	1640																										
6/06/14	1580																										
6/06/14	1500																										
6/06/14	1670																										
6/06/14	1700																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
6/06/14	1610																										
6/06/14	1580																										
6/06/14	1590																										
10/06/14	1010	7.2	2.5	.5	7	2.5	5	1	18	.05	.8	.25	88.6	68.1	5	25	50	50	25	5	25	50	50	25	110	107	103
10/06/14	1170	7	2.5	.5	6	6	8	1	24	.05	1.1	.6	97.5	117	5	25	50	50	25	5	25	50	50	25	126	123	108
10/06/14	1190	6.5	2.5	.5	6	2.5	12	1	18	.05	1	.6	93.4	71.6	5	25	50	50	25	5	25	50	50	25	104	124	106
10/06/14	1050																										
10/06/14	1090																										
10/06/14	1070																										
10/06/14	1060																										
10/06/14	1060																										
10/06/14	1070																										
10/06/14	1050																										
10/06/14	1000																										
10/06/14	1050																										
12/06/14	1130																										
12/06/14	1010																										
12/06/14	1040																										
12/06/14	1070																										
12/06/14	1050																										
12/06/14	1010																										
12/06/14	1010																										
12/06/14	1050																										
12/06/14	980																										
12/06/14	1050																										
12/06/14	1120																										
12/06/14	1100																										
12/06/14	1100																										
12/06/14	1070																										
12/06/14	1010																										
12/06/14	1060																										
12/06/14	1090																										
12/06/14	1050																										
18/06/14	1110																										
18/06/14	1090																										
18/06/14	1070																										
18/06/14	1170																										
18/06/14	1140																										
18/06/14	1110																										
18/06/14	1130																										
18/06/14	1180																										
18/06/14	1170																										
18/06/14	1150																										
18/06/14	1120																										
18/06/14	1170																										
18/06/14	1180																										
18/06/14	1170																										
18/06/14	1100																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
18/06/14	1030																										
18/06/14	1090																										
18/06/14	1130																										
20/06/14	1050																										
20/06/14	1060																										
20/06/14	1050																										
20/06/14	1100																										
20/06/14	1080																										
20/06/14	980																										
20/06/14	1050																										
20/06/14	1100																										
20/06/14	1100																										
20/06/14	1050																										
20/06/14	1070																										
20/06/14	1040																										
25/06/14	1040																										
25/06/14	1130																										
25/06/14	1060																										
25/06/14	1080																										
25/06/14	1020																										
25/06/14	1060																										
25/06/14	1030																										
25/06/14	1080																										
25/06/14	1010																										
25/06/14	1020																										
25/06/14	1010																										
25/06/14	1030																										
25/06/14	1130																										
25/06/14	1040																										
25/06/14	1040																										
25/06/14	1030																										
25/06/14	1000																										
25/06/14	1090																										
27/06/14	1600	5.7	2.5	.5	10	2.5	2.5	1	17	.05	.7	.25	101	79.9	5	25	50	50	25	5	25	50	50	25	84.4	87.4	96.5
27/06/14	1500	5.8	2.5	.5	7	5	7	1	31	.05	2.2	1.3	76.7	80.7	5	25	50	50	25	5	25	50	50	25	89.8	96.2	92
27/06/14	1600	6.1	2.5	.5	7	6	7	1	32	.05	1.6	1	94.9	82.6	5	25	50	50	25	5	25	50	50	25	83.5	88.8	92.2
27/06/14	1600																										
27/06/14	1670																										
27/06/14	1480																										
27/06/14	1070																										
27/06/14	1450																										
27/06/14	1500																										
27/06/14	1500																										
27/06/14	1570																										
27/06/14	1620																										
2/07/14	1170																										
2/07/14	1100																										
2/07/14	1110																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
2/07/14	1190																										
2/07/14	1160																										
2/07/14	1130																										
2/07/14	1090																										
2/07/14	1120																										
2/07/14	1040																										
2/07/14	1090																										
2/07/14	1050																										
2/07/14	1060																										
2/07/14	1100																										
2/07/14	1120																										
2/07/14	1080																										
2/07/14	1140																										
2/07/14	1080																										
2/07/14	1030																										
4/07/14	1050																										
4/07/14	1020																										
4/07/14	1040																										
4/07/14	1040																										
4/07/14	986																										
4/07/14	990																										
4/07/14	1070																										
4/07/14	1010																										
4/07/14	1040																										
4/07/14	1040																										
4/07/14	1050																										
4/07/14	1060																										
9/07/14	1010																										
9/07/14	1030																										
9/07/14	1030																										
9/07/14	1050																										
9/07/14	1130																										
9/07/14	1040																										
9/07/14	1040																										
9/07/14	1110																										
9/07/14	1050																										
9/07/14	1090																										
9/07/14	1050																										
9/07/14	1020																										
11/07/14	872																										
11/07/14	906																										
11/07/14	863																										
25/07/14	1020																										
25/07/14	1060																										
25/07/14	1100																										
25/07/14	1090																										
25/07/14	1060																										
25/07/14	1070																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
25/07/14	1100																										
25/07/14	1060																										
25/07/14	1090																										
25/07/14	1030																										
25/07/14	1080																										
25/07/14	1110																										
25/07/14	859																										
25/07/14	882																										
25/07/14	772																										
29/07/14	1090																										
29/07/14	1130																										
29/07/14	1030																										
29/07/14	1070																										
29/07/14	1100																										
29/07/14	1110																										
29/07/14	1050																										
29/07/14	1070																										
29/07/14	1050																										
29/07/14	1140																										
29/07/14	1020																										
29/07/14	1080																										
31/07/14	1150																										
31/07/14	1160																										
31/07/14	1140																										
31/07/14	1110																										
31/07/14	1130																										
31/07/14	1140																										
31/07/14	1130																										
31/07/14	1150																										
31/07/14	1080																										
31/07/14	1120																										
31/07/14	1130																										
31/07/14	1110																										
1/08/14	988																										
1/08/14	912																										
1/08/14	956																										
4/08/14	1140																										
4/08/14	1170																										
4/08/14	1140																										
4/08/14	1140																										
4/08/14	1140																										
4/08/14	1140																										
4/08/14	1110																										
4/08/14	1130																										
4/08/14	1130																										
4/08/14	1120																										
4/08/14	1120																										
4/08/14	1150																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
7/08/14	1070																										
7/08/14	1080																										
7/08/14	989																										
7/08/14	1020																										
7/08/14	1070																										
7/08/14	1070																										
7/08/14	990																										
7/08/14	1070																										
7/08/14	1020																										
7/08/14	1010																										
7/08/14	1040																										
7/08/14	1020																										
13/08/14	1020	7.5	2.5	.5	6	5	8	1	25	.05		.7	83.3	78.5	5	25	50	50	25	5	25	50	50	25	117	109	96.3
13/08/14	1080	8.5	2.5	.5	7	5	6	1	22	.05		.6	89.5	76.2	5	25	50	50	25	5	25	50	50	25	78.2	92	83.7
13/08/14	997	7.4	2.5	.5	6	5	10	1	25	.05		.6	93.2	82.9	5	25	50	50	25	5	25	50	50	25	87.8	92.5	82.9
13/08/14	1040																										
13/08/14	1080																										
13/08/14	1060																										
13/08/14	1080																										
13/08/14	979																										
13/08/14	1040																										
13/08/14	976																										
13/08/14	1040																										
13/08/14	1020																										
15/08/14	1110																										
15/08/14	1100																										
15/08/14	1130																										
15/08/14	1060																										
15/08/14	1140																										
15/08/14	1180																										
15/08/14	1030																										
15/08/14	1150																										
15/08/14	1060																										
15/08/14	1050																										
15/08/14	1140																										
15/08/14	1130																										
15/08/14	851																										
15/08/14	825																										
15/08/14	886																										
19/08/14	1100																										
19/08/14	1040																										
19/08/14	1130																										
19/08/14	1100																										
19/08/14	1090																										
19/08/14	1120																										
19/08/14	1070																										
19/08/14	1130																										
19/08/14	1060																										

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
19/08/14	1120																										
19/08/14	1040																										
19/08/14	1060																										
22/08/14	870																										
22/08/14	868																										
22/08/14	924																										
22/08/14	1020																										
22/08/14	1010																										
22/08/14	976																										
22/08/14	1010																										
22/08/14	1040																										
22/08/14	1060																										
22/08/14	1110																										
22/08/14	988																										
22/08/14	982																										
22/08/14	997																										
22/08/14	963																										
22/08/14	1060																										
26/08/14	1090																										
26/08/14	1100																										
26/08/14	1060																										
26/08/14	1070																										
26/08/14	1070																										
26/08/14	1130																										
26/08/14	1100																										
26/08/14	1080																										
26/08/14	1130																										
26/08/14	973																										
26/08/14	1040																										
26/08/14	1160																										
29/08/14	1090	4.8	2.5	.5	5	2.5	6	1	16	.05	.25		92.8	89.4	5	25	50	50	25	5	25	50	50	25	95.6	104	108
29/08/14	1020	5.3	2.5	.5	5	2.5	9	1	20	.05	.7		102	95.8	5	25	50	50	25	5	25	50	50	25	96.7	107	108
29/08/14	1100	4.5	2.5	.5	5	2.5	7	1	24	.05	.8		83.5	81.6	5	25	50	50	25	5	25	50	50	25	102	113	114
29/08/14	1000																										
29/08/14	1050																										
29/08/14	1040																										
29/08/14	1080																										
29/08/14	1130																										
29/08/14	1080																										
29/08/14	1060																										
29/08/14	1070																										
29/08/14	1120																										
29/08/14	878																										
29/08/14	872																										
29/08/14	795																										

Non Organic Waste
Soil Sampling Results

Part II
1 August 2009 to 8 October 2014

Date	Sample Weight	Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
		Moisture Content	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Organic Matter	Organic Carbon	Dibromo-DDE	DEF	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction	C6 - C10 Fraction	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction	1.2-Dichloroethane-D4	Toluene-D8	4-Bromofluorobenzene
Total Sample Wt 997,664																											
95% UCL		4.97	2.51	0.50	7.37	5.49	12.10	1.13	24.93	0.05	1.16	0.68	88.93	81.70	4.99	25.06	83.58	93.84	?	5.00	25.83	59.93	51.29	38.37	95.55	93.64	87.62
Mean		4.97	2.51	0.50	7.37	5.49	12.10	1.13	24.93	0.05	1.16	0.68	88.93	81.70	4.99	25.06	83.58	93.84	?	5.00	25.83	59.93	51.29	38.37	95.55	93.64	87.62
Maximum		25.2	7	.5	63	168	148	17	170	.2	11	6.4	149	134	5	60	7310	9800	?	5	240	2350	300	2890	128	124	124
Minimum		.5	2.5	.5	1	2.5	2.5	1	2.5	.05	.025	.25	0	0	0	0	0	0	0	5	25	50	50	25	0	0	0
EIL			20	3	50	60	300	60	200	1					100	500	1000			100	500	1000	1000	500			
Outcome			Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable					Acceptable	Acceptable	Acceptable			Acceptable	Acceptable	Acceptable	Acceptable	Acceptable			

All tests are carried out in accordance with the Ecological Investigation Levels contained within
artment of Environment and Conservation, Assessment levels for Soil, Sediment and Water 2010.

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
14/09/09	830	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.14	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/09/09	856	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/09/09	619	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/09/09	672	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/09/09	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/10/09	831	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/10/09	874	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/10/09	833	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/10/09	497	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/10/09	540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/10/09	324	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/09	581	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/09	469	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/09	576	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/10/09	593	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/10/09	470	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/10/09	423	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/09	588	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/09	618	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/09	460	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/09	386	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/09	359	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/09	409	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/11/09	413	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/11/09	385	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/11/09	354	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/11/09	489	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/11/09	583	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/11/09	687	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/09	354	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/09	465	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/09	616	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/11/09	411	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/11/09	412	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	1	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/11/09	390	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.13	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/11/09	434	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/11/09	455	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/11/09	473	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/11/09	508	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/11/09	519	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/11/09	507	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/11/09	483	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/11/09	529	0.0019	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/11/09	519	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/11/09	524	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.07	.025	.06	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/12/09	640	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/12/09	685	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/12/09	732	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/12/09	595	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/12/09	739	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/12/09	680	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/09	666	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/09	628	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
9/12/09	596	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/09	738	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/12/09	765	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/12/09	699	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/12/09	775	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/01/10	639	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/01/10	720	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/01/10	754	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/01/10	693	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/01/10	658	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/01/10	822	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/01/10	698	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/01/10	822	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/01/10	715	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/01/10	840	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.06	.06	.025	.025	.025	.025	.025	.1	.025	.1
22/01/10	778	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/01/10	815	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/01/10	908	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/01/10	812	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/01/10	792	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/02/10	864	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/02/10	718	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/02/10	754	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/10	818	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/10	820	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/10	970	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/10	808	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/10	649	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/10	858	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/10	844	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/10	771	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/10	769	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/02/10	800	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/02/10	872	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/02/10	840	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/10	889	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/10	640	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/10	688	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/10	847	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/10	746	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/10	740	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/10	816	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/10	756	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/03/10	766	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/03/10	802	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/03/10	794	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/03/10	839	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/03/10	884	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/03/10	778	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/03/10	810	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/03/10	860	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/03/10	783	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/03/10	889	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/03/10	971	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/03/10	833	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
19/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/03/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/04/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/04/10	741	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/04/10	664	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/04/10	676	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/05/10	733	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/05/10	946	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/05/10	759	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/05/10	730	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/05/10	812	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/05/10	879	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/05/10	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/05/10	648	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/05/10	745	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/06/10	682	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/06/10	778	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/06/10	838	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/10	741	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/10	780	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/10	785	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/06/10	718	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/06/10	739	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/06/10	769	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/06/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/06/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/06/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/07/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/07/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/07/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/07/10	607	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/07/10	784	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/07/10	917	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/07/10	802	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/07/10	763	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/07/10	707	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/07/10	782	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/07/10	733	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/07/10	734	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/07/10	709	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/07/10	646	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
30/07/10	662	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/08/10	688	0.1192	0.0113	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/08/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/09/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/10	801	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/10	826	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/10	783	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/10/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/10/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/10/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/10/10	736	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/10/10	715	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/10/10	770	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/10/10	798	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/10/10	986	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/10/10	785	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/11/10	750	0.0027	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/11/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/11/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/11/10	793	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/11/10	756	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/11/10	764	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/11/10	748	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/11/10	852	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/11/10	773	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/10	796	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/10	749	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/10	804	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/10	866	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/10	725	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/10	879	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/12/10	841	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/12/10	967	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/12/10	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/12/10	817	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/01/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/01/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/01/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/01/11	773	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/01/11	800	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/01/11	818	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/01/11	890	0.0000	0.0000	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	2	.5	2

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
25/01/11	852	0.0000	0.0000	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	2	.5	2
25/01/11	823	0.0000	0.0000	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	2	.5	2
1/02/11	890	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/02/11	852	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/02/11	823	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/11	841	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/11	882	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/02/11	796	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/02/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.12	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/04/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/05/11	750	0.0000	0.0009	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.1	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/05/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.12	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.37	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.34	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.36	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/11	732	0.0000	0.0004	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.12	.025	.025	.025	.025	.025	.025	.1	.025	.1

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
14/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.1	.025	.1
28/07/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/09/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/10/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/11/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/11/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/11/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/11	754	0.0043	0.0034	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/12/11	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/01/12	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/01/12	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/01/12	619	0.0397	0.0011	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/02/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/02/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/02/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/12	862	0.0000	0.0019	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/03/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/03/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/03/12	850	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
9/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/03/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.09	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/04/12	900	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/04/12	900	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/04/12	900	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/04/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/04/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/04/12	950	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/04/12	1053	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.16	.025	.025	.18	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/04/12	1120	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/04/12	1189	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.28	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/05/12	1018	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/05/12	1037	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.35	.025	.025	.025	.025	.18	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/05/12	994	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/05/12	1184	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/05/12	1344	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/05/12	1260	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/12	1290	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/12	1233	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/05/12	1228	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/05/12	1108	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/05/12	1066	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/05/12	1204	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/06/12	1278	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/06/12	1260	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/06/12	1298	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/12	1200	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/12	1240	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/06/12	1270	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/06/12	1338	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/06/12	1326	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/06/12	1390	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/07/12	1,154	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/07/12	1,169	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/07/12	1,279	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/07/12	1,268	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/07/12	1,275	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/07/12	1,204	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/07/12	1310	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.17	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/07/12	1303	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/07/12	1306	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/08/12	1277	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/08/12	1234	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/08/12	1274	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/08/12	722	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/08/12	788	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/08/12	847	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/08/12	873	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/09/12	730	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/09/12	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/09/12	770	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/09/12	790	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/09/12	750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/09/12	710	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/09/12	720	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
12/09/12	770	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/09/12	700	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/09/12	730	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/09/12	670	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
20/09/12	705	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/10/12	760	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/10/12	700	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/10/12	770	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/10/12	710	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	1072	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	1165	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	1180	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	790	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	690	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	800	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/10/12	730	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/12	804	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/12	650	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/12	600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/10/12	677	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/12	720	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/12	720	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/12	738	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/12	755	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/11/12	740	0.0000	0.0000																					
8/11/12	755	0.0000	0.0000																					
8/11/12	741	0.0000	0.0000																					
22/11/12	1230	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/12	1260	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/12	1270	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/11/12	1110	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/11/12	1210	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/11/12	1250	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/12	904	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/12	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/12/12	1100	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/01/13	1130	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.28	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/01/13	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.14	.025	.025	.025	.025	.025	.025	.1	.025	.1
15/01/13	1100	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.31	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/01/13	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.32	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/01/13	1150	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.21	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/01/13	1120	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.2	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/01/13	1130	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.23	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/01/13	1130	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.29	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/01/13	1230	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.29	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/13	1330	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/13	1020	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/02/13	1210	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/02/13	998	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/02/13	1140	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/02/13	1140	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/13	1210	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/13	1320	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/02/13	1290	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/13	906	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/13	900	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/13	832	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/03/13	1280	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/03/13	1330	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/03/13	1340	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
21/03/13	1270	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/03/13	1290	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/03/13	1340	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/13	1050	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/13	1320	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/13	1200	0.0000	0.0000	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.125	.1	.125	.1
5/04/13	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/04/13	1080	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/04/13	1180	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/04/13	1030	0.0097	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/04/13	1240	0.0081	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/04/13	1220	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.07	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1180	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1220	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1160	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1220	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/04/13	1280	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1300	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1140	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1370	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1370	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1250	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1430	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1370	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1370	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/08/13	1390	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/13	901	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.06	.06	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/13	1070	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/10/13	973	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/10/13	1330	0.0000	0.0000																					
7/10/13	1360	0.0000	0.0000																					
7/10/13	1450	0.0000	0.0000																					
7/10/13	1410	0.0000	0.0000																					
7/10/13	1340	0.0000	0.0000																					
7/10/13	1220	0.0000	0.0000																					
17/10/13	1360	0.0000	0.0000																					
17/10/13	1360	0.0000	0.0000																					
17/10/13	1360	0.0000	0.0000																					
17/10/13	1480	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/10/13	1440	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/10/13	1410	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/13	1560	0.0000	0.0000																					
24/10/13	1620	0.0062	0.0000																					
24/10/13	1640	0.0000	0.0000																					
24/10/13	1660	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/13	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/10/13	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/13	1590	0.0000	0.0000																					
12/11/13	1580	0.0000	0.0000																					
12/11/13	1660	0.0000	0.0000																					
12/11/13	1680	0.0000	0.0000																					
12/11/13	1570	0.0000	0.0000																					
12/11/13	1540	0.0000	0.0000																					
12/11/13	1590	0.0000	0.0000																					
12/11/13	1470	0.0000	0.0000																					
12/11/13	1460	0.0000	0.0000																					
12/11/13	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.13	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/13	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/11/13	1620	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

8/10/2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
22/11/13	1530	0.0007	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/13	1740	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/13	1680	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/11/13	1590	0.0000	0.0000																					
22/11/13	1570	0.0000	0.0000																					
22/11/13	1580	0.0000	0.0000																					
21/01/14	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/01/14	1650	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/01/14	1680	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/01/14	1630	0.0000	0.0000																					
21/01/14	1630	0.0000	0.0000																					
21/01/14	1660	0.0000	0.0000																					
28/01/14	1480	0.0000	0.0000																					
28/01/14	1550	0.0000	0.0000																					
28/01/14	1810	0.0000	0.0000																					
28/01/14	1700	0.0000	0.0000																					
28/01/14	1680	0.0000	0.0004																					
28/01/14	1820	0.0000	0.0000																					
4/02/14	1810	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/02/14	1780	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/02/14	1750	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/02/14	1780	0.0000	0.0000																					
4/02/14	1740	0.0000	0.0000																					
4/02/14	1750	0.0000	0.0000																					
11/02/14	1610	0.0000	0.0000																					
11/02/14	1650	0.0000	0.0000																					
11/02/14	1820	0.0000	0.0000																					
11/02/14	1650	0.0000	0.0000																					
11/02/14	1830	0.0000	0.0000																					
11/02/14	1660	0.0000	0.0000																					
18/02/14	1680	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/14	1680	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/14	1700	0.0000	0.0000																					
18/02/14	1700	0.0000	0.0000																					
18/02/14	1810	0.0000	0.0000																					
25/02/14	1680	0.0000	0.0000																					
25/02/14	1660	0.0000	0.0000																					
25/02/14	1650	0.0000	0.0000																					
25/02/14	1630	0.0000	0.0000																					
25/02/14	1570	0.0000	0.0000																					
25/02/14	1610	0.0000	0.0000																					
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/03/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
18/03/14	1590	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/03/14	1540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/03/14	1780	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/03/14	1820	0.0000	0.0000																					
18/03/14	1780	0.0000	0.0000																					
18/03/14	1760	0.0000	0.0000																					
24/03/14	1860	0.0000	0.0000																					
24/03/14	1760	0.0000	0.0000																					
24/03/14	1750	0.0000	0.0000																					
24/03/14	1530	0.0000	0.0000																					
24/03/14	1740	0.0000	0.0000																					
24/03/14	1680	0.0000	0.0000																					
11/04/14	1760	0.0000	0.0000																					
11/04/14	1780	0.0000	0.0000																					
11/04/14	1840	0.0000	0.0000																					
11/04/14	1730	0.0000	0.0000																					
11/04/14	1750	0.0000	0.0000																					
11/04/14	1690	0.0000	0.0000																					
15/04/14	1690	0.0000	0.0000																					
15/04/14	1600	0.0000	0.0000																					
15/04/14	1460	0.0000	0.0000																					
15/04/14	1550	0.0000	0.0000																					
15/04/14	1530	0.0000	0.0000																					
15/04/14	1640	0.0000	0.0000																					
1/05/14	1480	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/05/14	1560	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/05/14	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/05/14	1580	0.0000	0.0000																					
1/05/14	1580	0.0000	0.0000																					
1/05/14	1570	0.0000	0.0000																					
9/05/14	1630	0.0000	0.0000																					
9/05/14	1730	0.0000	0.0000																					
9/05/14	1600	0.0000	0.0000																					
9/05/14	1500	0.0000	0.0000																					
9/05/14	1450	0.0000	0.0000																					
9/05/14	1460	0.0000	0.0000																					
16/05/14	1690	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/05/14	1650	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/05/14	1780	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/05/14	1820	0.0000	0.0000																					
16/05/14	1600	0.0000	0.0000																					
16/05/14	1800	0.0000	0.0000																					
29/05/14	1500	0.0000	0.0000																					
29/05/14	1620	0.0000	0.0000																					
29/05/14	1690	0.0000	0.0000																					
29/05/14	1660	0.0000	0.0000																					
29/05/14	1660	0.0000	0.0000																					
29/05/14	1740	0.0000	0.0000																					
4/06/14	1690	0.0000	0.0000																					
4/06/14	1590	0.0000	0.0000																					
4/06/14	1640	0.0000	0.0000																					
4/06/14	1660	0.0000	0.0000																					
4/06/14	1670	0.0000	0.0000																					
4/06/14	1730	0.0000	0.0000																					
4/06/14	1560	0.0000	0.0000																					
4/06/14	1660	0.0000	0.0000																					
4/06/14	1700	0.0000	0.0000																					
4/06/14	1600	0.0000	0.0000																					
4/06/14	1620	0.0000	0.0000																					
4/06/14	1580	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
6/06/14	1500	0.0000	0.0000																					
6/06/14	1520	0.0000	0.0000																					
6/06/14	1520	0.0000	0.0000																					
6/06/14	1640	0.0000	0.0000																					
6/06/14	1620	0.0000	0.0000																					
6/06/14	1620	0.0000	0.0000																					
6/06/14	1550	0.0000	0.0000																					
6/06/14	1640	0.0000	0.0000																					
6/06/14	1580	0.0000	0.0000																					
6/06/14	1500	0.0000	0.0000																					
6/06/14	1670	0.0000	0.0000																					
6/06/14	1700	0.0000	0.0000																					
6/06/14	1610	0.0000	0.0000																					
6/06/14	1580	0.0000	0.0000																					
6/06/14	1590	0.0000	0.0000																					
10/06/14	1010	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/06/14	1170	0.0000	0.0002	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/06/14	1190	0.0000	0.0003	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/06/14	1050	0.0000	0.0001																					
10/06/14	1090	0.0000	0.0000																					
10/06/14	1070	0.0000	0.0000																					
10/06/14	1060	0.0000	0.0000																					
10/06/14	1060	0.0000	0.0000																					
10/06/14	1070	0.0000	0.0000																					
10/06/14	1050	0.0000	0.0000																					
10/06/14	1000	0.0000	0.0003																					
10/06/14	1050	0.0000	0.0002																					
12/06/14	1130	0.0000	0.0000																					
12/06/14	1010	0.0000	0.0000																					
12/06/14	1040	0.0000	0.0000																					
12/06/14	1070	0.0000	0.0000																					
12/06/14	1050	0.0000	0.0000																					
12/06/14	1010	0.0000	0.0000																					
12/06/14	1010	0.0000	0.0000																					
12/06/14	1050	0.0000	0.0000																					
12/06/14	980	0.0000	0.0000																					
12/06/14	1050	0.0000	0.0000																					
12/06/14	1120	0.0000	0.0000																					
12/06/14	1100	0.0000	0.0000																					
12/06/14	1100	0.0000	0.0000																					
12/06/14	1070	0.0000	0.0000																					
12/06/14	1010	0.0000	0.0000																					
12/06/14	1060	0.0000	0.0000																					
12/06/14	1090	0.0000	0.0000																					
12/06/14	1050	0.0000	0.0000																					
18/06/14	1110	0.0000	0.0000																					
18/06/14	1090	0.0000	0.0000																					
18/06/14	1070	0.0000	0.0000																					
18/06/14	1170	0.0000	0.0000																					
18/06/14	1140	0.0000	0.0000																					
18/06/14	1110	0.0000	0.0000																					
18/06/14	1130	0.0000	0.0000																					
18/06/14	1180	0.0000	0.0000																					
18/06/14	1170	0.0000	0.0000																					
18/06/14	1150	0.0000	0.0000																					
18/06/14	1120	0.0000	0.0000																					
18/06/14	1170	0.0000	0.0000																					
18/06/14	1180	0.0000	0.0000																					
18/06/14	1170	0.0000	0.0000																					
18/06/14	1100	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
18/06/14	1030	0.0000	0.0000																					
18/06/14	1090	0.0000	0.0000																					
18/06/14	1130	0.0000	0.0000																					
20/06/14	1050	0.0000	0.0000																					
20/06/14	1060	0.0000	0.0000																					
20/06/14	1050	0.0000	0.0000																					
20/06/14	1100	0.0000	0.0000																					
20/06/14	1080	0.0000	0.0000																					
20/06/14	980	0.0000	0.0000																					
20/06/14	1050	0.0000	0.0000																					
20/06/14	1100	0.0000	0.0000																					
20/06/14	1100	0.0000	0.0000																					
20/06/14	1050	0.0000	0.0000																					
20/06/14	1070	0.0000	0.0000																					
20/06/14	1040	0.0000	0.0000																					
25/06/14	1040	0.0000	0.0000																					
25/06/14	1130	0.0000	0.0000																					
25/06/14	1060	0.0000	0.0000																					
25/06/14	1080	0.0000	0.0000																					
25/06/14	1020	0.0000	0.0000																					
25/06/14	1060	0.0000	0.0000																					
25/06/14	1030	0.0000	0.0000																					
25/06/14	1080	0.0000	0.0000																					
25/06/14	1010	0.0000	0.0000																					
25/06/14	1020	0.0000	0.0000																					
25/06/14	1010	0.0000	0.0000																					
25/06/14	1030	0.0000	0.0000																					
25/06/14	1130	0.0000	0.0000																					
25/06/14	1040	0.0000	0.0000																					
25/06/14	1040	0.0000	0.0000																					
25/06/14	1030	0.0000	0.0000																					
25/06/14	1000	0.0000	0.0000																					
25/06/14	1090	0.0000	0.0000																					
27/06/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/06/14	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/06/14	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/06/14	1600	0.0000	0.0000																					
27/06/14	1670	0.0000	0.0000																					
27/06/14	1480	0.0000	0.0000																					
27/06/14	1070	0.0000	0.0000																					
27/06/14	1450	0.0000	0.0000																					
27/06/14	1500	0.0000	0.0000																					
27/06/14	1500	0.0000	0.0000																					
27/06/14	1570	0.0000	0.0000																					
27/06/14	1620	0.0000	0.0000																					
2/07/14	1170	0.0000	0.0000																					
2/07/14	1100	0.0000	0.0000																					
2/07/14	1110	0.0000	0.0000																					
2/07/14	1190	0.0000	0.0000																					
2/07/14	1160	0.0000	0.0000																					
2/07/14	1130	0.0000	0.0000																					
2/07/14	1090	0.0000	0.0000																					
2/07/14	1120	0.0000	0.0000																					
2/07/14	1040	0.0000	0.0000																					
2/07/14	1090	0.0000	0.0000																					
2/07/14	1050	0.0000	0.0000																					
2/07/14	1060	0.0000	0.0000																					
2/07/14	1100	0.0000	0.0000																					
2/07/14	1120	0.0000	0.0000																					
2/07/14	1080	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
2/07/14	1140	0.0000	0.0000																					
2/07/14	1080	0.0000	0.0000																					
2/07/14	1030	0.0000	0.0000																					
4/07/14	1050	0.0000	0.0000																					
4/07/14	1020	0.0000	0.0000																					
4/07/14	1040	0.0000	0.0000																					
4/07/14	1040	0.0000	0.0000																					
4/07/14	986	0.0000	0.0000																					
4/07/14	990	0.0000	0.0000																					
4/07/14	1070	0.0000	0.0000																					
4/07/14	1010	0.0000	0.0000																					
4/07/14	1040	0.0000	0.0000																					
4/07/14	1040	0.0000	0.0000																					
4/07/14	1050	0.0000	0.0000																					
4/07/14	1060	0.0000	0.0000																					
9/07/14	1010	0.0000	0.0000																					
9/07/14	1030	0.0000	0.0000																					
9/07/14	1030	0.0000	0.0000																					
9/07/14	1050	0.0000	0.0000																					
9/07/14	1130	0.0000	0.0000																					
9/07/14	1040	0.0000	0.0000																					
9/07/14	1040	0.0000	0.0000																					
9/07/14	1110	0.0000	0.0000																					
9/07/14	1050	0.0000	0.0000																					
9/07/14	1090	0.0000	0.0000																					
9/07/14	1050	0.0000	0.0000																					
9/07/14	1020	0.0000	0.0000																					
11/07/14	872	0.0000	0.0000																					
11/07/14	906	0.0000	0.0000																					
11/07/14	863	0.0000	0.0000																					
25/07/14	1020	0.0000	0.0000																					
25/07/14	1060	0.0000	0.0000																					
25/07/14	1100	0.0000	0.0000																					
25/07/14	1090	0.0000	0.0000																					
25/07/14	1060	0.0000	0.0000																					
25/07/14	1070	0.0000	0.0000																					
25/07/14	1100	0.0000	0.0000																					
25/07/14	1060	0.0000	0.0000																					
25/07/14	1090	0.0000	0.0000																					
25/07/14	1030	0.0000	0.0000																					
25/07/14	1080	0.0000	0.0000																					
25/07/14	1110	0.0000	0.0000																					
25/07/14	859	0.0000	0.0000																					
25/07/14	882	0.0000	0.0000																					
25/07/14	772	0.0000	0.0000																					
29/07/14	1090	0.0000	0.0000																					
29/07/14	1130	0.0000	0.0000																					
29/07/14	1030	0.0000	0.0000																					
29/07/14	1070	0.0000	0.0000																					
29/07/14	1100	0.0000	0.0000																					
29/07/14	1110	0.0000	0.0000																					
29/07/14	1050	0.0000	0.0000																					
29/07/14	1070	0.0000	0.0000																					
29/07/14	1050	0.0000	0.0000																					
29/07/14	1140	0.0000	0.0000																					
29/07/14	1020	0.0000	0.0000																					
29/07/14	1080	0.0000	0.0000																					
31/07/14	1150	0.0000	0.0000																					
31/07/14	1160	0.0000	0.0000																					
31/07/14	1140	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
31/07/14	1110	0.0000	0.0000																					
31/07/14	1130	0.0000	0.0000																					
31/07/14	1140	0.0000	0.0000																					
31/07/14	1130	0.0000	0.0000																					
31/07/14	1150	0.0000	0.0000																					
31/07/14	1080	0.0000	0.0000																					
31/07/14	1120	0.0000	0.0000																					
31/07/14	1130	0.0000	0.0000																					
31/07/14	1110	0.0000	0.0000																					
1/08/14	988	0.0000	0.0000																					
1/08/14	912	0.0000	0.0000																					
1/08/14	956	0.0000	0.0000																					
4/08/14	1140	0.0000	0.0000																					
4/08/14	1170	0.0000	0.0000																					
4/08/14	1140	0.0000	0.0000																					
4/08/14	1140	0.0000	0.0000																					
4/08/14	1140	0.0000	0.0000																					
4/08/14	1140	0.0000	0.0000																					
4/08/14	1110	0.0000	0.0000																					
4/08/14	1130	0.0000	0.0000																					
4/08/14	1130	0.0000	0.0000																					
4/08/14	1120	0.0000	0.0000																					
4/08/14	1120	0.0000	0.0000																					
4/08/14	1150	0.0000	0.0000																					
7/08/14	1070	0.0000	0.0000																					
7/08/14	1080	0.0000	0.0000																					
7/08/14	989	0.0000	0.0000																					
7/08/14	1020	0.0000	0.0000																					
7/08/14	1070	0.0000	0.0000																					
7/08/14	1070	0.0000	0.0000																					
7/08/14	990	0.0000	0.0000																					
7/08/14	1070	0.0000	0.0000																					
7/08/14	1020	0.0000	0.0000																					
7/08/14	1010	0.0000	0.0000																					
7/08/14	1040	0.0000	0.0000																					
7/08/14	1020	0.0000	0.0000																					
13/08/14	1020	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/08/14	1080	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/08/14	997	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/08/14	1040	0.0000	0.0000																					
13/08/14	1080	0.0000	0.0000																					
13/08/14	1060	0.0000	0.0000																					
13/08/14	1080	0.0000	0.0000																					
13/08/14	979	0.0000	0.0000																					
13/08/14	1040	0.0000	0.0000																					
13/08/14	976	0.0000	0.0000																					
13/08/14	1040	0.0000	0.0000																					
13/08/14	1020	0.0000	0.0000																					
15/08/14	1110	0.0000	0.0000																					
15/08/14	1100	0.0000	0.0000																					
15/08/14	1130	0.0000	0.0000																					
15/08/14	1060	0.0000	0.0000																					
15/08/14	1140	0.0000	0.0000																					
15/08/14	1180	0.0000	0.0000																					
15/08/14	1030	0.0000	0.0000																					
15/08/14	1150	0.0000	0.0000																					
15/08/14	1060	0.0000	0.0000																					
15/08/14	1050	0.0000	0.0000																					
15/08/14	1140	0.0000	0.0000																					
15/08/14	1130	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
15/08/14	851	0.0000	0.0000																					
15/08/14	825	0.0000	0.0000																					
15/08/14	886	0.0000	0.0000																					
19/08/14	1100	0.0000	0.0000																					
19/08/14	1040	0.0000	0.0000																					
19/08/14	1130	0.0000	0.0000																					
19/08/14	1100	0.0000	0.0000																					
19/08/14	1090	0.0000	0.0000																					
19/08/14	1120	0.0000	0.0000																					
19/08/14	1070	0.0000	0.0000																					
19/08/14	1130	0.0000	0.0000																					
19/08/14	1060	0.0000	0.0000																					
19/08/14	1120	0.0000	0.0000																					
19/08/14	1040	0.0000	0.0000																					
19/08/14	1060	0.0000	0.0000																					
22/08/14	870	0.0000	0.0000																					
22/08/14	868	0.0000	0.0000																					
22/08/14	924	0.0000	0.0000																					
22/08/14	1020	0.0000	0.0000																					
22/08/14	1010	0.0000	0.0000																					
22/08/14	976	0.0000	0.0000																					
22/08/14	1010	0.0000	0.0000																					
22/08/14	1040	0.0000	0.0000																					
22/08/14	1060	0.0000	0.0000																					
22/08/14	1110	0.0000	0.0000																					
22/08/14	988	0.0000	0.0000																					
22/08/14	982	0.0000	0.0000																					
22/08/14	997	0.0000	0.0000																					
22/08/14	963	0.0000	0.0000																					
22/08/14	1060	0.0000	0.0000																					
26/08/14	1090	0.0000	0.0000																					
26/08/14	1100	0.0000	0.0000																					
26/08/14	1060	0.0000	0.0000																					
26/08/14	1070	0.0000	0.0000																					
26/08/14	1070	0.0000	0.0000																					
26/08/14	1130	0.0000	0.0000																					
26/08/14	1100	0.0000	0.0000																					
26/08/14	1080	0.0000	0.0000																					
26/08/14	1130	0.0000	0.0000																					
26/08/14	973	0.0000	0.0000																					
26/08/14	1040	0.0000	0.0000																					
26/08/14	1160	0.0000	0.0000																					
29/08/14	1090	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/14	1020	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/14	1100	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/08/14	1000	0.0000	0.0000																					
29/08/14	1050	0.0000	0.0000																					
29/08/14	1040	0.0000	0.0000																					
29/08/14	1080	0.0000	0.0000																					
29/08/14	1130	0.0000	0.0000																					
29/08/14	1080	0.0000	0.0000																					
29/08/14	1060	0.0000	0.0000																					
29/08/14	1070	0.0000	0.0000																					
29/08/14	1120	0.0000	0.0000																					
29/08/14	878	0.0000	0.0000																					
29/08/14	872	0.0000	0.0000																					
29/08/14	795	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 August 2009 to 8 October 2014

8/10/2014

Date | Sample Weight

Total Number Samples

957

Total Sample Wt (Asbestos Only)

997,664

	Asbestos ACM % (ACM)	Asbestos Fibre % (AF)	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
95% UCL	0.0002	0.0000	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.11	0.03	0.11
Mean	0.0002	0.0000	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.11	0.03	0.11
Maximum	0.1192	0.0113	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	1	.5	.5	.5	.5	.5	.5	2	.5	2
Minimum	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
EIL	0.0100	0.0010	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.2	.5	.5	.5	.5	.5	.5	.5	.5	.5
Outcome	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

All tests are carried out in accordance with the Ecological Investigation Levels contained within
partment of Environment and Conservation, Assessment levels for Soil, Sediment and Water 2010.

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
27/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0000
20/01/15	0.0000	0.0050
22/01/15	0.2000	0.0000
22/01/15	0.2000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.2000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
22/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000
29/01/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
2/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000
6/02/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
9/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.2000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000
12/02/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

12/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
17/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

19/02/15	0.0000	0.0000
19/02/15	0.0000	0.0000
24/02/15	0.0000	0.0000
24/02/15	0.0000	0.0000
24/02/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0081
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
17/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
20/03/15	0.0000	0.0000
27/02/15	0.0000	0.0000
27/02/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0130
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.0000	0.0000
3/03/15	0.7000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.2000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
6/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0000
10/03/15	0.0000	0.0080
10/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
24/02/15	0.0000	0.0060
24/02/15	0.0000	0.0000
24/02/15	0.0000	0.0000

Asbestos Summary

Start | Thu, 1 Jan 2015 | End | Thu, 31 Dec 2015 | Search By Date

24/02/15	0.0000	0.0000
24/02/15	0.0000	0.0000
24/02/15	0.0000	0.0010
27/02/15	0.0000	0.0040
27/02/15	0.0000	0.0000
27/02/15	0.0000	0.0000
27/02/15	0.0000	0.0060
27/02/15	0.0000	0.0000
27/02/15	0.0000	0.0100
27/02/15	0.0000	0.0000
27/02/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
13/03/15	0.0000	0.0000
24/03/15	0.0000	0.0000
24/03/15	0.0000	0.0000
24/03/15	0.0000	0.0033
24/03/15	0.0000	0.0040
24/03/15	0.0000	0.0024
24/03/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

24/03/15	0.0000	0.0020
24/03/15	0.0000	0.0000
24/03/15	0.0000	0.0130
24/03/15	0.0000	0.0020
24/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0080
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0000
27/03/15	0.0000	0.0020
27/03/15	0.0000	0.0100
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0000
31/03/15	0.0000	0.0100
31/03/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
2/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.3000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
7/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0028
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
9/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0020
14/04/15	0.0000	0.0010

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
14/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0030
17/04/15	0.0000	0.0050
17/04/15	0.0000	0.0000
17/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
21/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0110
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
24/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
28/04/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
1/05/15	0.0000	0.0000
4/05/15	0.0000	0.0000
4/05/15	0.0000	0.0000
4/05/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
5/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0020
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000
8/05/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

8/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
12/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000
15/05/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

15/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
19/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

22/05/15	0.0000	0.0000
22/05/15	0.0000	0.0055
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
26/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
29/05/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0070
2/06/15	0.0000	0.0000
2/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
5/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
9/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
12/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
16/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
19/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0009
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0004
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
23/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
26/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.1000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
30/06/15	0.0000	0.0000
3/07/15	0.0000	0.0010
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
3/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0009
7/07/15	0.0000	0.0000
7/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

10/07/15	0.0000	0.0000
10/07/15	0.3000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0036
10/07/15	0.0000	0.0000
10/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
14/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0090
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
17/07/15	0.0000	0.0000
21/07/15	0.0000	0.0000
21/07/15	0.0000	0.0147
21/07/15	0.0000	0.0000
23/07/15	0.0000	0.0000
23/07/15	0.0000	0.0000
23/07/15	0.0000	0.0000
28/07/15	0.0000	0.0000
28/07/15	0.0000	0.0020
28/07/15	0.0000	0.0000
30/07/15	0.0000	0.0020
30/07/15	0.0000	0.0020
30/07/15	0.0000	0.0000
4/08/15	0.0000	0.0000
4/08/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

4/08/15	0.0000	0.0000
6/08/15	0.0000	0.0030
6/08/15	0.0000	0.0000
6/08/15	0.0000	0.0030
11/08/15	0.0000	0.0000
11/08/15	0.0000	0.0000
11/08/15	0.0000	0.0000
13/08/15	0.0000	0.0000
13/08/15	0.0000	0.0000
13/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
18/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

20/08/15	0.0000	0.0016
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0068
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
20/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0134
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000
25/08/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

27/08/15	0.0000	0.0188
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0147
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
27/08/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0030
1/09/15	0.0000	0.0000
1/09/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

1/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
3/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

8/09/15	0.0000	0.0000
8/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0062
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
10/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000
15/09/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

15/09/15	0.0000	0.0000
15/09/15	3.1000	0.0000
15/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
17/09/15	0.0000	0.0000
22/09/15	0.0000	0.0027
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0024
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
22/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
24/09/15	0.0000	0.0000
29/09/15	0.3000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
29/09/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
1/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
6/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
8/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
13/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0210

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
20/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
22/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
15/10/15	0.0000	0.0000
27/10/15	3.8000	0.0016
27/10/15	0.0000	0.0020
27/10/15	0.0000	0.0030

Non Organic Disposals

Asbestos Summary

Start | Thu, 1 Jan 2015 | End | Thu, 31 Dec 2015 | Search By Date

29/10/15	0.0000	0.0000
29/10/15	0.0000	0.0000
29/10/15	0.0000	0.0018
3/11/15	0.0000	0.0000
3/11/15	0.0000	0.0327
3/11/15	0.0000	0.0000
5/11/15	0.0000	0.0000
5/11/15	0.0000	0.0060
5/11/15	0.0000	0.0012
10/11/15	0.0000	0.0000
10/11/15	0.0000	0.0000
10/11/15	0.0000	0.0000
12/11/15	0.4000	0.0000
12/11/15	0.0000	0.0000
12/11/15	0.0000	0.0000
17/11/15	0.0000	0.0000
17/11/15	0.0000	0.0010
17/11/15	0.0000	0.0000
19/11/15	0.0000	0.0000
19/11/15	0.0000	0.0206
19/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
24/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
26/11/15	0.0000	0.0000
1/12/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
1/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000
3/12/15	0.0000	0.0000

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
8/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000
10/12/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

10/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
15/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000

Non Organic Disposals

Asbestos Summary

Start Thu, 1 Jan 2015 End Thu, 31 Dec 2015 Search By Date

17/12/15	0.0000	0.0000
17/12/15	0.0000	0.0000
	GMS	GMS
	10.0000	**0.3601**
	Total ACM Amount	**Total AF Amount**

Total No of Samples	**991**	Total ACM Wt (gms)	**10.000**
Total Sample Wt (gms)	**1,349,591**	Total AF Wt (gms)	**0.360**

Red Print = Over DoH Guideline Levels

Green Print = Under DoH Guideline Levels

ACM % (w/w) **0.000741%**

AF % (w/w) **0.000027%**

Red Background = Over DoH Guidelines

Guidelines referred to are the ***Guidelines for the Assessment, Remediation and Management of Asbestos - Contaminated Sites in Western Australia***

All tests are carried out in accordance with the Ecological Investigation Levels contained within the ***Department of Environment and Conservation, Assessment levels for Soil, Sediment and Water 2010.***

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
19/01/16	1640	0.0000	0.0000																					
19/01/16	1500	0.0000	0.0000																					
19/01/16	1640	0.0000	0.0000																					
19/01/16	1470	0.0000	0.0000																					
19/01/16	1490	0.0000	0.0000																					
19/01/16	1600	0.0000	0.0000																					
19/01/16	1440	0.0000	0.0000																					
19/01/16	1530	0.0000	0.0000																					
19/01/16	1420	0.0000	0.0000																					
19/01/16	1380	0.0000	0.0000																					
19/01/16	1420	0.0000	0.0000																					
19/01/16	1400	0.0000	0.0000																					
21/01/16	1480	0.0000	0.0000																					
21/01/16	1420	0.0000	0.0000																					
21/01/16	1480	0.0000	0.0000																					
21/01/16	1520	0.0000	0.0000																					
21/01/16	1460	0.0000	0.0000																					
21/01/16	1640	0.0000	0.0000																					
21/01/16	1580	0.0000	0.0000																					
21/01/16	1650	0.0000	0.0000																					
21/01/16	1480	0.0000	0.0000																					
21/01/16	1530	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.24	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/01/16	1490	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/01/16	1620	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/01/16	1570	0.0000	0.0000																					
27/01/16	1620	0.0000	0.0000																					
27/01/16	1630	0.0000	0.0000																					
27/01/16	1570	0.0000	0.0000																					
27/01/16	1570	0.0000	0.0000																					
27/01/16	1630	0.0000	0.0000																					
27/01/16	1550	0.0000	0.0000																					
27/01/16	1530	0.0000	0.0000																					
27/01/16	1540	0.0000	0.0000																					
27/01/16	1580	0.0000	0.0000																					
27/01/16	1560	0.0000	0.0000																					
27/01/16	1570	0.0000	0.0000																					
29/01/16	1700	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/01/16	1590	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/01/16	1490	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.05	.08	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
29/01/16	1590	0.0000	0.0000																					
29/01/16	1580	0.0000	0.0000																					
29/01/16	1580	0.0000	0.0000																					
29/01/16	1600	0.0000	0.0003																					
29/01/16	1470	0.0000	0.0000																					
29/01/16	1540	0.0000	0.0000																					
29/01/16	1580	0.0000	0.0000																					
29/01/16	1470	0.0000	0.0000																					
29/01/16	1550	0.0000	0.0000																					
2/02/16	1500	0.0000	0.0000																					
2/02/16	1500	0.0000	0.0000																					
2/02/16	1530	0.0000	0.0000																					
2/02/16	1450	0.0000	0.0000																					
2/02/16	1480	0.0000	0.0000																					
2/02/16	1490	0.0000	0.0000																					
2/02/16	1560	0.0000	0.0000																					
2/02/16	1490	0.0000	0.0000																					
2/02/16	1450	0.0000	0.0000																					
2/02/16	1470	0.0000	0.0000																					
2/02/16	1530	0.0000	0.0000																					
2/02/16	1490	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
4/02/16	1500	0.0000	0.0000																					
4/02/16	1520	0.0000	0.0000																					
4/02/16	1640	0.0000	0.0000																					
4/02/16	1580	0.0000	0.0005																					
4/02/16	1540	0.0000	0.0000																					
4/02/16	1460	0.0000	0.0000																					
4/02/16	1570	0.0000	0.0000																					
4/02/16	1540	0.0000	0.0000																					
4/02/16	1440	0.0000	0.0000																					
4/02/16	1540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/02/16	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
4/02/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/02/16	1520	0.0000	0.0000																					
9/02/16	1580	0.0000	0.0011																					
9/02/16	1570	0.0000	0.0000																					
9/02/16	1570	0.0000	0.0001																					
9/02/16	1540	0.0000	0.0021																					
9/02/16	1560	0.0000	0.0000																					
9/02/16	1590	0.0000	0.0000																					
9/02/16	1660	0.0000	0.0000																					
9/02/16	1600	0.0000	0.0000																					
9/02/16	1580	0.0000	0.0000																					
9/02/16	1570	0.0000	0.0000																					
9/02/16	1540	0.0000	0.0001																					
11/02/16	1560	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/16	1620	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/16	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
11/02/16	1560	0.0000	0.0000																					
11/02/16	1590	0.0000	0.0000																					
11/02/16	1630	0.0055	0.0000																					
11/02/16	1550	0.0000	0.0000																					
11/02/16	1660	0.0045	0.0000																					
11/02/16	1580	0.0000	0.0000																					
11/02/16	1640	0.0000	0.0000																					
11/02/16	1470	0.0000	0.0000																					
11/02/16	1700	0.0000	0.0000																					
16/02/16	1500	0.0000	0.0000																					
16/02/16	1510	0.0000	0.0000																					
16/02/16	1580	0.0000	0.0000																					
16/02/16	1510	0.0000	0.0000																					
16/02/16	1590	0.0000	0.0000																					
16/02/16	1500	0.0000	0.0000																					
16/02/16	1520	0.0000	0.0000																					
16/02/16	1620	0.0000	0.0000																					
16/02/16	1570	0.0000	0.0000																					
16/02/16	1560	0.0000	0.0000																					
16/02/16	1610	0.0000	0.0003																					
16/02/16	1530	0.0000	0.0000																					
18/02/16	1640	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/16	1550	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
18/02/16	1610	0.0000	0.0000																					
18/02/16	1530	0.0000	0.0000																					
18/02/16	1470	0.0000	0.0000																					
18/02/16	1520	0.0000	0.0000																					
18/02/16	1560	0.0000	0.0000																					
18/02/16	1600	0.0000	0.0000																					
18/02/16	1540	0.0000	0.0000																					
18/02/16	1650	0.0000	0.0000																					
18/02/16	1540	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
23/02/16	1630	0.0000	0.0000																					
23/02/16	1550	0.0000	0.0000																					
23/02/16	1620	0.0000	0.0000																					
23/02/16	1580	0.0000	0.0000																					
23/02/16	1610	0.0000	0.0000																					
23/02/16	1650	0.0000	0.0000																					
23/02/16	1770	0.0000	0.0000																					
23/02/16	1550	0.0000	0.0000																					
23/02/16	1480	0.0000	0.0000																					
23/02/16	1650	0.0000	0.0000																					
23/02/16	1650	0.0000	0.0000																					
23/02/16	1570	0.0000	0.0000																					
25/02/16	1640	0.0000	0.0010																					
25/02/16	1670	0.0000	0.0000																					
25/02/16	1470	0.0000	0.0011																					
25/02/16	1520	0.0000	0.0000																					
25/02/16	1600	0.0000	0.0000																					
25/02/16	1510	0.0000	0.0000																					
25/02/16	1610	0.0000	0.0000																					
25/02/16	1500	0.0000	0.0000																					
25/02/16	1500	0.0000	0.0000																					
25/02/16	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/16	1630	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
25/02/16	1570	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
1/03/16	1560	0.0000	0.0000																					
1/03/16	1650	0.0000	0.0000																					
1/03/16	1620	0.0000	0.0000																					
1/03/16	1610	0.0000	0.0000																					
1/03/16	1480	0.0000	0.0000																					
1/03/16	1630	0.0000	0.0000																					
1/03/16	1600	0.0000	0.0000																					
1/03/16	1390	0.0000	0.0000																					
1/03/16	1530	0.0000	0.0000																					
1/03/16	1580	0.0000	0.0002																					
1/03/16	1470	0.0000	0.0000																					
1/03/16	1580	0.0000	0.0000																					
3/03/16	1440	0.0000	0.0000																					
3/03/16	1560	0.0000	0.0000																					
3/03/16	1460	0.0000	0.0000																					
3/03/16	1440	0.0000	0.0000																					
3/03/16	1590	0.0000	0.0000																					
3/03/16	1530	0.0000	0.0000																					
3/03/16	1510	0.0000	0.0000																					
3/03/16	1510	0.0000	0.0000																					
3/03/16	1560	0.0000	0.0000																					
3/03/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/03/16	1570	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
3/03/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
8/03/16	1600	0.0000	0.0000																					
8/03/16	1660	0.0000	0.0000																					
8/03/16	1680	0.0000	0.0000																					
8/03/16	1710	0.0000	0.0000																					
8/03/16	1590	0.0000	0.0000																					
8/03/16	1610	0.0000	0.0000																					
8/03/16	1620	0.0000	0.0000																					
8/03/16	1670	0.0000	0.0000																					
8/03/16	1600	0.0000	0.0000																					
8/03/16	1660	0.0000	0.0000																					
8/03/16	1570	0.0000	0.0000																					
8/03/16	1620	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
10/03/16	1560	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/03/16	1460	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/03/16	1520	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.025	.025	.1	.025	.1
10/03/16	1650	0.0000	0.0000																					
10/03/16	1540	0.0000	0.0000																					
10/03/16	1640	0.0000	0.0000																					
10/03/16	1630	0.0000	0.0000																					
10/03/16	1510	0.0000	0.0000																					
10/03/16	1520	0.0000	0.0000																					
10/03/16	1530	0.0000	0.0000																					
10/03/16	1530	0.0000	0.0000																					
10/03/16	1520	0.0000	0.0000																					
15/03/16	1520	0.0000	0.0000																					
15/03/16	1510	0.0000	0.0000																					
15/03/16	1630	0.0000	0.0005																					
15/03/16	1420	0.0000	0.0000																					
15/03/16	1550	0.0000	0.0000																					
15/03/16	1610	0.0000	0.0000																					
15/03/16	1500	0.0000	0.0000																					
15/03/16	1490	0.0000	0.0000																					
15/03/16	1580	0.0000	0.0000																					
15/03/16	1580	0.0000	0.0000																					
15/03/16	1500	0.0000	0.0000																					
15/03/16	1500	0.0000	0.0000																					
17/03/16	1580	0.0000	0.0000																					
17/03/16	1740	0.0000	0.0000																					
17/03/16	1560	0.0000	0.0000																					
17/03/16	1590	0.0000	0.0000																					
17/03/16	1650	0.0000	0.0000																					
17/03/16	1620	0.0000	0.0000																					
17/03/16	1610	0.0000	0.0000																					
17/03/16	1540	0.0000	0.0000																					
17/03/16	1520	0.0000	0.0000																					
17/03/16	1470	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/03/16	1550	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
17/03/16	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
22/03/16	1500	0.0000	0.0000																					
22/03/16	1430	0.0000	0.0000																					
22/03/16	1450	0.0000	0.0000																					
22/03/16	1540	0.0000	0.0000																					
22/03/16	1440	0.0000	0.0003																					
22/03/16	1550	0.0000	0.0000																					
22/03/16	1450	0.0000	0.0000																					
22/03/16	1430	0.0000	0.0000																					
22/03/16	1450	0.0000	0.0000																					
22/03/16	1660	0.0000	0.0000																					
22/03/16	1540	0.0000	0.0000																					
22/03/16	1500	0.0000	0.0000																					
24/03/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/16	1540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/16	1430	0.0000	0.0002	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/03/16	1410	0.0000	0.0000																					
24/03/16	1430	0.0000	0.0000																					
24/03/16	1490	0.0000	0.0000																					
24/03/16	1570	0.0000	0.0000																					
24/03/16	1580	0.0000	0.0000																					
24/03/16	1520	0.0000	0.0000																					
24/03/16	1610	0.0000	0.0005																					
24/03/16	1570	0.0000	0.0000																					
24/03/16	1570	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
29/03/16	1010	0.0000	0.0000																					
29/03/16	1020	0.0000	0.0000																					
29/03/16	957	0.0000	0.0000																					
29/03/16	949	0.0000	0.0000																					
29/03/16	952	0.0000	0.0000																					
29/03/16	953	0.0000	0.0000																					
29/03/16	932	0.0000	0.0000																					
29/03/16	907	0.0000	0.0000																					
29/03/16	978	0.0000	0.0000																					
29/03/16	948	0.0000	0.0000																					
29/03/16	947	0.0000	0.0000																					
29/03/16	968	0.0000	0.0000																					
31/03/16	958	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/16	970	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.11	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/16	970	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
31/03/16	1050	0.0000	0.0000																					
31/03/16	963	0.0000	0.0000																					
31/03/16	981	0.0000	0.0000																					
31/03/16	989	0.0000	0.0000																					
31/03/16	966	0.0000	0.0000																					
31/03/16	1020	0.0000	0.0000																					
31/03/16	975	0.0000	0.0000																					
31/03/16	1000	0.0000	0.0000																					
31/03/16	973	0.0000	0.0000																					
5/04/16	1000	0.0000	0.0000																					
5/04/16	961	0.0000	0.0000																					
5/04/16	1010	0.0000	0.0000																					
5/04/16	1000	0.0000	0.0000																					
5/04/16	1000	0.0000	0.0000																					
5/04/16	1070	0.0000	0.0037																					
5/04/16	952	0.0000	0.0000																					
5/04/16	1070	0.0000	0.0000																					
5/04/16	978	0.0000	0.0000																					
5/04/16	1010	0.0000	0.0185																					
5/04/16	964	0.0000	0.0000																					
5/04/16	946	0.0000	0.0000																					
7/04/16	991	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/16	965	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/16	954	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/04/16	1000	0.0000	0.0000																					
7/04/16	1020	0.0000	0.0000																					
7/04/16	1090	0.0000	0.0000																					
7/04/16	1000	0.0000	0.0000																					
7/04/16	1020	0.0000	0.0000																					
7/04/16	971	0.0000	0.0000																					
7/04/16	1030	0.0000	0.0000																					
7/04/16	1030	0.0000	0.0000																					
7/04/16	1000	0.0000	0.0000																					
12/04/16	1550	0.0000	0.0000																					
12/04/16	1600	0.0000	0.0000																					
12/04/16	1520	0.0000	0.0000																					
12/04/16	1510	0.0000	0.0000																					
12/04/16	1580	0.0000	0.0000																					
12/04/16	1500	0.0000	0.0000																					
12/04/16	1490	0.0000	0.0000																					
12/04/16	1480	0.0000	0.0000																					
12/04/16	1540	0.0000	0.0000																					
12/04/16	1440	0.0000	0.0000																					
12/04/16	1570	0.0000	0.0000																					
12/04/16	1450	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
14/04/16	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/04/16	1470	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/04/16	1590	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/04/16	1530	0.0000	0.0000																					
14/04/16	1480	0.0000	0.0000																					
14/04/16	1580	0.0000	0.0000																					
14/04/16	1550	0.0000	0.0000																					
14/04/16	1520	0.0000	0.0000																					
14/04/16	1410	0.0000	0.0000																					
14/04/16	1560	0.0000	0.0000																					
14/04/16	1540	0.0000	0.0000																					
14/04/16	1600	0.0000	0.0000																					
19/04/16	1380	0.0000	0.0000																					
19/04/16	1460	0.0000	0.0000																					
19/04/16	1450	0.0000	0.0000																					
19/04/16	1400	0.0000	0.0000																					
19/04/16	1390	0.0000	0.0000																					
19/04/16	1410	0.0000	0.0000																					
19/04/16	1390	0.0000	0.0000																					
19/04/16	1490	0.0000	0.0000																					
19/04/16	1430	0.0000	0.0000																					
19/04/16	1560	0.0000	0.0000																					
19/04/16	1590	0.0000	0.0000																					
19/04/16	1490	0.0000	0.0000																					
21/04/16	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/04/16	1600	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/04/16	1580	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/04/16	1590	0.0000	0.0000																					
21/04/16	1480	0.0000	0.0000																					
21/04/16	1440	0.0000	0.0000																					
21/04/16	1530	0.0000	0.0000																					
21/04/16	1520	0.0000	0.0000																					
21/04/16	1480	0.0000	0.0000																					
21/04/16	1570	0.0000	0.0000																					
21/04/16	1520	0.0000	0.0000																					
21/04/16	1580	0.0000	0.0000																					
26/04/16	1440	0.0000	0.0000																					
26/04/16	1490	0.0000	0.0000																					
26/04/16	1470	0.0000	0.0000																					
26/04/16	1420	0.0053	0.0000																					
26/04/16	1480	0.0000	0.0000																					
26/04/16	1400	0.0000	0.0000																					
26/04/16	1410	0.0000	0.0000																					
26/04/16	1440	0.0000	0.0000																					
26/04/16	1400	0.0000	0.0000																					
26/04/16	1440	0.0000	0.0000																					
26/04/16	1410	0.0000	0.0000																					
26/04/16	1440	0.0000	0.0000																					
28/04/16	1420	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/04/16	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/04/16	1360	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
28/04/16	1450	0.0000	0.0000																					
28/04/16	1450	0.0000	0.0000																					
28/04/16	1480	0.0000	0.0000																					
28/04/16	1410	0.0000	0.0000																					
28/04/16	1390	0.0000	0.0000																					
28/04/16	1440	0.0000	0.0000																					
28/04/16	1480	0.0000	0.0000																					
28/04/16	1440	0.0000	0.0000																					
28/04/16	1370	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
3/05/16	1380	0.0000	0.0000																					
3/05/16	1500	0.0000	0.0000																					
3/05/16	1370	0.0000	0.0000																					
3/05/16	1450	0.0000	0.0000																					
3/05/16	1550	0.0000	0.0002																					
3/05/16	1510	0.0000	0.0000																					
3/05/16	1550	0.0000	0.0000																					
3/05/16	1480	0.0000	0.0000																					
3/05/16	1560	0.0000	0.0000																					
3/05/16	1530	0.0000	0.0000																					
3/05/16	1580	0.0000	0.0000																					
3/05/16	1570	0.0000	0.0002																					
5/05/16	1510	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/05/16	1410	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/05/16	1420	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
5/05/16	1490	0.0000	0.0000																					
5/05/16	1390	0.0000	0.0000																					
5/05/16	1420	0.0000	0.0000																					
5/05/16	1350	0.0000	0.0000																					
5/05/16	1380	0.0000	0.0000																					
5/05/16	1490	0.0000	0.0000																					
5/05/16	1350	0.0000	0.0000																					
5/05/16	1430	0.0000	0.0000																					
5/05/16	1460	0.0000	0.0000																					
10/05/16	1390	0.0000	0.0000																					
10/05/16	1320	0.0000	0.0000																					
10/05/16	1380	0.0000	0.0000																					
10/05/16	1360	0.0000	0.0000																					
10/05/16	1400	0.0000	0.0000																					
10/05/16	1410	0.0000	0.0000																					
10/05/16	1500	0.0000	0.0000																					
10/05/16	1550	0.0000	0.0000																					
10/05/16	1400	0.0000	0.0000																					
10/05/16	1440	0.0000	0.0000																					
10/05/16	1440	0.0000	0.0000																					
10/05/16	1380	0.0000	0.0000																					
12/05/16	1500	0.0000	0.0000																					
12/05/16	1400	0.0000	0.0001																					
12/05/16	1400	0.0236	0.0000																					
12/05/16	1440	0.0000	0.0000																					
12/05/16	1340	0.0000	0.0000																					
12/05/16	1420	0.0000	0.0000																					
12/05/16	1470	0.0000	0.0000																					
12/05/16	1400	0.0118	0.0007																					
12/05/16	1430	0.0000	0.0000																					
12/05/16	1410	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/05/16	1560	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
12/05/16	1420	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.05	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/16	1380	0.0000	0.0000																					
19/05/16	1390	0.0000	0.0000																					
19/05/16	1490	0.0000	0.0000																					
19/05/16	1510	0.0000	0.0000																					
19/05/16	1450	0.0000	0.0000																					
19/05/16	1390	0.0000	0.0015																					
19/05/16	1310	0.0000	0.0000																					
19/05/16	1390	0.0000	0.0000																					
19/05/16	1410	0.0000	0.0000																					
17/05/16	1410	0.0000	0.0000																					
17/05/16	1440	0.0000	0.0000																					
17/05/16	1290	0.0000	0.0001																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
17/05/16	1410	0.0000	0.0000																					
17/05/16	1470	0.0000	0.0000																					
17/05/16	1380	0.0000	0.0000																					
17/05/16	1400	0.0000	0.0000																					
17/05/16	1400	0.0000	0.0000																					
17/05/16	1420	0.0000	0.0000																					
17/05/16	1470	0.0000	0.0000																					
17/05/16	1450	0.0000	0.0003																					
17/05/16	1380	0.0000	0.0000																					
19/05/16	1350	0.0000	0.0026	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/16	1440	0.0000	0.0001	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/05/16	1420	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
24/05/16	1570	0.0000	0.0036																					
24/05/16	1430	0.0000	0.0003																					
24/05/16	1540	0.0000	0.0005																					
24/05/16	1590	0.0000	0.0027																					
24/05/16	1530	0.0000	0.0004																					
24/05/16	1510	0.0000	0.0011																					
24/05/16	1510	0.0000	0.0026																					
24/05/16	1440	0.0000	0.0005																					
24/05/16	1560	0.0000	0.0063																					
24/05/16	1390	0.0000	0.0045																					
24/05/16	1520	0.0000	0.0010																					
24/05/16	1550	0.0000	0.0010																					
26/05/16	1520	0.0000	0.0015	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/05/16	1350	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/05/16	1410	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
26/05/16	1450	0.0000	0.0005																					
26/05/16	1470	0.0000	0.0000																					
26/05/16	1430	0.0000	0.0000																					
26/05/16	1520	0.0000	0.0000																					
26/05/16	1430	0.0000	0.0000																					
26/05/16	1510	0.0000	0.0000																					
26/05/16	1480	0.0000	0.0000																					
26/05/16	1480	0.0000	0.0004																					
26/05/16	1440	0.0000	0.0012																					
31/05/16	1580	0.0000	0.0000																					
31/05/16	1470	0.0000	0.0000																					
31/05/16	1430	0.0000	0.0000																					
31/05/16	1490	0.0000	0.0000																					
31/05/16	1600	0.0000	0.0000																					
31/05/16	1540	0.0000	0.0002																					
31/05/16	1450	0.0000	0.0000																					
31/05/16	1600	0.0000	0.0000																					
31/05/16	1530	0.0000	0.0000																					
31/05/16	1530	0.0000	0.0000																					
31/05/16	1550	0.0000	0.0000																					
31/05/16	1620	0.0000	0.0000																					
2/06/16	1530	0.0000	0.0001	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/06/16	1640	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/06/16	1640	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
2/06/16	1460	0.0000	0.0000																					
2/06/16	1370	0.0000	0.0000																					
2/06/16	1510	0.0000	0.0000																					
2/06/16	1400	0.0000	0.0000																					
2/06/16	1650	0.0000	0.0000																					
2/06/16	1570	0.0000	0.0000																					
2/06/16	1610	0.0000	0.0000																					
2/06/16	1430	0.0000	0.0000																					
2/06/16	1540	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
7/06/16	1600	0.0000	0.0000																					
7/06/16	1600	0.0000	0.0000																					
7/06/16	1570	0.0000	0.0000																					
7/06/16	1560	0.0000	0.0010																					
7/06/16	1620	0.0000	0.0000																					
7/06/16	1440	0.0000	0.0000																					
7/06/16	1430	0.0000	0.0000																					
7/06/16	1580	0.0000	0.0000																					
7/06/16	1540	0.0000	0.0000																					
7/06/16	1570	0.0000	0.0000																					
7/06/16	1400	0.0000	0.0000																					
7/06/16	1460	0.0000	0.0000																					
9/06/16	1560	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/06/16	1570	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/06/16	1590	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
9/06/16	1640	0.0000	0.0000																					
9/06/16	1580	0.0000	0.0000																					
9/06/16	1590	0.0000	0.0000																					
9/06/16	1570	0.0000	0.0000																					
9/06/16	1570	0.0000	0.0000																					
9/06/16	1660	0.0000	0.0000																					
9/06/16	1560	0.0000	0.0000																					
9/06/16	1560	0.0000	0.0000																					
9/06/16	1440	0.0000	0.0000																					
14/06/16	1510	0.0000	0.0000																					
14/06/16	1530	0.0000	0.0018																					
14/06/16	1470	0.0000	0.0000																					
14/06/16	1470	0.0000	0.0000																					
14/06/16	1560	0.0000	0.0000																					
14/06/16	1520	0.0000	0.0005																					
14/06/16	1490	0.0000	0.0000																					
14/06/16	1500	0.0000	0.0000																					
14/06/16	1550	0.0000	0.0000																					
14/06/16	1490	0.0000	0.0000																					
14/06/16	1460	0.0000	0.0000																					
14/06/16	1460	0.0000	0.0000																					
16/06/16	1380	0.0000	0.0000																					
16/06/16	1490	0.0000	0.0000																					
16/06/16	1470	0.0000	0.0013																					
16/06/16	1480	0.0000	0.0000																					
16/06/16	1390	0.0000	0.0000																					
16/06/16	1500	0.0000	0.0000																					
16/06/16	1520	0.0000	0.0011																					
16/06/16	1460	0.0000	0.0000																					
16/06/16	1580	0.0000	0.0000																					
16/06/16	1540	0.0000	0.0001	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/06/16	1490	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
16/06/16	1430	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/16	1700	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/16	1620	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
23/06/16	1630	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/06/16	1570	0.0000	0.0000																					
21/06/16	1660	0.0000	0.0000																					
21/06/16	1600	0.0000	0.0000																					
21/06/16	1570	0.0000	0.0000																					
21/06/16	1620	0.0000	0.0000																					
21/06/16	1660	0.0000	0.0000																					
21/06/16	1610	0.0000	0.0000																					
21/06/16	1650	0.0000	0.0000																					
21/06/16	1550	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
21/06/16	1700	0.0000	0.0000																					
21/06/16	1680	0.0000	0.0000																					
21/06/16	1680	0.0000	0.0066																					
23/06/16	1670	0.0000	0.0000																					
23/06/16	1700	0.0000	0.0000																					
23/06/16	1650	0.0000	0.0000																					
23/06/16	1680	0.0000	0.0000																					
23/06/16	1650	0.0000	0.0000																					
23/06/16	1580	0.0000	0.0000																					
23/06/16	1560	0.0000	0.0000																					
23/06/16	1610	0.0000	0.0000																					
23/06/16	1630	0.0000	0.0000																					
28/06/16	1340	0.0000	0.0000																					
28/06/16	1310	0.0000	0.0004																					
28/06/16	1370	0.0000	0.0000																					
28/06/16	1330	0.0000	0.0005																					
28/06/16	1280	0.0000	0.0000																					
28/06/16	1340	0.0000	0.0000																					
28/06/16	1440	0.0000	0.0000																					
28/06/16	1240	0.0000	0.0000																					
28/06/16	1250	0.0000	0.0000																					
28/06/16	1350	0.0000	0.0000																					
28/06/16	1230	0.0000	0.0007																					
28/06/16	1280	0.0000	0.0000																					
30/06/16	1390	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.22	.07	.025	.025	.025	.025	.025	.1	.025	.1
30/06/16	1310	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/06/16	1250	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.025	.025	.025	.025	.025	.1	.025	.1
30/06/16	1330	0.0000	0.0000																					
30/06/16	1310	0.0000	0.0000																					
30/06/16	1340	0.0000	0.0000																					
30/06/16	1310	0.0000	0.0000																					
30/06/16	1220	0.0000	0.0000																					
30/06/16	1290	0.0000	0.0000																					
30/06/16	1320	0.0000	0.0000																					
30/06/16	1280	0.0000	0.0000																					
30/06/16	1320	0.0000	0.0000																					
5/07/16	1480	0.0000	0.0000																					
5/07/16	1480	0.0000	0.0001																					
5/07/16	1480	0.0000	0.0000																					
5/07/16	1550	0.0000	0.0000																					
5/07/16	1520	0.0000	0.0000																					
5/07/16	1560	0.0000	0.0000																					
5/07/16	1660	0.0000	0.0000																					
5/07/16	1520	0.0000	0.0000																					
5/07/16	1580	0.0000	0.0000																					
5/07/16	1570	0.0000	0.0000																					
5/07/16	1640	0.0000	0.0000																					
5/07/16	1580	0.0000	0.0000																					
7/07/16	1570	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
7/07/16	1500	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.09	.06	.025	.025	.025	.025	.025	.1	.025	.1
7/07/16	1540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.15	.025	.025	.025	.025	.025	.1	.025	.1
7/07/16	1490	0.0000	0.0000																					
7/07/16	1590	0.0000	0.0000																					
7/07/16	1530	0.0000	0.0000																					
7/07/16	1560	0.0000	0.0000																					
7/07/16	1540	0.0000	0.0000																					
7/07/16	1610	0.0000	0.0000																					
7/07/16	1580	0.0000	0.0000																					
7/07/16	1560	0.0000	0.0000																					
7/07/16	1570	0.0000	0.0001																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
12/07/16	1610	0.0000	0.0000																					
12/07/16	1570	0.0038	0.0000																					
12/07/16	1530	0.0000	0.0000																					
12/07/16	1580	0.0000	0.0000																					
12/07/16	1620	0.0000	0.0006																					
12/07/16	1540	0.0000	0.0000																					
12/07/16	1480	0.0000	0.0000																					
12/07/16	1550	0.0000	0.0000																					
12/07/16	1570	0.0000	0.0000																					
12/07/16	1500	0.0000	0.0000																					
12/07/16	1420	0.0000	0.0000																					
12/07/16	1530	0.0000	0.0000																					
14/07/16	1290	0.0000	0.0000																					
14/07/16	1330	0.0000	0.0000																					
14/07/16	1260	0.0000	0.0000																					
14/07/16	1310	0.0000	0.0000																					
14/07/16	1260	0.0000	0.0000																					
14/07/16	1360	0.0000	0.0000																					
14/07/16	1370	0.0000	0.0000																					
14/07/16	1290	0.0000	0.0000																					
14/07/16	1280	0.0000	0.0000																					
14/07/16	1310	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/07/16	1270	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
14/07/16	1310	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
19/07/16	1360	0.0000	0.0000																					
19/07/16	1390	0.0000	0.0000																					
19/07/16	1390	0.0000	0.0000																					
19/07/16	1410	0.0000	0.0000																					
19/07/16	1400	0.0000	0.0000																					
19/07/16	1420	0.0000	0.0000																					
19/07/16	1350	0.0000	0.0000																					
19/07/16	1330	0.0000	0.0000																					
19/07/16	1370	0.0000	0.0000																					
19/07/16	1410	0.0000	0.0000																					
19/07/16	1370	0.0000	0.0000																					
19/07/16	1360	0.0000	0.0000																					
21/07/16	1340	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/16	1440	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/16	1360	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
21/07/16	1340	0.0000	0.0000																					
21/07/16	1340	0.0000	0.0000																					
21/07/16	1330	0.0000	0.0000																					
21/07/16	1390	0.0000	0.0000																					
21/07/16	1430	0.0000	0.0000																					
21/07/16	1300	0.0000	0.0000																					
21/07/16	1410	0.0000	0.0000																					
21/07/16	1300	0.0000	0.0000																					
21/07/16	1380	0.0000	0.0000																					
25/07/16	1600	0.0000	0.0002																					
25/07/16	1580	0.0000	0.0000																					
25/07/16	1640	0.0000	0.0000																					
27/07/16	1640	0.0000	0.0000																					
27/07/16	1660	0.0000	0.0000																					
27/07/16	1640	0.0000	0.0000																					
29/07/16	1510	0.0000	0.0000																					
29/07/16	1540	0.0000	0.0002																					
29/07/16	1500	0.0000	0.0000																					
4/10/16	1480	0.0000	0.0000																					
4/10/16	1520	0.0000	0.0000																					
4/10/16	1590	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
4/10/16	1560	0.0000	0.0000																					
4/10/16	1590	0.0000	0.0000																					
4/10/16	1540	0.0000	0.0000																					
4/10/16	1490	0.0000	0.0000																					
4/10/16	1500	0.0000	0.0000																					
4/10/16	1460	0.0000	0.0000																					
6/10/16	1540	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.08	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/10/16	1480	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/10/16	1610	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
6/10/16	1540	0.0000	0.0000																					
6/10/16	1480	0.0000	0.0000																					
6/10/16	1560	0.0000	0.0000																					
6/10/16	1460	0.0000	0.0000																					
6/10/16	1470	0.0000	0.0000																					
6/10/16	1540	0.0000	0.0000																					
11/10/16	1470	0.0000	0.0000																					
11/10/16	1460	0.0000	0.0000																					
11/10/16	1410	0.0000	0.0000																					
11/10/16	1470	0.0000	0.0000																					
11/10/16	1490	0.0000	0.0000																					
11/10/16	1470	0.0000	0.0000																					
11/10/16	1560	0.0000	0.0000																					
11/10/16	1520	0.0000	0.0000																					
11/10/16	1540	0.0000	0.0000																					
13/10/16	1480	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/10/16	1530	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/10/16	1520	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
13/10/16	1470	0.0000	0.0000																					
13/10/16	1510	0.0000	0.0000																					
13/10/16	1510	0.0000	0.0000																					
13/10/16	1510	0.0000	0.0000																					
13/10/16	1620	0.0000	0.0000																					
13/10/16	1550	0.0000	0.0000																					
18/10/16	1490	0.0000	0.0000																					
18/10/16	1520	0.0000	0.0000																					
18/10/16	1480	0.0000	0.0000																					
18/10/16	1560	0.0000	0.0000																					
18/10/16	1480	0.0000	0.0000																					
18/10/16	1530	0.0000	0.0000																					
18/10/16	1580	0.0000	0.0000																					
18/10/16	1630	0.0000	0.0000																					
18/10/16	1530	0.0000	0.0000																					
20/10/16	1530	0.0000	0.0000																					
20/10/16	1550	0.0000	0.0000																					
20/10/16	1580	0.0000	0.0000																					
20/10/16	1530	0.0000	0.0000																					
20/10/16	1590	0.0000	0.0000																					
20/10/16	1600	0.0000	0.0000																					
20/10/16	1600	0.0000	0.0000																					
20/10/16	1540	0.0000	0.0000																					
20/10/16	1620	0.0000	0.0000																					
25/10/16	1440	0.0000	0.0000																					
25/10/16	1560	0.0000	0.0000																					
25/10/16	1530	0.0000	0.0000																					
25/10/16	1560	0.0000	0.0000																					
25/10/16	1440	0.0000	0.0000																					
25/10/16	1440	0.0000	0.0000																					
25/10/16	1560	0.0000	0.0000																					
25/10/16	1490	0.0000	0.0000																					
25/10/16	1530	0.0000	0.0000																					

Non Organic Waste
Soil Sampling Results

Part I - Organochlorine Pesticides (OC) & Asbestos
1 January 2016 to 31 December 2016

23/01/2017

Date	Sample Weight	Asbestos ACM %	Asbestos Fibre %	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
27/10/16	1620	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.06	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/16	1510	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/16	1550	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
27/10/16	1570	0.0000	0.0000																					
27/10/16	1570	0.0000	0.0000																					
27/10/16	1490	0.0000	0.0000																					
27/10/16	1570	0.0000	0.0000																					
27/10/16	1570	0.0000	0.0000																					
27/10/16	1450	0.0000	0.0000																					
1/11/16	1550	0.0000	0.0000																					
1/11/16	1540	0.0000	0.0000																					
1/11/16	1480	0.0000	0.0000																					
1/11/16	1480	0.0000	0.0000																					
1/11/16	1450	0.0000	0.0000																					
1/11/16	1450	0.0000	0.0000																					
1/11/16	1440	0.0000	0.0000																					
1/11/16	1480	0.0000	0.0000																					
1/11/16	1620	0.0000	0.0000																					
3/11/16	1540	0.0000	0.0000																					
3/11/16	1620	0.0000	0.0000																					
3/11/16	1550	0.0000	0.0000																					
3/11/16	1450	0.0000	0.0000																					
3/11/16	1490	0.0000	0.0000																					
3/11/16	1580	0.0000	0.0000																					
3/11/16	1620	0.0000	0.0000																					
3/11/16	1470	0.0000	0.0000																					
3/11/16	1620	0.0000	0.0000																					

Total Number Samples

747

Total Sample Wt (Asbestos Only)

1,102,168

	ACM	AF	Alpha-BHC	Hexachlorobenzene	Beta-BHC	Gamma-BHC	Delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Trans-Chlordane	alpha-Endosulfan	cis-Chlordane	Dieldrin	4.4`-DDE	Endrin	beta-Endosulfan	4.4`-DDD	Endrin aldehyde	Endosulfan Sulfate	4.4`-DDT	Endrin ketone	Methoxychlor
95% UCL	0.0001	0.0001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.03	0.10
Mean	0.0001	0.0001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.10	0.03	0.10
Maximum	0.0236	0.0185	.025	.025	.025	.025	.025	.025	.06	.05	.24	.025	.025	.22	.15	.025	.025	.025	.025	.025	.1	.025	.1
Minimum	0.0000	0.0000	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025	.1	.025	.1
EIL	0.0100	0.0010	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.2	.5	.5	.5	.5	.5	.5	.5	.5	.5
Outcome	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

All tests are carried out in accordance with the Ecological Investigation Levels contained within the ***Department of Environment and Conservation, Assessment levels for Soil, Sediment and Water 2010.***

sample_BATCH::Date Gen	sample_BATCH::Batch No	SampleWeight	AsbestosFibrousAmount	AsbestosFibrousPercent	AsbestosACMAmount	AsbestosACMPercent
21/03/2017	1124	1,560	0	0.0000	0	0.0000
21/03/2017	1124	1,360	0	0.0000	0	0.0000
21/03/2017	1124	1,580	0	0.0000	0	0.0000
21/03/2017	1125	1,580	0	0.0000	0	0.0000
21/03/2017	1125	1,660	0	0.0000	0	0.0000
21/03/2017	1125	1,750	0	0.0000	0	0.0000
23/03/2017	1126	1,660	0	0.0000	0	0.0000
23/03/2017	1126	1,540	0	0.0000	0	0.0000
23/03/2017	1126	1,650	0	0.0000	0	0.0000
23/03/2017	1127	1,620	0	0.0000	0	0.0000
23/03/2017	1127	1,620	0	0.0000	0	0.0000
23/03/2017	1127	1,570	0	0.0000	0	0.0000
28/03/2017	1128	1,650	0	0.0000	0	0.0000
28/03/2017	1128	1,670	0	0.0000	0	0.0000
28/03/2017	1128	1,640	0	0.0000	0	0.0000
28/03/2017	1129	1,590	0	0.0000	0	0.0000
28/03/2017	1129	1,590	0	0.0000	0	0.0000
28/03/2017	1129	1,610	0	0.0000	0	0.0000
30/03/2017	1130	1,560	0	0.0000	0	0.0000
30/03/2017	1130	1,630	0	0.0000	0	0.0000
30/03/2017	1130	1,610	0	0.0000	0	0.0000
30/03/2017	1131	1,820	0	0.0000	0	0.0000
30/03/2017	1131	1,660	0	0.0000	0	0.0000
30/03/2017	1131	1,720	0	0.0000	0	0.0000
06/04/2017	1134	1,570	0	0.0000	0	0.0000
06/04/2017	1134	1,590	0	0.0000	0	0.0000
06/04/2017	1134	1,540	0	0.0000	0	0.0000
06/04/2017	1135	1,530	0	0.0000	0	0.0000
06/04/2017	1135	1,600	0	0.0000	0	0.0000
06/04/2017	1135	1,450	0.0021	0.0001	0	0.0000
04/04/2017	1132	1,530	0	0.0000	0	0.0000
04/04/2017	1132	1,480	0	0.0000	0	0.0000
04/04/2017	1132	1,600	0	0.0000	0	0.0000
04/04/2017	1133	1,400	0	0.0000	0	0.0000
04/04/2017	1133	1,720	0	0.0000	0	0.0000
04/04/2017	1133	1,570	0	0.0000	0	0.0000
11/04/2017	1136	1,600	0	0.0000	0	0.0000
11/04/2017	1136	1,610	0	0.0000	0	0.0000
11/04/2017	1136	1,580	0.0121	0.0008	0	0.0000
11/04/2017	1137	1,520	0	0.0000	0	0.0000
11/04/2017	1137	1,610	0	0.0000	0	0.0000
11/04/2017	1137	1,610	0	0.0000	0	0.0000
13/04/2017	1138	1,690	0	0.0000	0	0.0000
13/04/2017	1138	1,610	0	0.0000	0	0.0000
13/04/2017	1138	1,400	0	0.0000	0	0.0000
13/04/2017	1139	1,360	0	0.0000	0	0.0000
13/04/2017	1139	1,390	0	0.0000	0	0.0000
13/04/2017	1139	1,420	0	0.0000	0	0.0000
18/04/2017	1140	1,280	0	0.0000	0	0.0000
18/04/2017	1140	1,340	0	0.0000	0	0.0000
18/04/2017	1140	1,470	0	0.0000	0	0.0000
18/04/2017	1141	1,480	0.0129	0.0009	0	0.0000
18/04/2017	1141	1,360	0	0.0000	0	0.0000
18/04/2017	1141	1,320	0.084	0.0064	0	0.0000
20/04/2017	1142	1,410	0	0.0000	0	0.0000
20/04/2017	1142	1,340	0	0.0000	0	0.0000
20/04/2017	1142	1,350	0	0.0000	0	0.0000
20/04/2017	1143	1,310	0.0052	0.0004	0	0.0000
20/04/2017	1143	1,360	0.126	0.0093	0	0.0000
20/04/2017	1143	1,460	0	0.0000	0	0.0000
24/04/2017	1144	1,560	0.0046	0.0003	0	0.0000
24/04/2017	1144	1,570	0	0.0000	0	0.0000
24/04/2017	1144	1,460	0	0.0000	0	0.0000
24/04/2017	1145	1,580	0	0.0000	0	0.0000
24/04/2017	1145	1,550	0	0.0000	0	0.0000
24/04/2017	1145	1,570	0	0.0000	0	0.0000
27/04/2017	1146	1,530	0	0.0000	0	0.0000
27/04/2017	1146	1,560	0	0.0000	0	0.0000
27/04/2017	1146	1,500	0	0.0000	0	0.0000
27/04/2017	1147	1,470	0	0.0000	0	0.0000
27/04/2017	1147	1,440	0	0.0000	0	0.0000
27/04/2017	1147	1,540	0	0.0000	0	0.0000
02/05/2017	1148	1,530	0	0.0000	0	0.0000
02/05/2017	1148	1,460	0	0.0000	0	0.0000
02/05/2017	1148	1,540	0	0.0000	0	0.0000
02/05/2017	1149	1,370	0	0.0000	0	0.0000
02/05/2017	1149	1,400	0	0.0000	0	0.0000
02/05/2017	1149	1,460	0	0.0000	0	0.0000
04/05/2017	1150	1,540	0	0.0000	0	0.0000
04/05/2017	1150	1,500	0	0.0000	0	0.0000
04/05/2017	1150	1,520	0	0.0000	0	0.0000
04/05/2017	1151	1,460	0	0.0000	0	0.0000
04/05/2017	1151	1,430	0.146	0.0102	0	0.0000
04/05/2017	1151	1,390	0	0.0000	0	0.0000
09/05/2017	1152	1,410	0.15	0.0106	0	0.0000

09/05/2017	1152	1,460	0	0.0000	0	0.0000
09/05/2017	1152	1,500	0	0.0000	0	0.0000
09/05/2017	1153	1,400	0.0135	0.0010	0	0.0000
09/05/2017	1153	1,450	0	0.0000	0	0.0000
09/05/2017	1153	1,400	0	0.0000	0	0.0000
11/05/2017	1154	1,380	0	0.0000	0	0.0000
11/05/2017	1154	1,390	0	0.0000	0	0.0000
11/05/2017	1154	1,330	0	0.0000	0	0.0000
11/05/2017	1155	1,440	0	0.0000	0	0.0000
11/05/2017	1155	1,420	0	0.0000	0	0.0000
11/05/2017	1155	1,410	0	0.0000	0	0.0000
16/05/2017	1156	1,480	0	0.0000	0	0.0000
16/05/2017	1156	1,420	0	0.0000	0	0.0000
16/05/2017	1156	1,460	0	0.0000	0	0.0000
16/05/2017	1157	1,520	0	0.0000	0	0.0000
16/05/2017	1157	1,510	0	0.0000	0	0.0000
16/05/2017	1157	1,480	0	0.0000	0	0.0000
18/05/2017	1158	1,420	0	0.0000	0	0.0000
18/05/2017	1158	1,450	0	0.0000	0	0.0000
18/05/2017	1158	1,420	0	0.0000	0	0.0000
18/05/2017	1159	1,490	0	0.0000	0	0.0000
18/05/2017	1159	1,510	0	0.0000	0	0.0000
18/05/2017	1159	1,520	0	0.0000	0	0.0000
23/05/2017	1160	1,450	0	0.0000	0	0.0000
23/05/2017	1160	1,340	0	0.0000	0	0.0000
23/05/2017	1160	1,370	0	0.0000	0	0.0000
23/05/2017	1161	1,330	0	0.0000	0	0.0000
23/05/2017	1161	1,390	0	0.0000	0	0.0000
23/05/2017	1161	1,310	0	0.0000	0	0.0000
25/05/2017	1162	1,390	0	0.0000	0	0.0000
25/05/2017	1162	1,370	0	0.0000	0	0.0000
25/05/2017	1162	1,460	0	0.0000	0	0.0000
25/05/2017	1163	1,480	0	0.0000	0	0.0000
25/05/2017	1163	1,410	0	0.0000	0	0.0000
25/05/2017	1163	1,430	0	0.0000	0	0.0000
30/05/2017	1164	1,410	0	0.0000	0	0.0000
30/05/2017	1164	1,440	0	0.0000	0	0.0000
30/05/2017	1164	1,440	0	0.0000	0	0.0000
30/05/2017	1165	1,460	0	0.0000	0	0.0000
30/05/2017	1165	1,420	0	0.0000	0	0.0000
30/05/2017	1165	1,400	0	0.0000	0	0.0000
01/06/2017	1166	1,500	0	0.0000	0	0.0000
01/06/2017	1166	1,460	0	0.0000	0	0.0000
01/06/2017	1166	1,470	0	0.0000	0	0.0000
01/06/2017	1167	1,430	0	0.0000	0	0.0000
01/06/2017	1167	1,390	0	0.0000	0	0.0000
01/06/2017	1167	1,430	0	0.0000	0	0.0000
06/06/2017	1168	1,420	0	0.0000	0	0.0000
06/06/2017	1168	1,520	0	0.0000	0	0.0000
06/06/2017	1168	1,450	0	0.0000	0	0.0000
06/06/2017	1169	1,430	0	0.0000	0	0.0000
06/06/2017	1169	1,390	0	0.0000	0	0.0000
06/06/2017	1169	1,500	0	0.0000	0	0.0000
08/06/2017	1170	1,410	0	0.0000	0	0.0000
08/06/2017	1170	1,430	0	0.0000	0	0.0000
08/06/2017	1170	1,490	0	0.0000	0	0.0000
08/06/2017	1171	1,280	0	0.0000	0	0.0000
08/06/2017	1171	1,460	0	0.0000	0	0.0000
08/06/2017	1171	1,520	0	0.0000	0	0.0000
13/06/2017	1172	1,460	0	0.0000	0	0.0000
13/06/2017	1172	1,360	0	0.0000	0	0.0000
13/06/2017	1172	1,430	0	0.0000	0	0.0000
13/06/2017	1173	1,480	0	0.0000	0	0.0000
13/06/2017	1173	1,400	0	0.0000	0	0.0000
13/06/2017	1173	1,450	0	0.0000	0	0.0000
15/06/2017	1174	1,440	0	0.0000	0	0.0000
15/06/2017	1174	1,360	0	0.0000	0	0.0000
15/06/2017	1174	1,480	0	0.0000	0	0.0000
15/06/2017	1175	1,380	0	0.0000	0	0.0000
15/06/2017	1175	1,340	0	0.0000	0	0.0000
15/06/2017	1175	1,400	0	0.0000	0	0.0000
20/06/2017	1176	1,510	0	0.0000	0	0.0000
20/06/2017	1176	1,390	0	0.0000	0	0.0000
20/06/2017	1176	1,450	0	0.0000	0	0.0000
20/06/2017	1177	1,460	0	0.0000	0	0.0000
20/06/2017	1177	1,440	0.0819	0.0057	0	0.0000
20/06/2017	1177	1,460	0	0.0000	0	0.0000
22/06/2017	1178	1,460	0	0.0000	0	0.0000
22/06/2017	1178	1,470	0	0.0000	0	0.0000
22/06/2017	1178	1,470	0	0.0000	0	0.0000
22/06/2017	1179	1,460	0	0.0000	0	0.0000
22/06/2017	1179	1,440	0	0.0000	0	0.0000
22/06/2017	1179	1,520	0	0.0000	0	0.0000
27/06/2017	1180	1,490	0	0.0000	0	0.0000
27/06/2017	1180	1,440	0	0.0000	0	0.0000
27/06/2017	1180	1,360	0	0.0000	0	0.0000
27/06/2017	1181	1,470	0	0.0000	0	0.0000
27/06/2017	1181	1,420	0	0.0000	0	0.0000

27/06/2017	1181	1,420	0	0.0000	0	0.0000
29/06/2017	1182	1,510	0	0.0000	0	0.0000
29/06/2017	1182	1,480	0	0.0000	0	0.0000
29/06/2017	1182	1,480	0	0.0000	0	0.0000
04/07/2017	1184	1,490	0	0.0000	0	0.0000
04/07/2017	1184	1,440	0	0.0000	0	0.0000
04/07/2017	1184	1,420	0	0.0000	0	0.0000
04/07/2017	1185	1,420	0	0.0000	0	0.0000
04/07/2017	1185	1,460	0	0.0000	0	0.0000
04/07/2017	1185	1,470	0	0.0000	0	0.0000
06/07/2017	1186	1,500	0	0.0000	0	0.0000
06/07/2017	1186	1,570	0	0.0000	0	0.0000
06/07/2017	1186	1,500	0	0.0000	0	0.0000
06/07/2017	1187	1,510	0	0.0000	0	0.0000
06/07/2017	1187	1,540	0	0.0000	0	0.0000
06/07/2017	1187	1,490	0	0.0000	0	0.0000
29/06/2017	1183	1,630	0	0.0000	1.3	0.0120
29/06/2017	1183	1,550	0	0.0000	0	0.0000
29/06/2017	1183	1,540	0	0.0000	0	0.0000
11/07/2017	1188	1,480	0	0.0000	0	0.0000
11/07/2017	1188	1,630	0	0.0000	0	0.0000
11/07/2017	1188	1,540	0	0.0000	0	0.0000
11/07/2017	1189	1,520	0	0.0000	0	0.0000
11/07/2017	1189	1,610	0	0.0000	0	0.0000
11/07/2017	1189	1,440	0	0.0000	0	0.0000
13/07/2017	1190	1,510	0	0.0000	0	0.0000
13/07/2017	1190	1,660	0.0015	0.0001	0	0.0000
13/07/2017	1190	1,570	0	0.0000	0	0.0000
13/07/2017	1191	1,450	0	0.0000	0	0.0000
13/07/2017	1191	1,580	0	0.0000	0	0.0000
13/07/2017	1191	1,500	0	0.0000	0	0.0000
18/07/2017	1192	1,470	0	0.0000	0	0.0000
18/07/2017	1192	1,460	0	0.0000	0	0.0000
18/07/2017	1192	1,460	0	0.0000	0	0.0000
18/07/2017	1193	1,590	0	0.0000	0	0.0000
18/07/2017	1193	1,560	0	0.0000	0	0.0000
18/07/2017	1193	1,540	0	0.0000	0	0.0000
20/07/2017	1194	1,460	0	0.0000	0	0.0000
20/07/2017	1194	1,560	0	0.0000	0	0.0000
20/07/2017	1194	1,490	0	0.0000	0	0.0000
20/07/2017	1195	1,570	0	0.0000	0	0.0000
20/07/2017	1195	1,520	0	0.0000	0	0.0000
20/07/2017	1195	1,500	0	0.0000	0	0.0000
25/07/2017	1196	1,480	0	0.0000	0	0.0000
25/07/2017	1196	1,600	0	0.0000	0	0.0000
25/07/2017	1196	1,640	0	0.0000	0	0.0000
25/07/2017	1197	1,560	0	0.0000	0	0.0000
25/07/2017	1197	1,460	0	0.0000	0	0.0000
25/07/2017	1197	1,610	0	0.0000	0	0.0000
27/07/2017	1198	1,390	0	0.0000	0	0.0000
27/07/2017	1198	1,630	0	0.0000	0	0.0000
27/07/2017	1198	1,430	0	0.0000	0	0.0000
27/07/2017	1199	1,480	0	0.0000	0	0.0000
27/07/2017	1199	1,510	0	0.0000	0	0.0000
27/07/2017	1199	1,570	0	0.0000	0	0.0000
01/08/2017	1200	1,470	0	0.0000	0	0.0000
01/08/2017	1200	1,380	0	0.0000	0	0.0000
01/08/2017	1200	1,390	0	0.0000	0	0.0000
01/08/2017	1201	1,420	0	0.0000	0	0.0000
01/08/2017	1201	1,410	0	0.0000	0	0.0000
01/08/2017	1201	1,420	0	0.0000	0	0.0000
03/08/2017	1202	1,490	0	0.0000	0	0.0000
03/08/2017	1202	1,470	0	0.0000	0	0.0000
03/08/2017	1202	1,480	0	0.0000	0	0.0000
03/08/2017	1203	1,460	0	0.0000	0	0.0000
03/08/2017	1203	1,440	0	0.0000	0	0.0000
03/08/2017	1203	1,500	0	0.0000	0	0.0000
08/08/2017	1204	1,450	0	0.0000	0	0.0000
08/08/2017	1204	1,500	0	0.0000	0	0.0000
08/08/2017	1204	1,520	0	0.0000	0	0.0000
08/08/2017	1205	1,530	0	0.0000	0	0.0000
08/08/2017	1205	1,410	0	0.0000	0	0.0000
08/08/2017	1205	1,450	0	0.0000	0	0.0000
10/08/2017	1206	1,590	0	0.0000	0	0.0000
10/08/2017	1206	1,420	0	0.0000	0	0.0000
10/08/2017	1206	1,530	0	0.0000	0	0.0000
10/08/2017	1207	1,420	0	0.0000	0	0.0000
10/08/2017	1207	1,480	0	0.0000	0	0.0000
10/08/2017	1207	1,490	0	0.0000	0	0.0000
15/08/2017	1208	1,460	0	0.0000	0	0.0000
15/08/2017	1208	1,530	0	0.0000	0	0.0000
15/08/2017	1208	1,600	0	0.0000	0	0.0000
15/08/2017	1209	1,600	0	0.0000	0	0.0000
15/08/2017	1209	1,460	0	0.0000	0	0.0000
15/08/2017	1209	1,430	0	0.0000	0	0.0000
17/08/2017	1210	1,480	0	0.0000	0	0.0000
17/08/2017	1210	1,600	0	0.0000	0	0.0000
17/08/2017	1210	1,450	0	0.0000	0	0.0000

17/08/2017	1211	1,410	0	0.0000	0	0.0000
17/08/2017	1211	1,420	0	0.0000	0	0.0000
17/08/2017	1211	1,540	0	0.0000	0	0.0000
22/08/2017	1212	1,470	0	0.0000	0	0.0000
22/08/2017	1212	1,560	0	0.0000	0	0.0000
22/08/2017	1212	1,500	0	0.0000	0	0.0000
22/08/2017	1213	1,550	0	0.0000	0	0.0000
22/08/2017	1213	1,600	0	0.0000	0	0.0000
22/08/2017	1213	1,480	0	0.0000	0	0.0000
24/08/2017	1214	1,640	0	0.0000	0	0.0000
24/08/2017	1214	1,480	0	0.0000	0	0.0000
24/08/2017	1214	1,470	0	0.0000	0	0.0000
24/08/2017	1215	1,580	0	0.0000	0	0.0000
24/08/2017	1215	1,550	0	0.0000	0	0.0000
24/08/2017	1215	1,590	0	0.0000	0	0.0000
29/08/2017	1216	1,510	0	0.0000	0	0.0000
29/08/2017	1216	1,550	0	0.0000	0	0.0000
29/08/2017	1216	1,490	0	0.0000	0	0.0000
29/08/2017	1217	1,570	0	0.0000	0	0.0000
29/08/2017	1217	1,560	0	0.0000	0	0.0000
29/08/2017	1217	1,580	0	0.0000	0	0.0000
31/08/2017	1218	1,400	0.154	0.0110	0	0.0000
31/08/2017	1218	1,500	0	0.0000	0	0.0000
31/08/2017	1218	1,540	0	0.0000	0	0.0000
31/08/2017	1219	1,620	0	0.0000	0	0.0000
31/08/2017	1219	1,520	0	0.0000	0	0.0000
31/08/2017	1219	1,610	0	0.0000	0	0.0000
05/09/2017	1220	1,550	0	0.0000	0	0.0000
05/09/2017	1220	1,590	0	0.0000	0	0.0000
05/09/2017	1220	1,540	0	0.0000	0	0.0000
05/09/2017	1221	1,540	0	0.0000	0	0.0000
05/09/2017	1221	1,500	0	0.0000	0	0.0000
05/09/2017	1221	1,480	0	0.0000	0	0.0000
07/09/2017	1222	1,550	0	0.0000	0	0.0000
07/09/2017	1222	1,540	0	0.0000	0	0.0000
07/09/2017	1222	1,530	0	0.0000	0	0.0000
07/09/2017	1223	1,480	0	0.0000	0	0.0000
07/09/2017	1223	1,490	0	0.0000	0	0.0000
07/09/2017	1223	1,460	0	0.0000	0	0.0000
12/09/2017	1224	1,500	0	0.0000	0	0.0000
12/09/2017	1224	1,370	0	0.0000	0	0.0000
12/09/2017	1224	1,460	0	0.0000	0	0.0000
12/09/2017	1225	1,480	0	0.0000	0	0.0000
12/09/2017	1225	1,540	0	0.0000	0	0.0000
12/09/2017	1225	1,490	0	0.0000	0	0.0000
14/09/2017	1226	1,440	0	0.0000	0	0.0000
14/09/2017	1226	1,400	0	0.0000	0	0.0000
14/09/2017	1226	1,520	0	0.0000	0	0.0000
14/09/2017	1227	1,390	0	0.0000	0	0.0000
14/09/2017	1227	1,430	0	0.0000	0.8	0.0084
14/09/2017	1227	1,520	0	0.0000	0	0.0000
19/09/2017	1228	1,540	0	0.0000	0	0.0000
19/09/2017	1228	1,570	0	0.0000	0	0.0000
19/09/2017	1228	1,480	0	0.0000	0	0.0000
19/09/2017	1229	1,460	0	0.0000	0	0.0000
19/09/2017	1229	1,530	0	0.0000	0	0.0000
19/09/2017	1229	1,570	0	0.0000	0	0.0000
21/09/2017	1230	1,530	0	0.0000	0	0.0000
21/09/2017	1230	1,490	0	0.0000	0	0.0000
21/09/2017	1230	1,480	0	0.0000	0	0.0000
21/09/2017	1231	1,620	0	0.0000	0	0.0000
21/09/2017	1231	1,540	0	0.0000	0	0.0000
21/09/2017	1231	1,440	0	0.0000	0	0.0000
Totals	324	483,440	0.7938	0.0568	2.1000	0.0204
		483,440				

APPENDIX P

GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLES

Table 1
Groundwater Analytical Results - NODGW01 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	NODGW01 24/02/11	10/08/11	6/02/12	21/08/12	28/02/13	28/08/13	29/04/14	21/08/14	19/02/15	20/08/15	24/02/16	3/08/16	23/02/17	30/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					<100	<100	160	180	370	410	300	<100	150	120	<100	<100	500	100
	C29-C36	µg/L	50					<50	<50	60	50	<50	70	70	<50	<50	<50	<50	<50	180	<50
	C10 - C36 (sum)	µg/L	50					<50	<50	220 - 245	230 - 255	370 - 420	480 - 505	370 - 395	<50	150	120	<50	<50	680	100
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	<100	210	200	370	440	320	<100	160	120	<100	<100	100	0.12
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	<100	210	200	370	440	320	<100	160	120	<100	<100	660	120
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					227	425	432	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					227	425	432	526	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		5.33	5.98	4.99	6.44	6.29	4.97	5.56	8.44	8.43	5.77	6.77	5.22	1.76	6.46
	Anions Total	meq/L	0.01					7.6	17.5	14	20.9	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					88	252	208	274	317	279	213	127	173	130	140	131	83	568
	Cations Total	meq/L	0.01					8.14	18.4	16.8	20.2	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					55	90	85	106	-	-	-	-	-	-	53	64	41	141
	COD	mg/L	5					27	36	35	37	494	47	160	41	86	56	728	34	158	58
	Electrical conductivity *(lab)	µS/cm	1					804	1,750	1,530	1,360	-	-	-	1,040	1,350	1,110	1,060	1,060	734	2,960
	Ionic Balance	%	0.01					3.44	2.7	8.95	1.58	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					4	4.5	4.9	5.8	6.1	5.5	11.1	6.9	15.8	8.7	17.2	10.2	9.5	6.6
	Nitrate (as N)	mg/L	0.01		50			<0.01	0.35	<0.01	2.52	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					<0.01	0.02	<0.01	0.03	<0.01	0.04	0.03	0.03	0.01	<0.01	0.01	0.01	<0.01	<0.01
	Nitrogen (Total)	mg/L	0.05					4.0	4.5	4.9	5.8	6.1	5.5	11.1	6.9	15.8	8.7	17.2	10.2	9.5	6.6
	pH (Lab)	pH_Units	0					8	7	7.56	7.73	-	-	-	7.32	7.49	7.52	7.44	7.48	7.52	7.41
	Phosphorus	mg/L	0.01					<0.01	0.02	0.02	0.03	0.05	0.35	0.16	0.07	1.14	0.07	1.84	0.66	0.83	0.25
	Potassium (Filtered)	mg/L	0.1					19	23	28	29	29	25	32	26	30	30	30	25	21	40
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	-	<0.01	0.01	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				51	76	82	84	83	88	90	77	79	73	66	60	45	117
	Sulphate	mg/L	1	250	500	5,000		73	310	145	354	732	393	189	117	185	83	109	-	42	1,000
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				457	1,130	912	965	-	-	-	816	1,110	764	816	687	508	2,460
	TOC	mg/L	1					6	10	13	<1	48	21	<1	27	44	18	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				272	728	626	791	948	787	635	395	518	419	415	401	248	1,600
Metals	Arsenic (Filtered)	µg/L	1		10	100		34	20	42	<1	25	42	6	34	21	24	25	14	19	15
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Copper (Filtered)	µg/L	1	1000	2000	20,000		2	<1	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	300		300		5070	4920	8500	<0.05	4180	8670	50	3590	360	500	810	70	210	5,280
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	0.001	<1	<1	<1	<1	<1	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					12,000	24,000	26,000	26,000	38,000	22,000	25,000	19,000	21,000	23,000	7,900	18,000	10,000	45,000
	Manganese (Filtered)	µg/L	1	100	500	5000		62	155	125	<1	128	163	99	89	64	72	79	68	53	341
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		2	5	1	<1	<1	<1	2	<1	1	<1	<1	<1	<1	2
	Zinc (Filtered)	µg/L	5	3000		3000		33	8	26	<5	9	6	<5	<5	<5	5	<5	<5	<5	11
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	0.1	300	3000		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2.8	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.04	<0.02	0.04	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.05	<0.02	0.13	0.04	0.03	0.04
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	0.011	0.021	0.056	<0.005	0.144	0.043	<0.005	0.034
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	-	0.08	<0.02	0.17	0.05	0.04	0.03
	Benzo(g,h,i)perylene	µg/L	0.02					<0.01	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.07	<0.02	0.11	0.04	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	0.06	<0.02	0.03	0.03
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.05	<0.02	0.11	0.03	0.03	0.03
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.04	0.09	<0.02	0.22	0.07	0.07	0.07
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.05	<0.02	0.1	0.03	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	<5	0.11	0.03	<0.02	0.04	<0.02	0.03	0.02
	PAHs (Sum of total)	µg/L	0.5					-	-	-	-	<0.5	<0.5	-	0.271	0.706	<0.005	1.47	0.373	0.35	0.354
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.04	0.04	<0.02	0.07	<0.04	0.04	0.03
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.04	0.09	<0.02	0.23	0.07	0.08	0.07
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01													0.212	0.056	0.01	0.044
Methane		µg/L	10				1600											329	373	463	402

Notes:
1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

-- No available assessment level
<0.001 Grey text indicates concentration is below the laboratory limit of reporting
0.01 Black text indicates concentration is above the laboratory limit of reporting

Table 2
Groundwater Analytical Results - NODGW02 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	NODGW02													
								24/02/11	10/08/11	6/02/12	21/08/12	28/02/13	28/08/13	30/04/14	20/08/14	19/02/15	20/08/15	23/02/16	2/08/16	22/02/17	29/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					110	<50	<50	130	120	100	190	<50	70	<50	60	<50	<50	<50
	C15 - C28	µg/L	100					1,200	140	510	1,200	1,310	1,180	1,580	230	440	290	360	210	<100	300
	C29-C36	µg/L	50					280	<50	160	240	220	200	420	<50	100	90	60	120	<50	120
	C10 - C36 (sum)	µg/L	50					1,590	140 - 190	670 - 695	1,570	1,650	1,480	2,190	230	610	380	480	330	<50	420
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	260	230	200	320	<100	120	<100	110	<100	<100	<100
	C16-C34	µg/L	100					-	130	640	1,240	1,400	1,250	1,760	270	470	330	350	290	<100	390
	C34-C40	µg/L	100					-	<100	<100	170	<100	<100	180	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	130	640	1,670	1,630	1,450	2,260	270	590	330	460	290	<100	390
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	200	320	<100	120	<100	110	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	310
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	100
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	410
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	330
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	330
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					1,020	926	952	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					1,020	926	952	980	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		26.51	21.03	27.72	18.85	24.32	19.70	16.17	37.45	12.40	12.40	22.70	29.00	0.20	0.33
	Anions Total	meq/L	0.01					37.7	35.5	30.7	29.7	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					283	383	229	196	35	248	194	114	156	346	166	496	632	615
	Cations Total	meq/L	0.01					33.3	32.4	28.3	26.2	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					306	165	266	276	-	-	-	-	-	-	216	96	134	123
	COD	mg/L	5					162	140	147	163	156	181	360	194	660	196	312	218	278	396
	Electrical conductivity *(lab)	µS/cm	1					3,020	2,960	2,760	1,990	-	-	-	2,590	2,880	2,800	2,620	2,600	3,060	3140
	Ionic Balance	%	0.01					6.28	4.49	3.94	6.32	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					21	17.9	25.2	35.1	25.6	23	26.3	33.9	47.1	20	34.6	14.7	12.7	18.7
	Nitrate (as N)	mg/L	0.01		50			<0.01	120.7	<0.01	0.35	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	2.79	<0.01	0.1	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					<0.01	6.42	<0.01	0.03	<0.01	0.03	0.03	0.02	0.02	3.60	0.03	0.02	30.1	67.3
	Nitrogen (Total)	mg/L	0.05					21.0	24.3	25.2	35.1	25.6	23.0	26.3	33.9	47.1	23.6	34.6	38.7	42.8	86000
	pH (Lab)	pH_Units	0					7.7	7.03	7.58	7.69	-	-	-	7.29	7.35	7.32	7.29	7.34	7.05	7.22
	Phosphorus	mg/L	0.05					0.13	0.13	0.11	0.04	0.06	0.67	0.08	0.15	1.63	<0.1	0.6	0.37	0.88	0.86
	Potassium (Filtered)	mg/L	0.1					70	57	75	72	53	61	74	75	78	70	71	34	37	39
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	-	0.03	0.01	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				216	137	180	180	191	214	313	300	393	209	270	115	122	117
	Sulphate	mg/L	1	250	500	5,000		424	594	199	114	107	384	127	71	151	329	202	-	1,400	1,140
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				1,920	2,030	1,670	1,470	-	-	-	1,760	2,630	2,010	1,800	2,270	2,720	2,650
	TOC	mg/L	1					41	47	39	57	39	32	51	5	108	60	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				1,100	1,250	930	827	322	895	781	594	637	1,180	678	1390	1,730	1,680
Metals	Arsenic (Filtered)	µg/L	1		10	100		22	4	26	20	26	10	3	14	12	3	10	2	2	2
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2
	Copper (Filtered)	µg/L	1	1000	2000	20,000		4	6	1	4	1	2	<1	<1	<1	2	<1	13	4	6
	Iron (Filtered)	µg/L	50	300		300		12,800	<50	9520	7410	13200	4780	<50	2980	940	250	1,160	70	<50	180
	Lead (Filtered)	µg/L	1		10	100		<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					97,000	72,000	87,000	82,000	57,000	67,000	72,000	75,000	60,000	76,000	64,000	36,000	38,000	35,000
	Manganese (Filtered)	µg/L	1	100	500	5000		273	70	132	117	159	271	6	90	144	224	100	100	62	41
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		6	5	2	4	2	4	1	2	3	4	3	4	4	6
	Zinc (Filtered)	µg/L	5	3000		3000		22	8	7	13	9	60	<5	<5	<5	33	<5	42	26	42
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<1.5	<0.5	<0.5	<0.5	<0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<0.11	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<0.12	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	<0.14	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.15	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<0.16	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			<1	<1	<1	<1	<1	<1	<1	<0.17	<1	<1	<1	<1	<1	<1
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.18	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	0.1	300	3000		<1	<1	<1	<1	<1	<1	<1	<0.19	<1	<1	<1	<1	<1	<1
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.20	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.21	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	0.1	<0.1	<0.1	<1	-	-	<0.22	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.23	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.24	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	2.4	<2	<2	<2	<0.25	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.26	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.27	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.28	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.30	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.31	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.05	0.005	<0.005	0.007	<0.32	0.01	<0.005	<0.005	<0.005	0.02	0.042
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.33	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	<0.34	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.35	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.36	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.37	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.38	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.39	<0.02	<0.02	<0.02	<0.02	0.03	0.04
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.40	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.41	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	<5	<0.42	0.02	<0.02	<0.02	0.09	<0.02	0.37
	PAHs (Sum of total)	µg/L	0.5					-	-	-	-	<0.5	<0.5	-	<0.43	0.05	<0.005	0.03	0.15	0.1	0.752
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<0.44	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.45	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.46	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.47	0.02	<0.02	<0.02	<0.02	0.05	0.06
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.48	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.49	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	<0.50	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	<0.51	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<0.52	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.53	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<0.54	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.55	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.56	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.57	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	<0.58	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01													<0.005	0.01	0.02	0.057
Methane		µg/L	10			*1600*												474	422	195	1,070

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

-- No available assessment level
<0.001 Grey text indicates concentration is below the laboratory limit of reporting
0.01 Black text indicates concentration is above the laboratory limit of reporting

Table 3
Groundwater Analytical Results - NODGW03 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

ENPOINT

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	NODGW03													
								24/02/11	9/08/11	7/02/12	22/08/12	28/02/13	28/08/13	30/04/14	20/08/14	19/02/15	20/08/15	23/02/16	2/08/16	22/02/17	29/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					50	<50	<50	70	190	<50	<50	930	660	330	<50	90	70	640
	C15 - C28	µg/L	100					200	120	<100	300	910	<100	380	1,120	680	420	<100	290	190	1,130
	C29-C36	µg/L	50					60	<50	<50	90	170	<50	120	190	100	60	<50	90	<50	200
	C10 - C36 (sum)	µg/L	50					310	120 - 170	<50	460	1,270	<50	500 - 525	2,240	1,440	810	<50	470	260	1,970
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	30	20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	30	20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	110	290	<100	<100	1,000	720	380	<100	120	<100	650
	C16-C34	µg/L	100					-	130	<100	330	970	<100	440	1,180	680	440	<100	320	220	1,240
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	110
	C10 - C40 (sum)	µg/L	100					-	130	<100	440	1,250	<100	440	2,180	1,400	820	<100	440	220	2,000
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	<100	<100	1	720	380	<100	120	<100	650
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	130	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	100	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	230	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	210	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	210	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					326	400	339	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					326	400	339	486	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		3.36	7.61	2.24	6.31	21.03	0.36	5.88	39.88	26.10	15.20	26.00	65.20	7.40	24.00
	Anions Total	meq/L	0.01					11.4	15.3	12.4	18.2	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					144	193	153	199	71	202	184	64	117	134	138	240	437	204
	Cations Total	meq/L	0.01					12.8	16.8	13.2	16.8	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					80	61	67	74	-	-	-	-	-	-	55	96	84	126
	COD	mg/L	5					46	63	36	67	164	24	90	288	330	128	38	284	95	216
	Electrical conductivity *(lab)	µS/cm	1					1,380	1,640	1,200	1,260	-	-	-	1,600	1,800	1,510	1,020	2,030	2,380	1,940
	Ionic Balance	%	0.01					5.62	4.87	2.88	3.98	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					2.8	6.6	2.7	7.8	18.9	1.8	7.1	34.7	31.6	22.6	4.4	13.5	10.5	26.3
	Nitrate (as N)	mg/L	0.01		50			<0.01	<0.01	0.57	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					<0.01	<0.01	0.03	<0.01	<0.01	1.9	0.02	0.05	0.03	<0.01	0.01	0.01	0.11	<0.01
	Nitrogen (Total)	mg/L	0.05					2.8	5.4	2.7	7.8	18.9	3.7	7.1	34.8	31.6	22.6	44.0	24.4	10.6	26.3
	pH (Lab)	pH_Units	0					8	7.62	7.7	7.88	-	-	-	7.8	7.83	7.65	7.60	7.75	7.37	8.31
	Phosphorus	mg/L	0.05					0.01	0.02	0.03	0.03	0.09	0.18	0.05	0.04	0.63	0.09	0.02	0.17	0.12	0.39
	Potassium (Filtered)	mg/L	0.1					26	39	29	37	55	8	34	63	77	61	19	72	43	61
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	-	<0.02	<0.03	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				82	92	76	91	173	18	110	239	178	121	70	143	113	140
	Sulphate	mg/L	1	250	500	5,000		126	268	181	308	159	276	183	144	194	153	150	-	1,120	658
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				719	1,070	840	1,100	-	-	-	1,280	1,480	933	691	1,540	2,080	1,290
	TOC	mg/L	1					13	23	11	9	42	16	14	78	72	38	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				426	593	456	596	231	537	558	184	350	409	427	731	1,290	592
Metals	Arsenic (Filtered)	µg/L	1		10	100		4	5	3	6	8	2	2	256	182	28	3	3	69	163
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	2	<1	<1	1	2	<1	6	1	1	<0.1	<0.1	2	2
	Copper (Filtered)	µg/L	1	1000	2000	20,000		<1	1	<1	2	<1	3	<1	2	<1	2	<1	2	<1	<1
	Iron (Filtered)	µg/L	50	300		300		2,520	1,460	2,310	2,120	1,280	<50	310	110	80	90	120	60	330	130
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
	Magnesium (Filtered)	µg/L	1					16,000	27,000	18,000	24,000	13,000	8,000	24,000	6,000	14,000	18,000	20,000	32,000	48,000	20,000
	Manganese (Filtered)	µg/L	1	100	500	5000		136	169	148	97	65	2	31	15	31	58	169	35	100	199
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		3	7	2	2	2	<1	<1	9	4	4	1	2	6	11
	Zinc (Filtered)	µg/L	5	3000		3000		10	20	30	30	90	180	50	40	8	6	<5	15	<5	19
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					26	39	29	37	55	8	34	63	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					0.005	0.012	<5	0.012	0.008	0.01	<0.5	0.009	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Organophosphorous Pesticides		µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		µg/L	0.5		10			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Azinophos methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	2		0.7			<0.5	<0.5	<0.5	<1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	Malathion	µg/L	2		2			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	Methyl parathion	µg/L	0.5					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Monocrotophos	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-
	Prothiofos	µg/L	1					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L	1					-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,6-dichlorophenol	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	2-chlorophenol	µg/L	1	0.1	300	3000		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	1					<0.1	<0.1	<0.1	<0.1	<1	-	-	-	-	-	<1	<1	<1	<1
	2-methylphenol	µg/L	2					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	13.5
	2-nitrophenol	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	3-&4-methylphenol	µg/L	1					<2	<2	<2	<2	<2	<2	<2	3.1	<2	<2	<1	<1	<1	<1
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02
	4-chloro-3-methylphenol	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.05					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.005	<0.005	<0.005	<0.005
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	-	-	-	-
	Benzo(a) pyrene	µg/L	0.02		0.01	0.01		<0.05	<0.05	<0.05	<0.05	0.009	<0.005	0.012	<0.005	<0.005	<0.005	<0.02	<0.02	<0.02	<0.02
	Benzo(b)fluoranthene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	-	-	<0.02	<0.02	<0.02	<0.02
	Benzo[b+j]fluoranthene	µg/L	0.1					-	-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	0.17	0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.5					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.005	0.14	0.02	<0.02
	Naphthalene	µg/L	2					0.1	<0.1	<0.1	<0.1	<1	<1	<5	0.09	0.3	<0.02	<0.02	<0.02	<0.02	0.06
	PAHs (Sum of total)	µg/L	0.1					-	-	-	-	<0.5	<0.5	-	0.09	0.3	<0.005	<0.02	<0.02	<0.02	0.06
	Pentachlorophenol	µg/L	1					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	1.4	<1	<1	<0.5	<0.5	<0.5	16.3
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	<2	<2	<2	<2
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01													<0.005	<0.005	<0.005	<0.005
Methane		µg/L	10				1600											341	81	382	61

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

-- No available assessment level
<0.001 Grey text indicates concentration is below the laboratory limit of reporting
0.01 Black text indicates concentration is above the laboratory limit of reporting

Table 4
Groundwater Analytical Results - NODGW04 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

								NODGW04													
Chemical Group	**Chemical Name**	**Units**	**LOR**	**ADWG 2011 Aesthetic [1]**	ADWG 2011 Health [1]	NPUG [2]	*British Geological Survey*	24/02/11	9/08/11	7/02/12	22/08/12	1/03/13	28/08/13	30/04/14	20/08/14	19/02/15	19/08/15	23/02/16	2/08/16	22/02/17	29/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	300	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	100	<50	150	70	120	<50	<50	<50
	C15 - C28	µg/L	100					170	280	<100	<100	<100	130	260	<100	260	180	210	<100	<100	130
	C29-C36	µg/L	50					<50	370	<50	<50	<50	<50	140	<50	70	160	80	<50	<50	<50
	C10 - C36 (sum)	µg/L	50					170 - 220	650 - 675	<50	<50	<50	130 - 180	500	<50	480	410	410	<50	<50	130
	C6-C10	µg/L	20					-	<20	<20	300	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	300	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	110	<100	170	<100	140	<100	<100	<100
	C16-C34	µg/L	100					-	610	<100	<100	<100	140	320	140	270	290	240	<100	<100	130
	C34-C40	µg/L	100					-	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	710	<100	<100	<100	140	430	140	440	290	380	<100	<100	130
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	<100	110	<100	170	<100	140	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	**3**	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	**25**	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	**20**	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					146	151	122	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					146	151	122	146	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	**0.5**		0.5		0.35	0.16	0.24	**0.73**	**0.97**	0.29	**1.70**	**16.78**	**39.40**	**21.80**	**14.20**	**18.70**	**27.00**	**38.50**
	Anions Total	meq/L	0.01					8.28	9.76	8.18	12.1	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					122	125	91	153	162	131	211	199	175	129	126	182	288	157
	Cations Total	meq/L	0.01					9.84	10.4	7.94	12.3	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					46	62	14	39	-	-	-	-	-	-	235	170	99	196
	COD	mg/L	5					93	154	87	107	108	89	430	324	596	452	582	455	242	238
	Electrical conductivity *(lab)	µS/cm	1					985	1,060	725	853	-	-	-	2,040	2,230	1,930	1,770	2,240	2,840	1,960
	Ionic Balance	%	0.01					8.65	3.17	1.5	0.67	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					1.1	2.2	1.2	1.8	1.8	2.7	23.6	17	46.2	37.8	30.2	30.4	28.4	8.3
	Nitrate (as N)	mg/L	0.01		50			0.57	34.88	1.54	129.7	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	2.36	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					0.03	1.78	0.08	6.84	0.5	<0.01	0.38	0.03	0.14	0.04	0.27	0.38	1.89	7.89
	Nitrogen (Total)	mg/L	0.05					1.1	4.0	1.3	8.6	2.3	2.7	24.0	17.0	46.3	37.8	30.5	30.8	30.3	16.2
	pH (Lab)	pH_Units	0					7.7	7.17	7.1	7.37	-	-	-	7.32	7.67	7.6	7.26	7.43	7.49	7.68
	Phosphorus	mg/L	0.05					0.04	0.48	0.1	0.06	0.03	0.21	4.56	0.08	0.94	0.67	0.93	0.90	0.82	0.19
	Potassium (Filtered)	mg/L	0.1					20	20	18	20	20	20	20	44	82	81	53	115	89	46
	Residual Chlorine	mg/L	0.01	**0.6**				-	-	-	-	-	-	-	-	<0.02	<0.1	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	**180**				50	46	41	40	32	59	73	**220**	**222**	173	169	175	129	159
	Sulphate	mg/L	1	**250**	500	5,000		196	240	**257**	**389**	96	**313**	**302**	174	147	5	116	-	156	474
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	-	<2	<4	2	<2	<2	<2
	TDS	mg/L	5	**600**				593	**701**	**691**	**627**	-	-	-	**1,510**	**1,440**	**1,280**	**1,190**	**1,660**	**1,750**	**1,370**
	TOC	mg/L	1					24	52	29	34	36	40	65	84	133	98	-	-	-	-
	Hardness as CaCO3	mg/L	1	**200**				**359**	**394**	**285**	**501**	**516**	**405**	**626**	**633**	**565**	**417**	**413**	**562**	**818**	**491**
Metals	Arsenic (Filtered)	µg/L	1		10	100		3	4	1	<1	<1	3	3	5	6	4	5	9	26	6
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	0.0002	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	1	<1	<1	<1	<1	1	1	1	<1	2	1	1	0.002
	Copper (Filtered)	µg/L	1	**1000**	2000	20,000		2	2	1	6	5	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	**300**		300		190	290	180	220	90	430	90	150	100	120	180	60	270	170
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1	2	<1	<1
	Magnesium (Filtered)	µg/L	1					13,000	20,000	14,000	29,000	27,000	19,000	24,000	33,000	31,000	23,000	24,000	26,000	24,000	24,000
	Manganese (Filtered)	µg/L	1	**100**	500	5000		26	5	3	2	3	2	88	14	6	3	3	11	83	24
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		6	6	12	2	3	2	3	10	8	7	6	10	9	6
	Zinc (Filtered)	µg/L	5	**3000**		3000		13	10	6	26	20	7	10	<5	7	<5	<5	<5	12	16
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	**2**	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	**0.3**	200			**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	**0.1**	300	3000		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.07	<0.02	0.03	<0.02	<0.02	<0.02
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	0.169	0.007	0.062	<0.005	0.028	<0.005	<0.005	<0.005
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	-	0.08	<0.02	0.03	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.06	<0.02	0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.07	<0.02	0.05	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	<5	0.32	0.12	<0.02	0.31	0.14	<0.02	0.10
	PAHs (Sum of total)	µg/L	0.5					-	-	-	-	<0.5	<0.5	-	0.407	0.732	<0.005	0.598	0.205	<0.005	0.120
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	0.06	0.05	<0.02	0.08	<0.02	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	1.4	<1	<1	<1	1.8	2.4	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<1	-	<0.02	0.11	<0.02	0.05	<0.02	<0.02	<0.02
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01													0.034	<0.005	<0.005	<0.005
Methane		µg/L	10				*1600*											1450	1100	738	291

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

Table 5
Groundwater Analytical Results - NODGW05 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

ENPOINT Environmental Asset Management

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	NODGW05 25/02/11	7/02/12	22/08/12	1/03/13	28/08/13	29/04/14	20/08/14	19/02/15	19/08/15	24/02/16	2/08/16	23/02/17	30/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	270	<100
	C29-C36	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	50	<50	<50	190	<50
	C10 - C36 (sum)	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	50	<50	<50	460	<50
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	430	<100
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	430	<100
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					113	18	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					113	18	11	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		0.47	0.24	0.36	0.24	0.85	0.15	0.36	0.08	0.18	0.02	0.51	0.08	0.17
	Anions Total	meq/L	0.01					4.13	1.57	1.64	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					56	12	10	4	6	13	7	23	5	6	5	11	5
	Cations Total	meq/L	0.01					4.5	2.03	1.74	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					35	28	32	-	-	-	-	-	-	24	10	30	16
	COD	mg/L	5					7	<5	<5	230	7	22	<10	60	<10	30	21	15	13
	Electrical conductivity *(lab)	µS/cm	1					496	213	163	-	-	-	128	340	115	144	118	218	112
	Ionic Balance	%	0.01					4.36	-	2.87	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					1.4	0.6	1.2	0.9	1.8	1.8	0.7	2.9	0.2	1.9	2.7	2.1	7.6
	Nitrate (as N)	mg/L	0.01		50			119.5	91.28	47.23	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			0.75	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					6.17	4.66	2.41	2.18	0.5	2.56	1.03	4.33	1.22	3	1.1	1.42	0.91
	Nitrogen (Total)	mg/L	0.05					7.6	5.3	3.6	3.1	2.3	4.4	1.7	7.2	1.4	4.9	3.8	3.5	8.5
	pH (Lab)	pH_Units	0					8.1	6.62	6.69	-	-	-	6.49	6.83	6.41	6.26	6.40	6.49	6.14
	Phosphorus	mg/L	0.05					<0.05	0.01	<0.05	0.07	0.42	0.34	0.18	0.62	<0.01	0.51	0.80	0.82	2.02
	Potassium (Filtered)	mg/L	0.1					2	3	2	2	2	2	2	2	2	2	2	1	2
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	0.02	<0.01	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				14	16	16	11	11	22	14	30	13	20	11	18	10
	Sulphate	mg/L	1	250	500	5,000		42	20	25	20	11	21	13	34	15	11	-	22	13
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				294	140	105	-	-	-	98	208	78	90	81	160	65
	TOC	mg/L	1					<1	<1	<1	12	4	7	<1	6	<1	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				191	63	50	26	27	57	34	94	29	31	21	44	25
Metals	Arsenic (Filtered)	µg/L	1		10	100		2	<1	<1	<1	1	<1	1	<1	<1	<1	<1	<1	<1
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Copper (Filtered)	µg/L	1	1000	2000	20,000		<1	3	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	300		300		340	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	Lead (Filtered)	µg/L	1		10	100		<0.001	3	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					12,000	8,000	6,000	4,000	3,000	6,000	4,000	9,000	4,000	4,000	2,000	4,000	3,000
	Manganese (Filtered)	µg/L	1	100	500	5000		19	2	<1	<1	<1	2	1	<1	<1	<1	1	-	2
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		<1	2	1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1
	Zinc (Filtered)	µg/L	5	3000		3000		13	38	31	20	8	<5	5	<5	7	8	12	<5	<5
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	0.1	300	3000		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	<5	0.06	0.03	<0.02	<0.02	0.06	0.02	0.02
	PAHs (Sum of total)	µg/L	0.5					-	-	-	<0.5	<0.5	-	0.06	0.036	<0.005	<0.005	0.08	0.02	0.02
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01												<0.005	<0.005	<0.005	<0.005
Methane		µg/L	10				1600										<10	<10	<10	44

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

Table 6
Groundwater Analytical Results - NODGW06 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	NODGW06 24/02/11	6/02/12	21/08/12	1/03/13	28/08/13	29/04/14	20/08/14	19/02/15	19/08/15	24/02/16	2/08/16	22/02/17	30/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					260	<100	210	620	200	160	<100	<100	<100	<100	<100	<100	<100
	C29-C36	µg/L	50					90	<50	60	130	<50	60	<50	<50	<50	<50	50	60	<50
	C10 - C36 (sum)	µg/L	50					350 - 375	<50	270 - 295	750 - 775	200 - 250	220 - 245	<50	<50	<50	<50	50	60	<50
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	<100	240	700	220	200	<100	<100	110	<100	120	130	<100
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	<100	240	700	220	200	<100	<100	110	<100	120	130	<100
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					537	623	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					537	623	663	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		7.02	6.31	7.81	14.59	0.86	8.29	6.82	4.71	3.13	5.80	4.92	7.33	4.65
	Anions Total	meq/L	0.01					18	19	25.3	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					285	222	301	430	214	493	380	334	296	375	421	264	241
	Cations Total	meq/L	0.01					22.4	18.5	24.4	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					99	92	115	-	-	-	-	-	-	144	133	114	85
	COD	mg/L	5					88	47	69	200	31	78	61	61	44	61	13	51	61
	Electrical conductivity *(lab)	µS/cm	1					1,930	1,740	1,580	-	-	-	2,170	1,940	1,700	2,200	2,300	1,750	1,480
	Ionic Balance	%	0.01					10.8	1.24	1.82	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					6.3	7.2	10.7	15.2	2	8.5	6.6	6.5	4.9	8.7	8.2	9.2	4.8
	Nitrate (as N)	mg/L	0.01		50			<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.02	0.05	<0.01	0.02	-	0.04	<0.01
	Nitrogen (Total)	mg/L	0.05					6.3	7.2	10.7	15.2	2.0	8.5	6.6	6.6	4.9	8.7	8.2	9.2	4.8
	pH (Lab)	pH_Units	0					7.89	7.54	7.63	-	-	-	7.44	7.44	7.4	7.42	7.45	7.47	7.48
	Phosphorus	mg/L	0.05					0.11	0.07	0.03	<0.01	0.12	0.05	0.08	0.11	0.18	0.65	0.75	0.28	0.21
	Potassium (Filtered)	mg/L	0.1					32	33	38	51	16	40	26	23	23	30	28	24	23
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	0.03	<0.01	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				90	79	94	185	36	85	84	74	77	88	91	69	67
	Sulphate	mg/L	1	250	500	5,000		217	188	422	816	318	693	507	351	238	480	-	155	224
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				1,100	1,130	908	-	-	-	1,810	1,460	1,200	1,690	1,740	1,190	1,000
	TOC	mg/L	1					19	19	<1	74	18	17	17	37	21	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				885	711	966	1430	621	1450	1130	982	883	1120	1230	791	729
Metals	Arsenic (Filtered)	µg/L	1		10	100		1	6	8	7	2	6	13	12	14	14	8	11	9
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					2	1	<1	5	<1	1	<1	<1	<1	<1	<1	<1	<1
	Copper (Filtered)	µg/L	1	1000	2000	20,000		2	<1	2	2	<1	<1	2	1	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	300		300		4210	5070	7970	7020	1180	120	480	<50	280	1,990	1,190	730	3,410
	Lead (Filtered)	µg/L	1		10	100		<1	3	<1	<1	2	<1	<1	<1	<1	<0.001	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					42,000	28,000	52,000	86,000	21,000	54,000	44,000	36,000	35,000	46,000	43,000	32,000	31,000
	Manganese (Filtered)	µg/L	1	100	500	5000		8	99	106	191	118	593	453	293	306	386	399	230	177
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		1	9	4	4	7	1	1	1	<1	<1	2	<1	1
	Zinc (Filtered)	µg/L	5	3000		3000		131	<5	16	8	5	7	9	6	6	5	40	<5	8
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	0.1	300	3000		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	<5	0.09	0.03	<0.02	<0.02	0.06	<0.02	0.03
	PAHs (Sum of total)	µg/L	0.5					-	-	-	<0.5	<0.5	-	0.09	0.03	<0.005	<0.005	0.09	<0.005	0.03
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01												<0.005	<0.005	<0.005	<0..005
Methane		µg/L	10				1600										428	227	654	851

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.

2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

Table 7
Groundwater Analytical Results - DDW13 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

ENPOINT

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	British Geological Survey	DDW13												
								25/02/11	9/08/11	7/02/12	22/08/12	1/03/13	30/04/14	20/08/14	19/02/15	19/08/15	23/02/16	3/08/16	22/02/17	30/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					200	<100	<100	180	110	320	<100	210	170	110	250	<100	100
	C29-C36	µg/L	50					100	<50	<50	60	<50	90	<50	<50	<50	<50	60	<50	<50
	C10 - C36 (sum)	µg/L	50					300 - 325	<50	<50	240 - 265	110 - 160	410 - 435	<50	210	170	110	310	<50	100
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	<100	<100	190	140	360	<100	200	180	0.11	0.29	<100	120
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	<100	<100	190	140	360	<100	200	180	110	290	<100	120
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<0.05	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	**3**	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	**25**	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	**20**	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					52	110	160	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					51	110	160	167	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	**0.5**		0.5		**1.80**	**3.37**	**2.63**	**7.05**	**2.00**	**9.11**	**6.15**	**13.90**	**6.45**	**3.36**	**3.23**	**3.54**	**4.30**
	Anions Total	meq/L	0.01					8.68	9.21	12.8	10.7	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					83	108	130	109	123	156	176	148	135	97	80	83	99
	Cations Total	meq/L	0.01					9.74	9.91	12.8	10.6	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					95	76	118	92	-	-	-	-	-	113	90	78	42
	COD	mg/L	5					36	34	38	44	94	240	63	128	62	128	92	67	65
	Electrical conductivity *(lab)	µS/cm	1					917	1090	1270	852	-	-	1500	1570	1360	1,280	1,080	987	1020
	Ionic Balance	%	0.01					5.74	3.68	0.19	0.3	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					1.6	2.3	2.5	5.2	2.5	12.5	6.8	18.8	8.7	5.8	5.5	4.5	6.8
	Nitrate (as N)	mg/L	0.01		50			0.17	1.15	54.67	7.26	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	0.03	<0.01	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					0.01	0.06	2.8	0.37	<0.01	1.18	11.2	0.18	1.56	0.02	0.97	<0.01	7.72
	Nitrogen (Total)	mg/L	0.05					1.6	2.4	5.3	5.6	2.5	13.7	18.0	19.0	10.3	5.8	6.5	4.5	14.5
	pH (Lab)	pH_Units	0					7.32	7.02	7.08	7.4	-	-	7.01	7.22	7.28	7.02	6.85	6.95	7.23
	Phosphorus	mg/L	0.05					0.01	<0.01	0.04	0.02	0.09	0.6	<0.1	0.29	0.02	0.17	0.14	0.06	0.28
	Potassium (Filtered)	mg/L	0.1					9	12	21	18	47	22	25	38	40	18	30	15	28
	Residual Chlorine	mg/L	0.01	**0.6**				-	-	-	-	-	-	-	<0.02	**<0.75**	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	**180**				68	61	92	70	**195**	109	114	146	110	111	99	102	68
	Sulphate	mg/L	1	**250**	500	5,000		239	234	**301**	227	**423**	250	**284**	**283**	237	246	-	168	227
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	**600**				**628**	**659**	**964**	596	-	-	**1100**	**1070**	**1070**	**948**	**791**	**652**	**796**
	TOC	mg/L	1					7	13	12	12	25	17	23	49	21	-	-	-	-
	Hardness as CaCO3	mg/L	1	**200**				**327**	**348**	**415**	**354**	**550**	**484**	**555**	**468**	**452**	**308**	**266**	**269**	**350**
Metals	Arsenic (Filtered)	µg/L	1		10	100		3	2	<1	2	2	1	1	1	2	2	2	2	1
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
	Copper (Filtered)	µg/L	1	**1000**	2000	20,000		3	<1	2	3	1	<1	1	1	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	**300**		300		**770**	**320**	<0.05	**660**	**1150**	<0.05	240	**1,700**	**700**	**2,990**	**640**	**3,680**	280
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					29,000	19,000	22,000	20,000	59,000	23,000	28,000	24,000	28,000	16,000	16,000	15,000	25,000
	Manganese (Filtered)	µg/L	1	**100**	500	5000		19	9	21	28	19	4	**113**	**122**	65	50	46	74	40
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01
	Nickel (Filtered)	µg/L	1		20	200		2	1	4	2	<1	2	<1	2	<1	<1	2	<1	2
	Zinc (Filtered)	µg/L	5	**3000**		3000		41	8	23	26	91	<5	<5	12	8	<5	13	<5	10
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	**2**	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	**0.3**	200			**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	**0.1**	300	3000		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.05	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<5	0.04	0.03	<0.02	0.06	0.03	<0.02	0.08
	PAHs (Sum of total)	µg/L	0.5					-	-	-	-	<0.5	-	0.04	0.14	<0.005	0.06	0.03	<0.005	0.089
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01												<0.005	<0.005	<0.005	0.009
Methane		µg/L	10				*1600*										646	23	255	<10

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.

2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

Table 8
Groundwater Analytical Results - DDW28 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

Chemical Group	Chemical Name	Units	LOR	ADWG 2011 Aesthetic [1]	ADWG 2011 Health [1]	NPUG [2]	Britsh Geological Survey	DDW28 31/03/11	DDW28 9/08/11	DDW28 7/02/12	DDW28 22/08/12	DDW28 1/03/13	DDW28 28/08/13	DDW28 30/04/14	DDW28 20/08/14	DDW28 19/02/15	DDW28 19/08/15	DDW28 13/04/16	DDW28 3/08/16	DDW28 22/02/17	DDW28 29/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	80	60	90	<50	90	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					<100	110	170	400	820	560	410	180	1640	250	140	170	<100	100
	C29-C36	µg/L	50					<50	<50	100	100	160	120	110	<50	420	<50	<50	60	<50	<50
	C10 - C36 (sum)	µg/L	50					<50	110 - 160	270 - 295	500 - 525	1060	740	610	180	2150	250	140	230	<50	100
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	150	110	130	<100	230	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	140	240	420	880	610	425	230	1,910	250	0.11	200	<100	120
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	170	<100	<100	<100	<100	<100
	C10 - C40 (sum)	µg/L	100					-	140	240	420	1030	720	580	230	2310	250	110	200	<100	120
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	-	110	130	<100	230	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	3	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	25	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	20	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					206	384	209	-	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					206	384	209	324	-	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	0.5		0.5		**3.85**	**7.90**	**1.64**	**4.24**	**5.51**	**2.24**	**1.43**	**2.75**	**3.06**	**6.12**	**4.11**	**2.30**	**1.40**	**1.09**
	Anions Total	meq/L	0.01					12.8	13.8	14.4	12.6	-	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					105	125	127	103	177	145	282	152	323	111	129	117	146	477
	Cations Total	meq/L	0.01					12.3	15.2	14.8	12.5	-	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					85	90	99	96	-	-	-	-	-	-	134	128	161	246
	COD	mg/L	5					45	46	45	48	247	148	374	97	580	68	89	91	410	208
	Electrical conductivity *(lab)	µS/cm	1					1,130	1,630	1,360	1,010	-	-	-	2,000	4,080	1,330	1,600	1,330	1,670	3,420
	Ionic Balance	%	0.01					2.2	4.98	1.42	0.28	-	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					3.7	6.6	1.8	4.1	7	7.2	13.1	4	18.4	8.9	6.6	4.8	11.7	36.6
	Nitrate (as N)	mg/L	0.01		50			0.18	0.35	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					0.01	0.02	<0.01	<0.01	<0.01	0.02	0.07	0.02	0.03	0.02	0.01	0.07	9.35	164
	Nitrogen (Total)	mg/L	0.05					3.7	5.0	1.8	4.1	7.0	7.1	13.2	4.0	18.4	8.9	6.6	4.9	21.0	201
	pH (Lab)	pH_Units	0					7.46	7.58	7.06	7.64	-	-	-	7.21	7.3	7.33	7.29	7.05	7.12	7.19
	Phosphorus	mg/L	0.05					0.06	0.02	0.05	0.04	0.09	0.51	1.46	0.07	1.1	0.02	0.07	0.39	0.76	0.58
	Potassium (Filtered)	mg/L	0.1					20	38	32	35	61	62	86	58	136	40	40	38	42	38
	Residual Chlorine	mg/L	0.01	0.6				-	-	-	-	-	-	-	-	0.06	0.02	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	180				100	124	105	100	**233**	170	**266**	**237**	**499**	113	148	120	141	**186**
	Sulphate	mg/L	1	250	500	5,000		**302**	172	**355**	164	**509**	234	**580**	159	**528**	165	211	-	224	**654**
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	600				**798**	**914**	**996**	**746**	-	-	-	**1,410**	**3,050**	**972**	**1,060**	**996**	**1,440**	**2,680**
	TOC	mg/L	1					16	16	12	9	44	32	89	25	132	25	-	-	-	-
	Hardness as CaCO3	mg/L	1	200				**369**	**444**	**469**	**364**	**722**	**518**	**1050**	**569**	**1280**	**401**	**474**	**403**	**509**	**1,530**
Metals	Arsenic (Filtered)	µg/L	1		10	100		1	2	4	4	6	7	8	4	3	2	3	2	2	2
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<1	2	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
	Copper (Filtered)	µg/L	1	1000	2000	20,000		7	<1	1	<1	2	<1	2	<1	2	<1	<1	<1	<1	<1
	Iron (Filtered)	µg/L	50	300		300		**1330**	**2060**	**3150**	**2090**	**1190**	280	**720**	**660**	270	190	230	180	<50	<50
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Magnesium (Filtered)	µg/L	1					26000	32000	37000	26000	68000	38000	85000	46000	116000	30000	37	27	35	82
	Manganese (Filtered)	µg/L	1	100	500	5000		**118**	45	**142**	23	**103**	88	**169**	86	85	58	40	79	32	85
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		16	28	16	2	4	2	5	3	8	2	2	2	1	2
	Zinc (Filtered)	µg/L	5	3000		3000		36	13	254	10	13	19	2220	<5	6	14	466	<5	14	54
Organochlorine Pesticides	4,4-DDE	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	2	20	200		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	0.3	200			**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	0.1	300	3000		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	-	-	-	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.023
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	-	-	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					-	-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
	Dibenz(a,h)anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	<5	<5	<0.02	0.03	<0.02	<0.02	0.02	0.03	0.37
	PAHs (Sum of total)	µg/L	0.5					-	-	-	-	<0.5	-	-	<0.005	0.03	<0.005	<0.005	0.02	0.03	0.663
	Pentachlorophenol	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Phenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
Pesticides	Demeton-S-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mirex	µg/L	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Parathion	µg/L	0.2		20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B(a)P Total Potency Equivalent		µg/L	0.005		0.01													<0.005	<0.005	<0.005	0.032
Methane		µg/L	10				1600											414	146	131	<10

Notes:

1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.

2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

Table 9
Groundwater Analytical Results - DDW29 (2011 - 2017)
Preliminary Site Invesigation and Data Gaps Review
Newsquare Nominees

ENPOINT

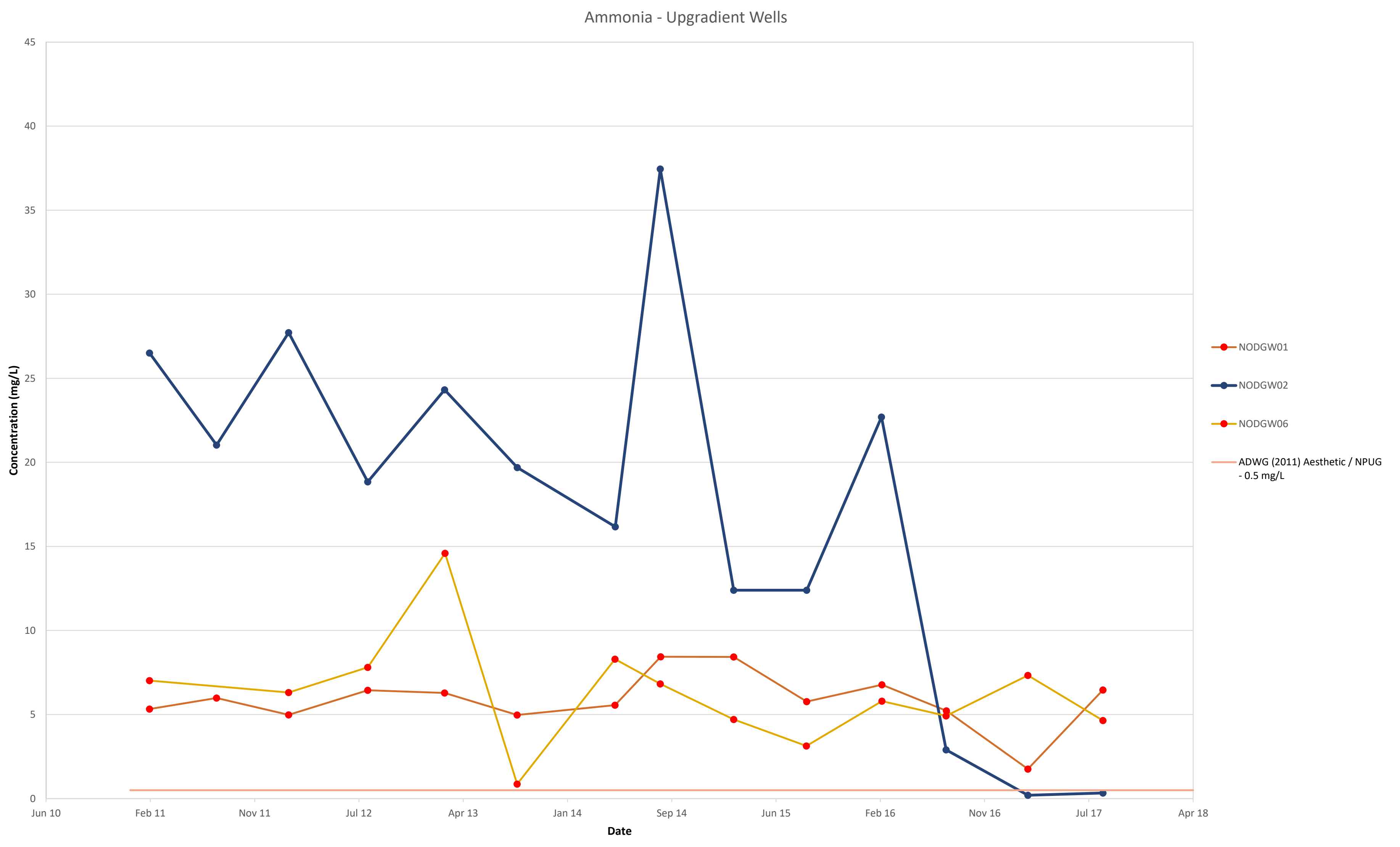
								DDW29												
Chemical Group	**Chemical Name**	**Units**	**LOR**	**ADWG 2011 Aesthetic [1]**	ADWG 2011 Health [1]	NPUG [2]	*British Geological Survey*	25/02/11	9/08/11	7/02/12	22/08/12	28/08/13	29/04/14	21/08/14	19/02/15	19/08/15	24/02/16	3/08/16	22/02/17	30/08/17
TRH	C6 - C9	µg/L	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10 - C14	µg/L	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	µg/L	100					210	<100	<100	140	180	220	<100	<100	100	<100	<100	140	<100
	C29-C36	µg/L	50					80	<50	<50	70	<50	<50	<50	<50	<50	<50	<50	370	<50
	C10 - C36 (sum)	µg/L	50					290 - 315	<50	<50	210 - 235	180 - 230	220 - 270	<50	<50	100	<50	<50	510	<50
	C6-C10	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C6-C10 less BTEX (F1)	µg/L	20					-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	C10-C16	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C16-C34	µg/L	100					-	120	<100	180	160	220	<100	<100	120	<100	120	380	<100
	C34-C40	µg/L	100					-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	180	<100
	C10 - C40 (sum)	µg/L	100					-	120	<100	180	160	220	<100	<100	120	<100	120	560	<100
	C10 - C16 minus Naphthalene (F2)	µg/L	100					-	-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH - SG	C10-C14 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C15-C28 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C29-C36 (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C36 (sum) (SG)	µg/L	50					-	-	-	-	-	-	<50	<50	<50	<50	<50	<50	<50
	C10 - C16 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C16 - C34 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C34 - C40 (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C40 (sum) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
	C10 - C16 Fraction minus Naphthalene (F2) (SG)	µg/L	100					-	-	-	-	-	-	<100	<100	<100	<100	<100	<100	<100
BTEX	Benzene	µg/L	1		1	10		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	2	**3**	300	3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Toluene	µg/L	2	**25**	800	25		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	**20**	600	20		<4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Total BTEX	µg/L	1					-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Halogenated Benzenes	Hexachlorobenzene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Inorganics	Alkalinity (Bicarbonate as CaCO3)	mg/L	1					43	55	63	-	-	-	-	-	-	-	-	-	-
	Alkalinity (Carbonate as CaCO3)	mg/L	1					-	-	<1	<1	-	-	-	-	-	-	-	-	-
	Alkalinity (Hydroxide) as CaCO3	mg/L	1					<1	<1	<1	<1	-	-	-	-	-	-	-	-	-
	Alkalinity (total) as CaCO3	mg/L	1					43	55	63	122	-	-	-	-	-	-	-	-	-
	Ammonia as N	mg/L	0.01	**0.5**		0.5		**1.09**	**1.35**	**1.11**	0.24	0.26	**0.73**	**1.33**	**1.82**	**1.77**	**0.97**	**0.55**	**0.21**	**1.21**
	Anions Total	meq/L	0.01					5.46	6.68	5.51	9.06	-	-	-	-	-	-	-	-	-
	Calcium (Filtered)	mg/L	0.2					48	53	46	77	94	103	92	88	110	54	48	65	67
	Cations Total	meq/L	0.01					5.46	6.47	5.6	8.71	-	-	-	-	-	-	-	-	-
	Chloride	mg/L	1					63	60	54	73	-	-	-	-	-	54	64	72	60
	COD	mg/L	5					90	34	35	25	40	48	44	38	44	50	82	650	82
	Electrical conductivity *(lab)	µS/cm	1					570	747	547	700	-	-	931	903	995	571	593	688	761
	Ionic Balance	%	0.01					0.03	1.6	0.8	1.96	-	-	-	-	-	-	-	-	-
	Kjeldahl Nitrogen Total	mg/L	0.1					1.9	1.3	1.4	1	1.4	1.5	2.1	3.2	3.1	2.6	3.7	14.6	9.8
	Nitrate (as N)	mg/L	0.01		50			0.35	1.55	1.55	47.59	-	-	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.01		3			<0.01	<0.01	<0.01	0.75	-	-	-	-	-	-	-	-	-
	Nitrogen (Total Oxidised)	mg/L	0.01					0.02	0.08	0.08	2.5	0.59	1.35	0.04	0.24	0.02	0.07	0.39	0.5	14.4
	Nitrogen (Total)	mg/L	0.05					1.9	1.4	1.5	3.5	2.0	2.8	2.1	3.4	3.1	2.7	4.1	15.1	24.2
	pH (Lab)	pH_Units	0					7.28	6.76	6.92	7.38	-	-	6.96	7.11	6.81	6.7	6.75	6.54	7.26
	Phosphorus	mg/L	0.05					0.3	0.03	0.08	0.28	0.17	0.06	0.05	0.08	<0.01	0.17	0.54	1.61	0.88
	Potassium (Filtered)	mg/L	0.1					7	9	10	13	14	19	17	16	20	9	9	12	20
	Residual Chlorine	mg/L	0.01	**0.6**				-	-	-	-	-	-	-	<0.02	<0.03	-	-	-	-
	Sodium (Filtered)	mg/L	0.5	**180**				48	60	53	72	94	123	109	66	78	56	56	69	60
	Sulphate	mg/L	1	**250**	500	5,000		135	187	131	219	234	219	190	181	201	119	-	183	141
	Sulphite as SO3 -	mg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TDS	mg/L	5	**600**				590	434	373	535	-	-	**714**	**758**	**712**	374	398	572	456
	TOC	mg/L	1					12	12	10	8	16	13	22	25	19	-	-	-	-
	Hardness as CaCO3	mg/L	1	**200**				159	182	152	**262**	**317**	**331**	**291**	**269**	**340**	164	153	**220**	**217**
Metals	Arsenic (Filtered)	µg/L	1		10	100		<1	1	2	<1	2	<1	1	<1	1	2	2	31	<1
	Cadmium (Filtered)	µg/L	0.1		2	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	1					<0.001	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1
	Copper (Filtered)	µg/L	1	**1000**	2000	20,000		<1	2	2	5	1	1	1	1	<1	1	<1	8	<1
	Iron (Filtered)	µg/L	50	**300**		300		<50	**650**	230	70	80	<0.05	<0.05	<50	300	110	280	**1,800**	180
	Lead (Filtered)	µg/L	1		10	100		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	2	<1
	Magnesium (Filtered)	µg/L	1					10,000	12,000	9,000	17,000	20,000	18,000	15,000	12,000	16,000	7,000	8,000	14,000	12,000
	Manganese (Filtered)	µg/L	1	**100**	500	5000		<1	4	5	18	51	26	10	15	11	21	18	44	11
	Mercury (Filtered)	µg/L	0.1		1	10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Nickel (Filtered)	µg/L	1		20	200		<1	21	24	2	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Zinc (Filtered)	µg/L	5	**3000**		3000		<50	23	26	156	23	18	5	6	6	6	12	16	<5
Organochlorine Pesticides	4,4-DDE	µg/L	0.5												<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	a-BHC	µg/L	0.5					0.3	0.03	0.08	0.28	0.17	0.06	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin	µg/L	0.5					7	9	10	13	14	19	17	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Aldrin + Dieldrin	µg/L	0.5		0.3	3		<0.005	0.023	0.026	0.156	0.023	0.018	0.005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	b-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane	µg/L	0.5			20		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (cis)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlordane (trans)	µg/L	0.5					<1	<1	<1	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5
	d-BHC	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDD	µg/L	0.5					-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DDT	µg/L	2		9	90		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	DDT+DDE+DDD	µg/L	3					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dieldrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan I	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endosulfan II	µg/L	0.5					<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Endosulfan sulphate	µg/L	0.5			200		<3	<3	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin aldehyde	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Endrin ketone	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	g-BHC (Lindane)	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor	µg/L	0.5		0.3	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Heptachlor epoxide	µg/L	0.5			3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methoxychlor	µg/L	2		300			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Organophosphorous Pesticides	Azinophos methyl	µg/L	0.5		30	300		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Bromophos-ethyl	µg/L	0.5		10			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbophenothion	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorfenvinphos	µg/L	0.5			20		<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos	µg/L	0.5		10	100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chlorpyrifos-methyl	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorvos	µg/L	0.5		5	50		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	µg/L	0.5		4	40		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenthion	µg/L	0.5		7	70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Malathion	µg/L	0.5		70	700		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl parathion	µg/L	2		0.7			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	Monocrotophos	µg/L	2		2			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	Prothiofos	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAH / Phenols	2,3,4,6-tetrachlorophenol	µg/L						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-
	2,4,5-trichlorophenol	µg/L	1					<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1
	2,4,6-trichlorophenol	µg/L	1	**2**	20	200		<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1
	2,4-dichlorophenol	µg/L	1	**0.3**	200			**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<1**	**<1**	**<1**	**<1**
	2,6-dichlorophenol	µg/L	1					-	-	-	-	-	-	-	-	-	<1	<1	<1	<1
	2-chlorophenol	µg/L	1	**0.1**	300	3000		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
	7,12-dimethylbenz(a)anthracene	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-methylnaphthalene	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	2-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-nitrophenol	µg/L	1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	<1	<1	<1	<1
	3-&4-methylphenol	µg/L	2					<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2
	3-methylcholanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Acenaphthene	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02
	Acenaphthylene	µg/L	0.1					<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.02	<0.02	<0.02	<0.02
	Anthracene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	<0.02	<0.02	0.02	<0.02
	Benz(a)anthracene	µg/L	0.1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02
	Benzo(a) pyrene	µg/L	0.05		0.01	0.01		<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.005	<0.005	<0.005	<0.005	0.011	<0.005
	Benzo(b)fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	-	-	-	-
	Benzo[b+j]fluoranthene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(g,h,i)perylene	µg/L	0.02					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Benzo(k)fluoranthene	µg/L	0.1					<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.02	<0.02
	Chrysene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	-	-	<0.02	<0.02	<0.02	<0.02
	Dibenz(a,h)anthracene	µg/L	0.1					-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluoranthene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Indeno(1,2,3-c,d)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	0.05	0.03	<5
	PAHs (Sum of total)	µg/L	0.5					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.005	0.05	0.06	0.09
	Pentachlorophenol	µg/L	2					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<2	<2	<2	<2
	Phenanthrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Phenol	µg/L	1					<0.1	<0.1	<0.1	<0.1	<1	<5	0.03	<0.02	<0.02	<1	<1	<1	<1
	Pyrene	µg/L	0.1					-	-	-	-	<0.5	-	0.03	<0.005	<0.005	<0.02	<0.02	<0.02	<0.02
Pesticides	Demeton-S-methyl	µg/L	0.5					<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5
	Fenamiphos	µg/L	0.5		0.5	5		<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	<0.5	<0.5	<0.5	<0.5
	Isodrin	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	Mirex	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<1	-	<0.02	<0.02	<0.02	-	-	-	-
	Parathion	µg/L	0.2		20	200		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
	Pirimphos-ethyl	µg/L	0.5		0.5	900		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PCB's	PCBs (Sum of total)	µg/L	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
SVOCs	2-(acetylamino) fluorene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Benzo(e)pyrene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Coronene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	Perylene	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-
	B(a)P Total Potency Equivalent	µg/L	0.005		0.01												<0.005	<0.005	0.011	<0.005
	Methane	µg/L	10				*1600*										10	<0.01	<0.01	<10

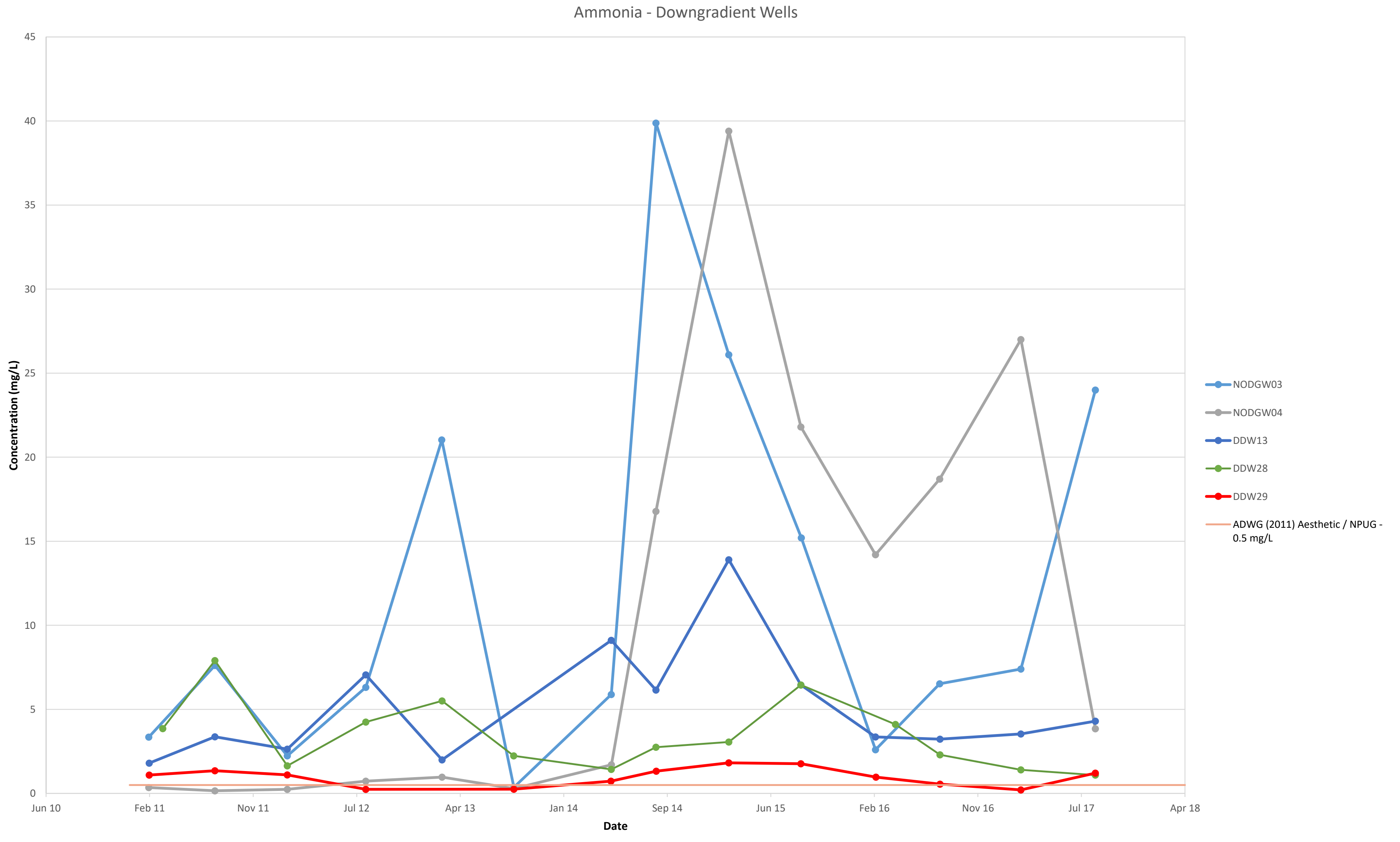
Notes:
1. National Health and Medical Research Council / Agriculture and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ), 2011. Australian Drinking Water Guidelines.
2. Department of Health (DoH), 2014. Contaminated Sites Reporting Assessment levels for Chemicals in Groundwater.

--	No available assessment level
<0.001	Grey text indicates concentration is below the laboratory limit of reporting
0.01	Black text indicates concentration is above the laboratory limit of reporting

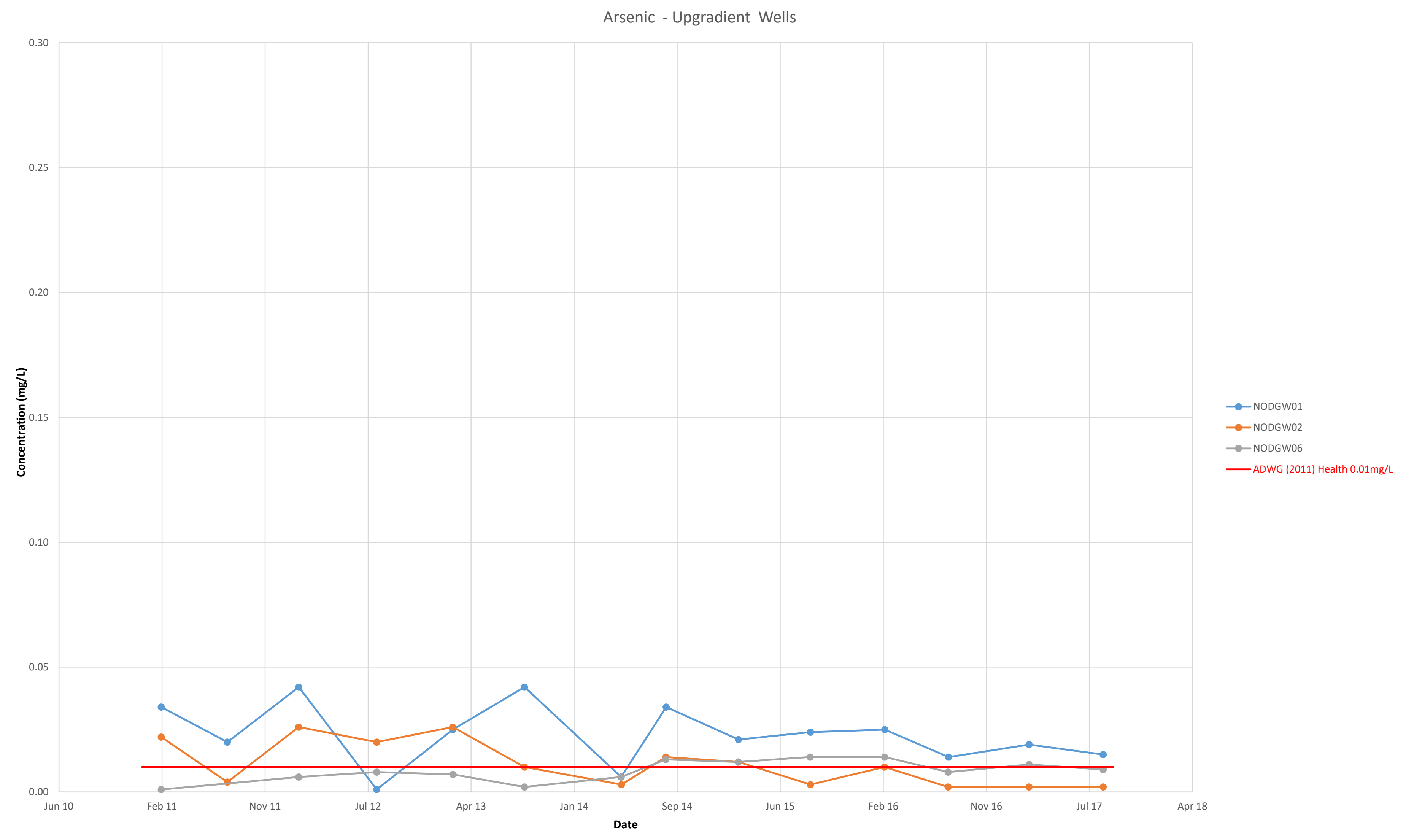
APPENDIX Q

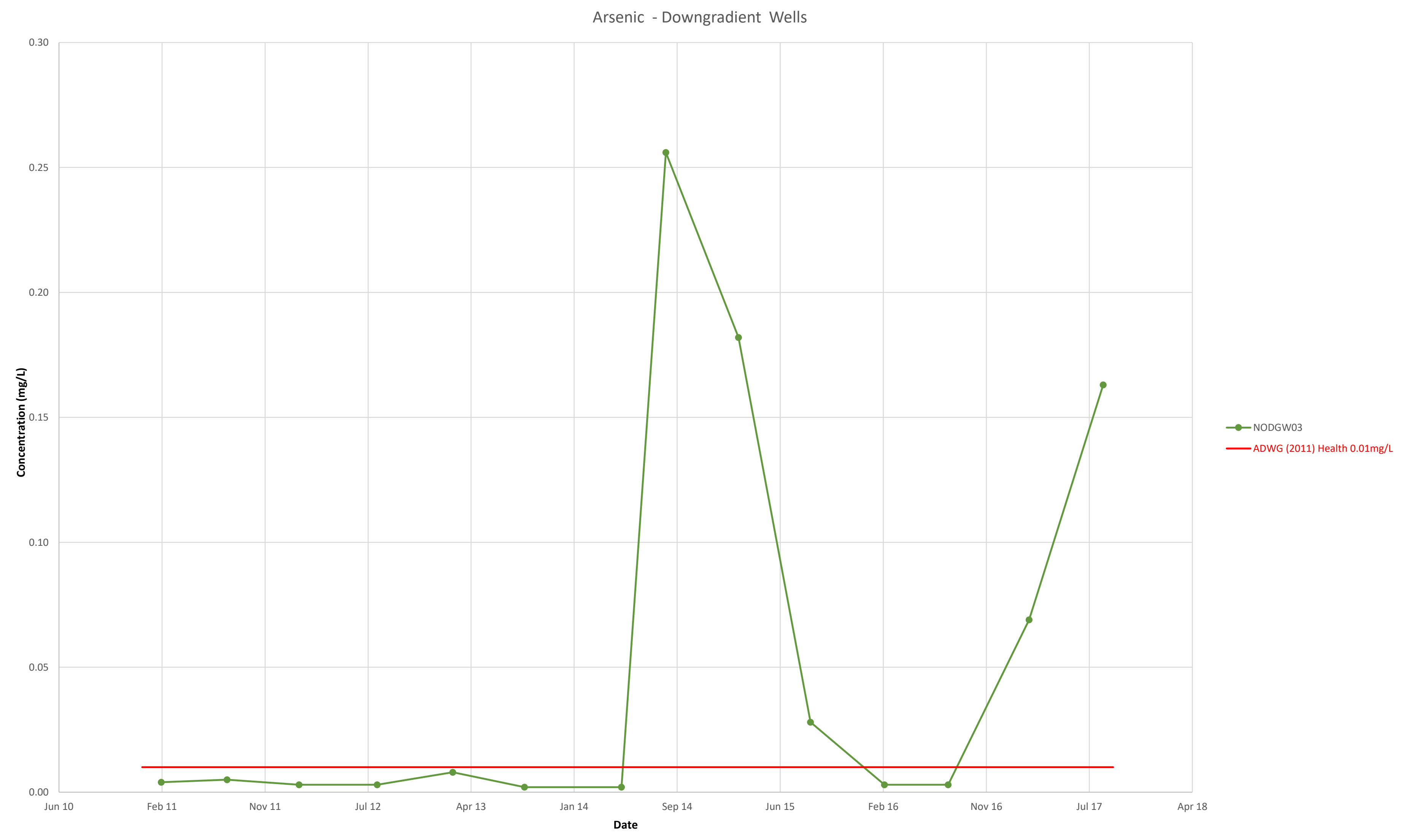
GROUNDWATER TIME SERIES PLOTS



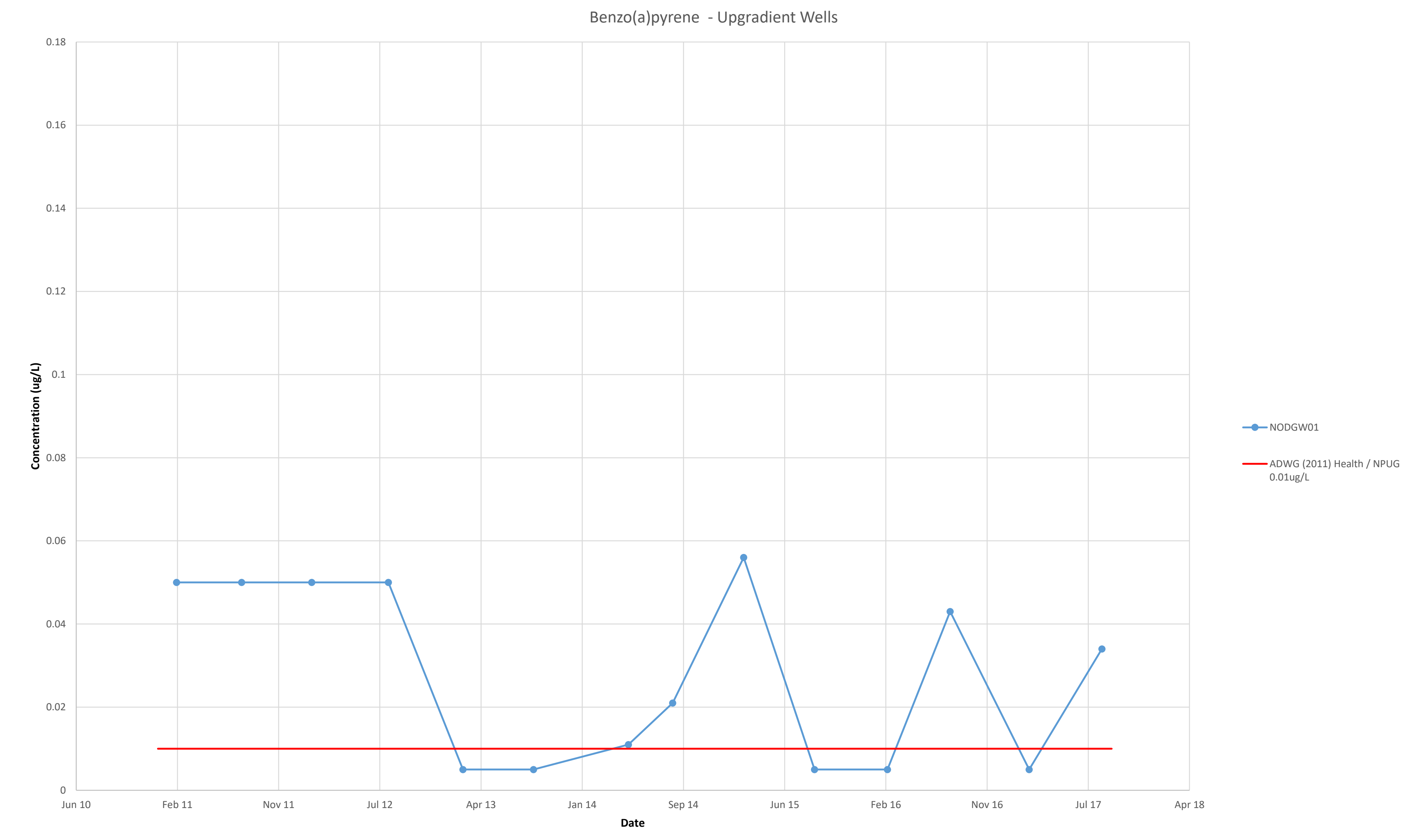


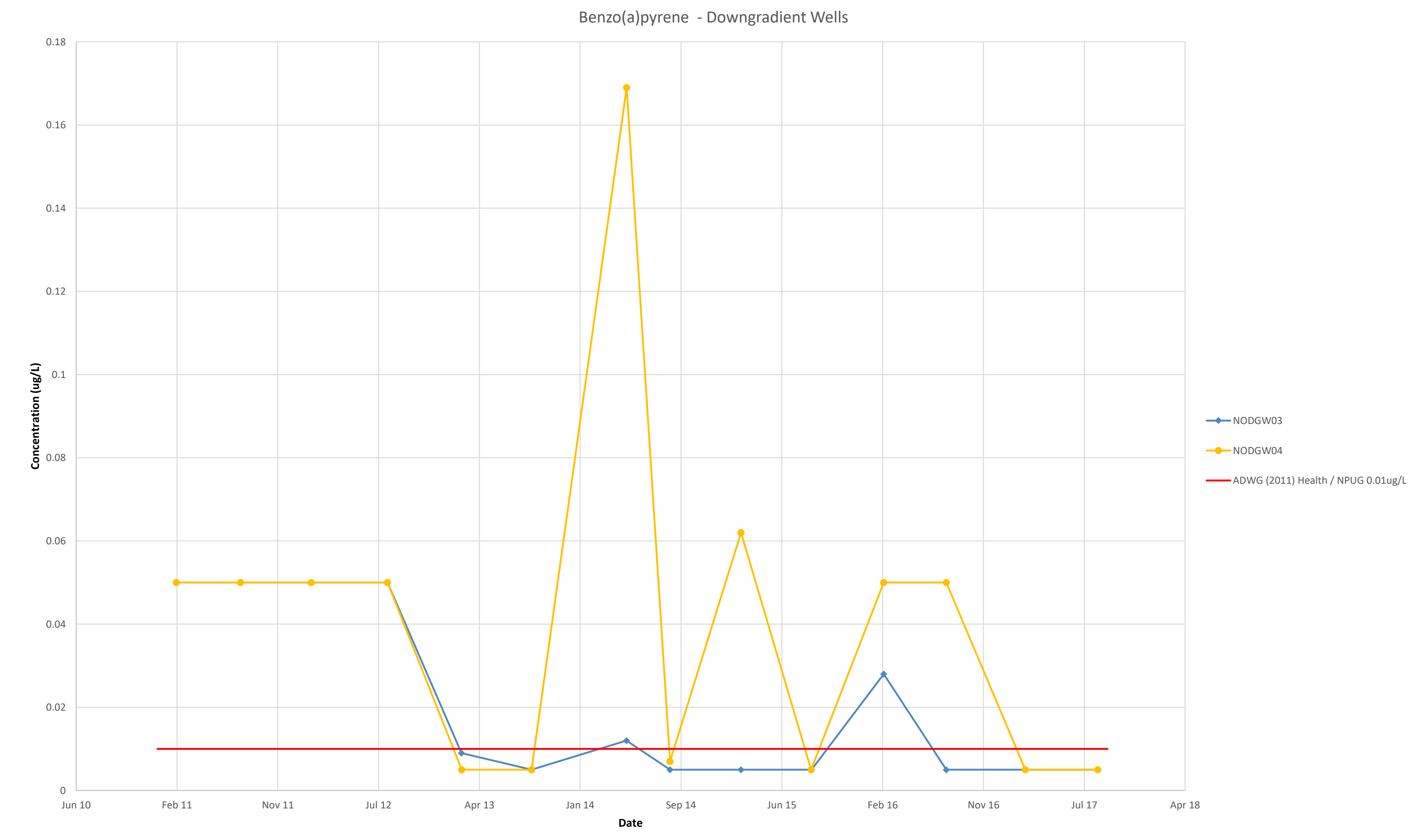
Ammonia	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



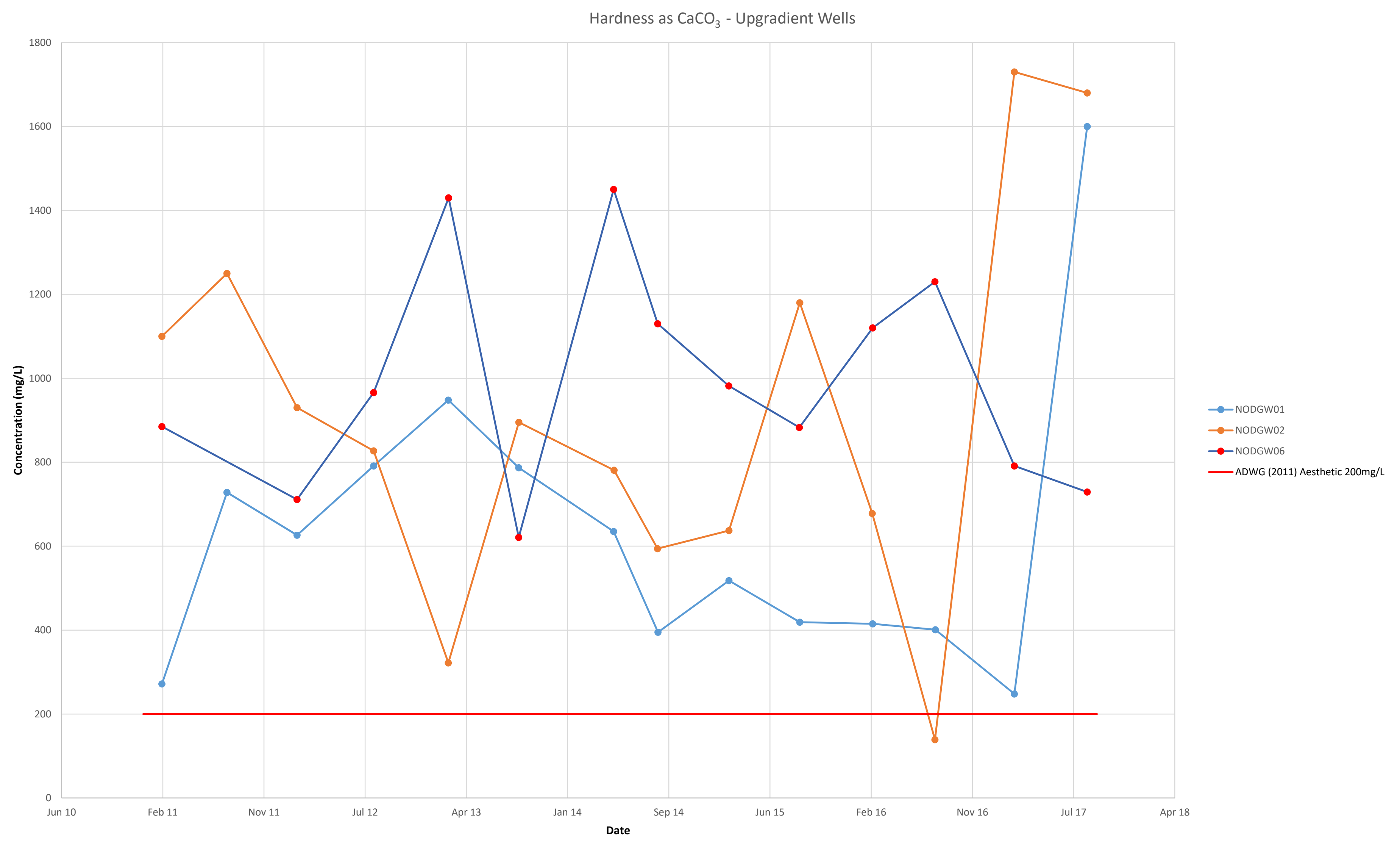


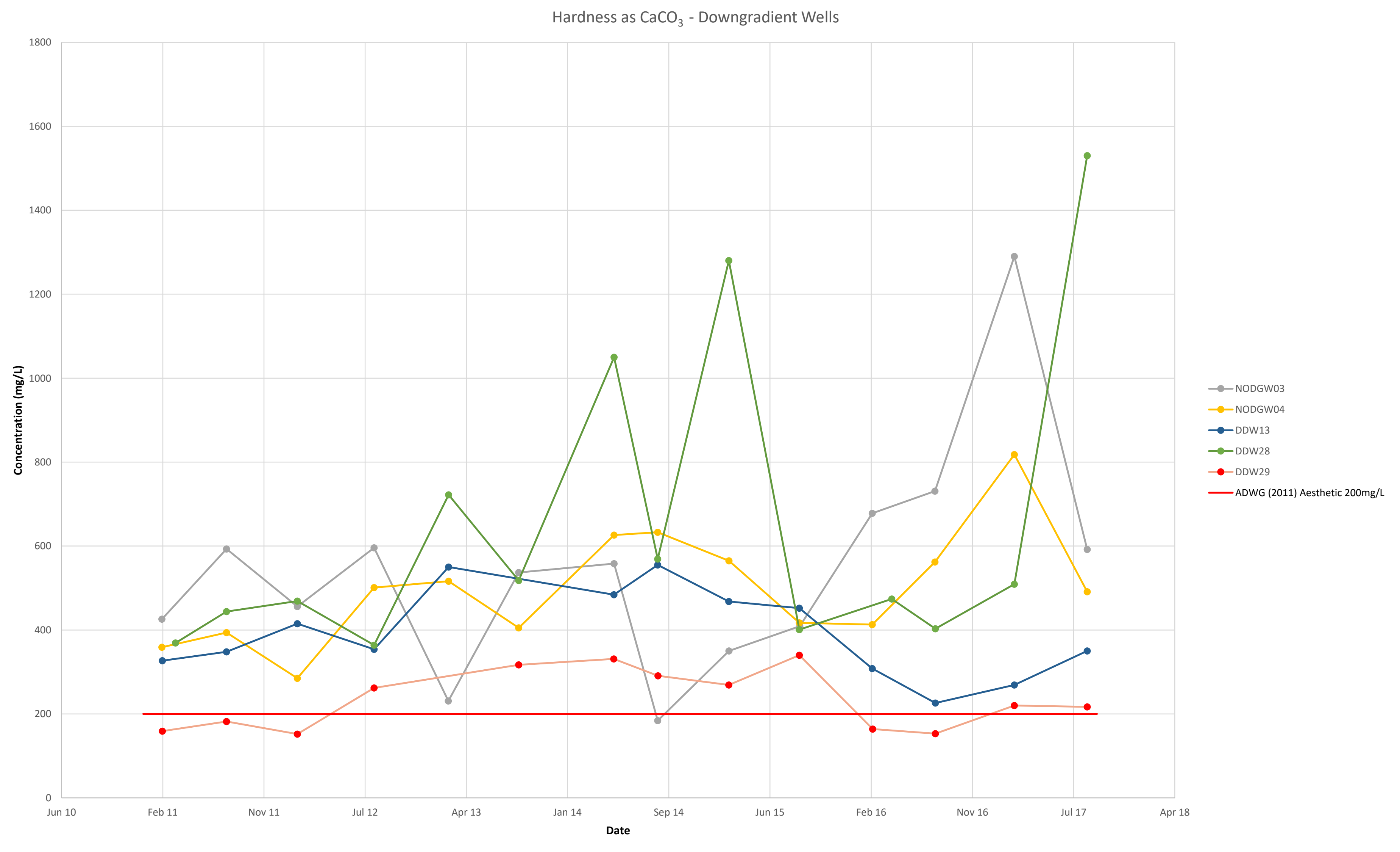
Arsenic	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



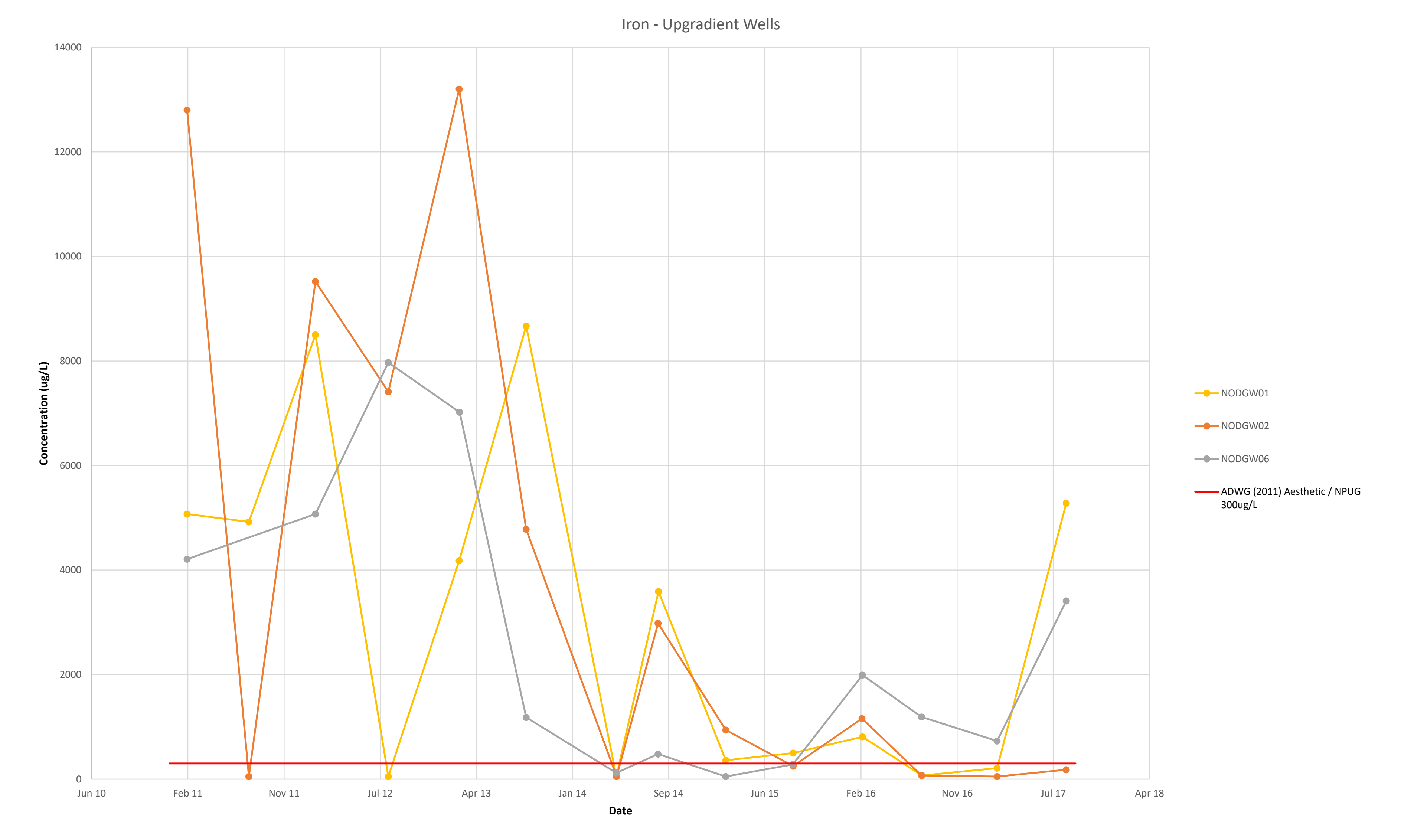


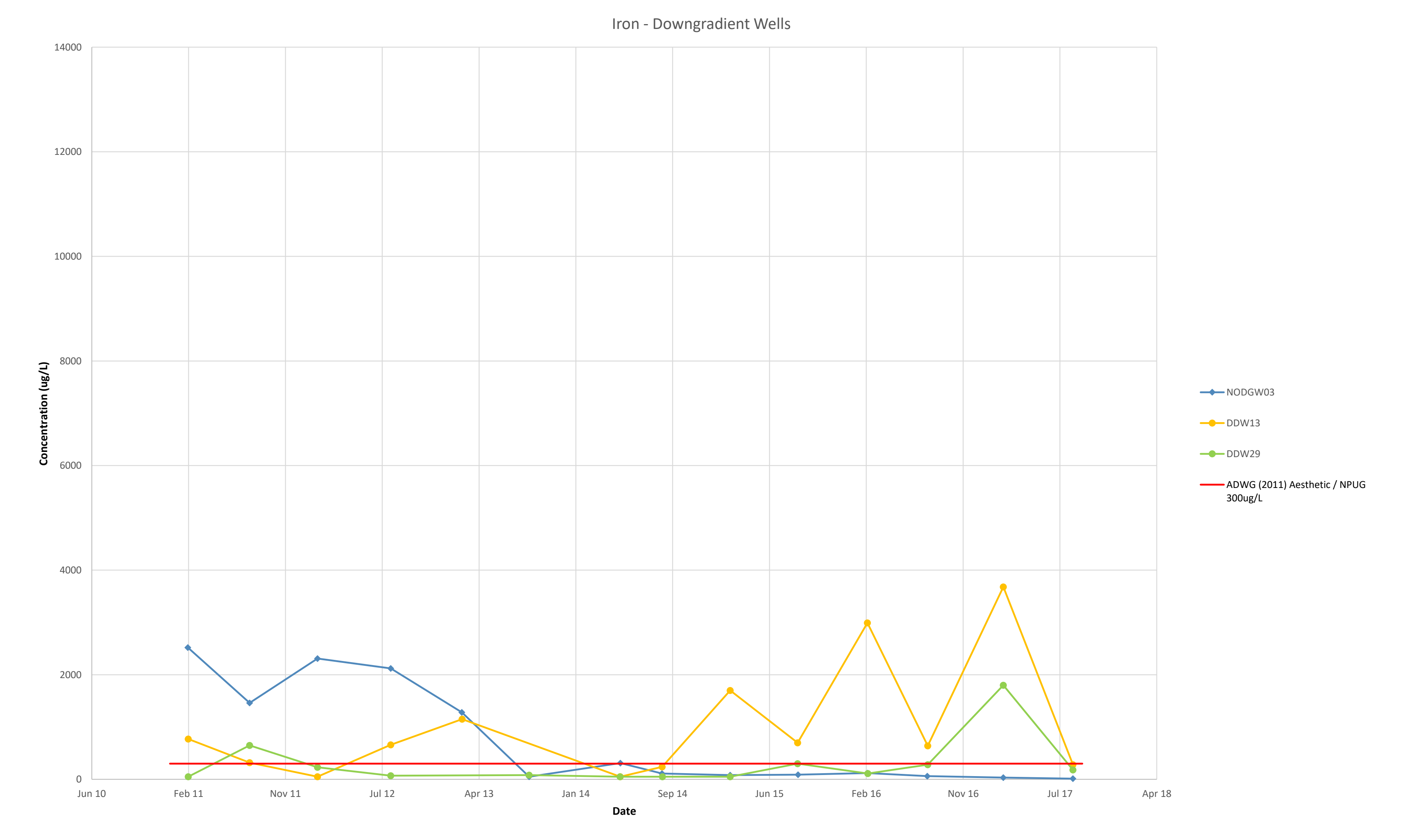
Benzo(a)pyrene	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



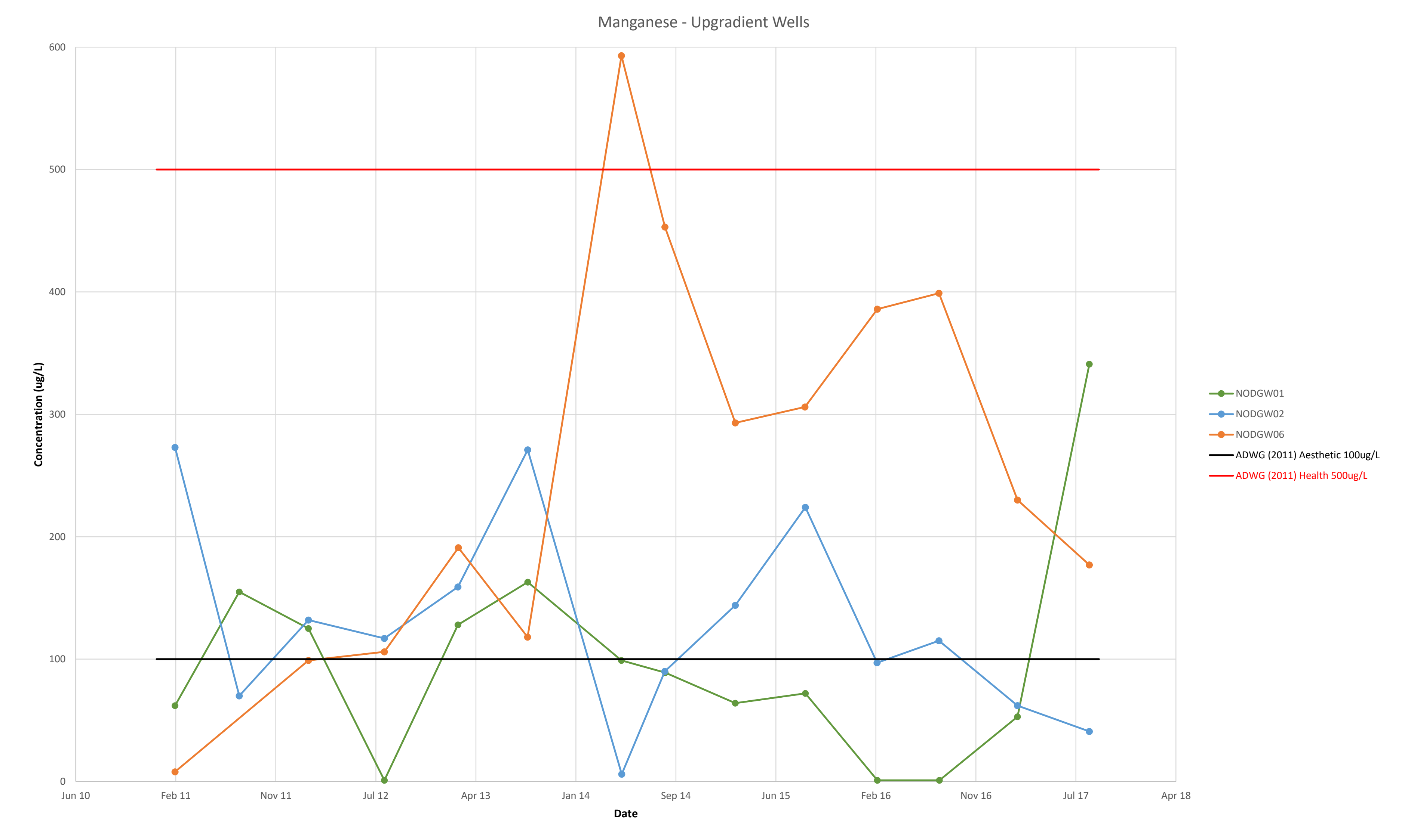


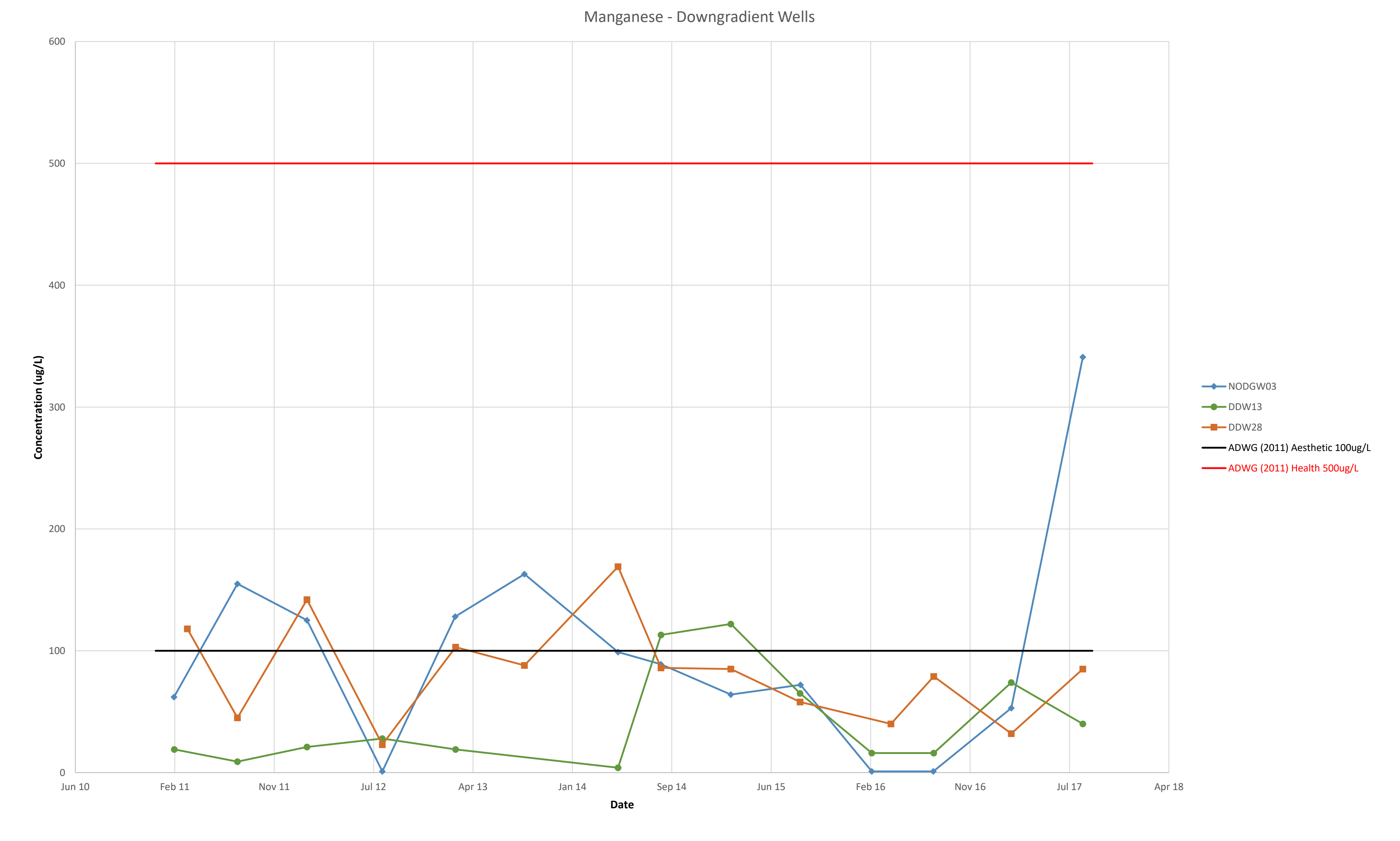
Hardness	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



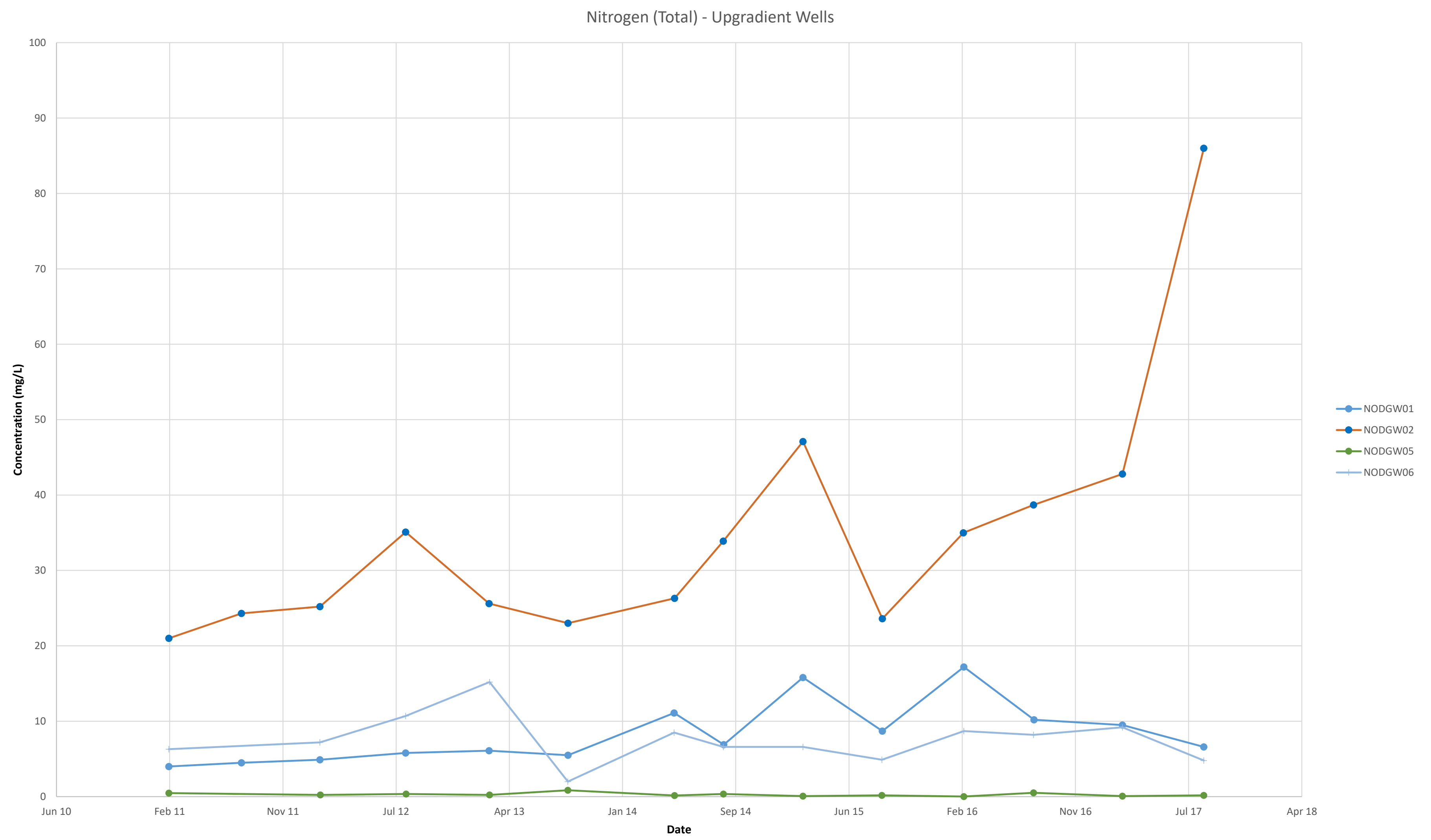


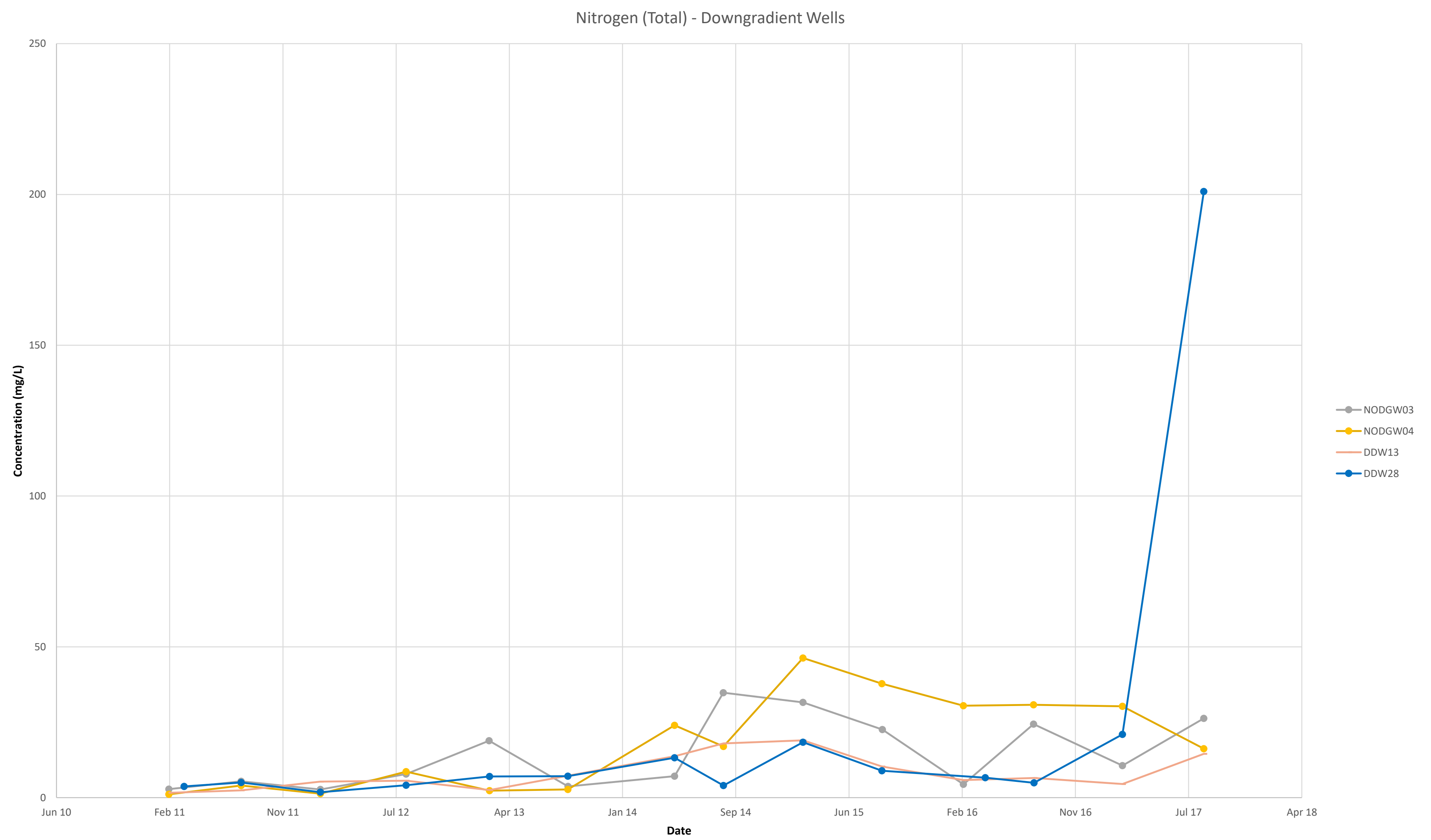
Iron	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



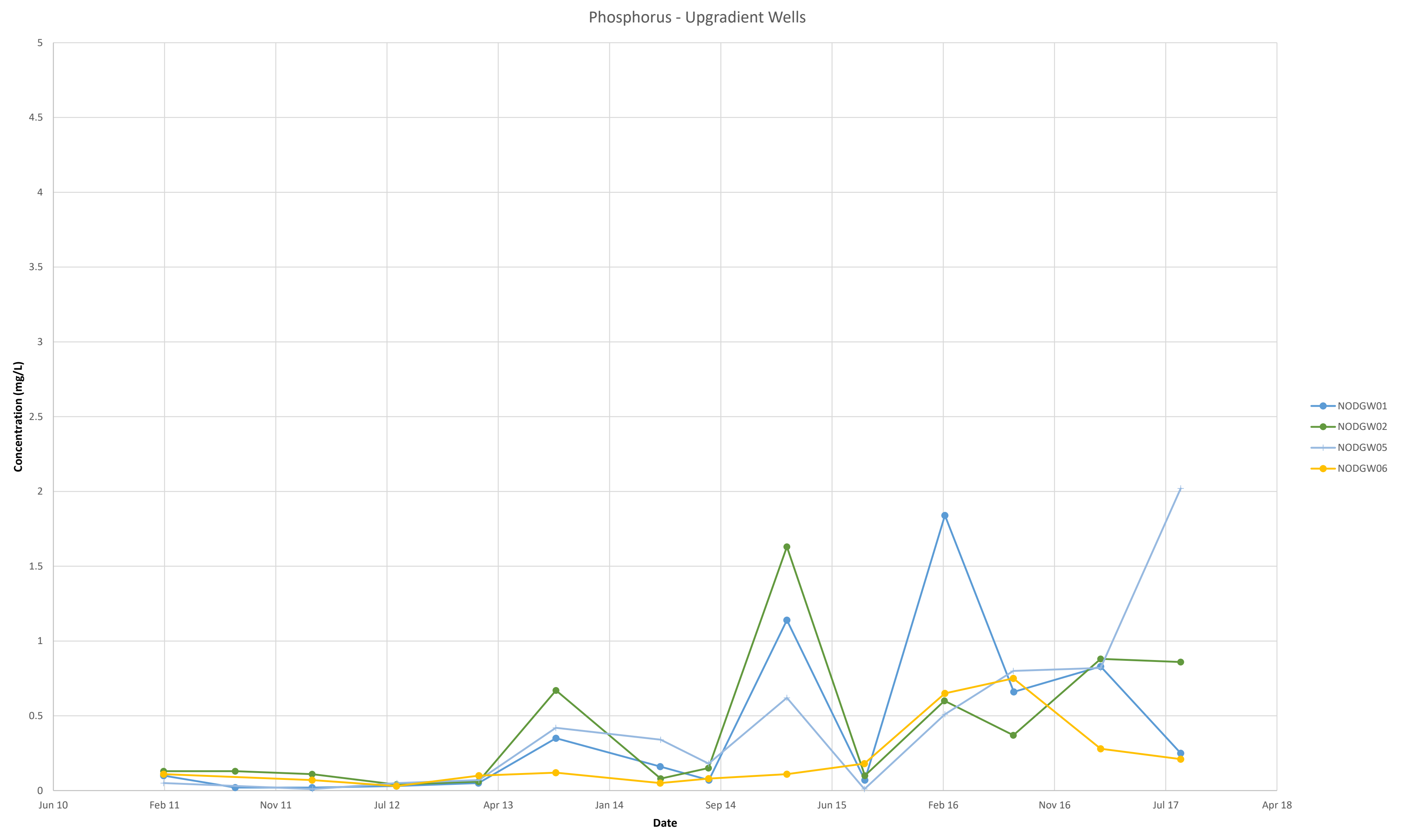


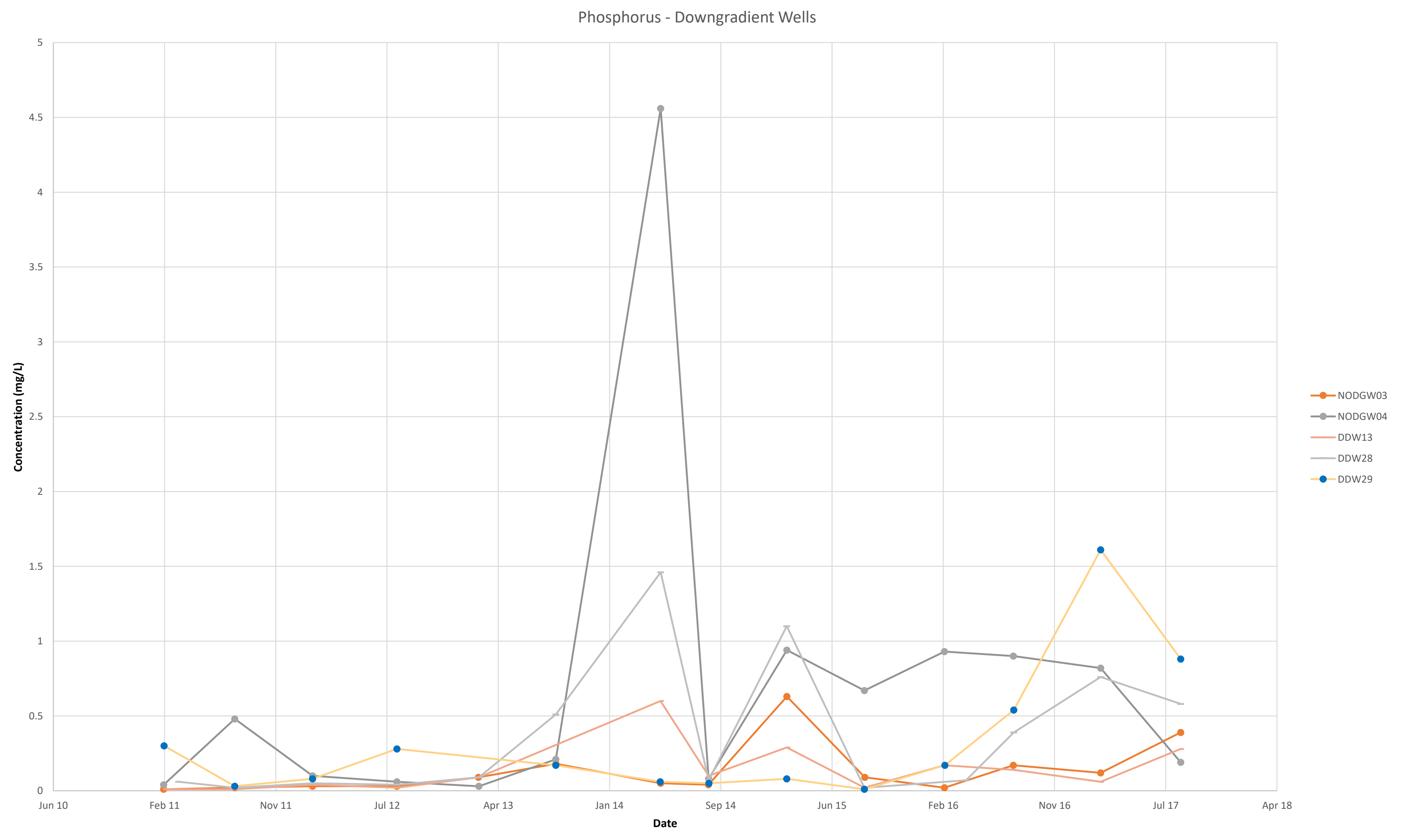
Manganese	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



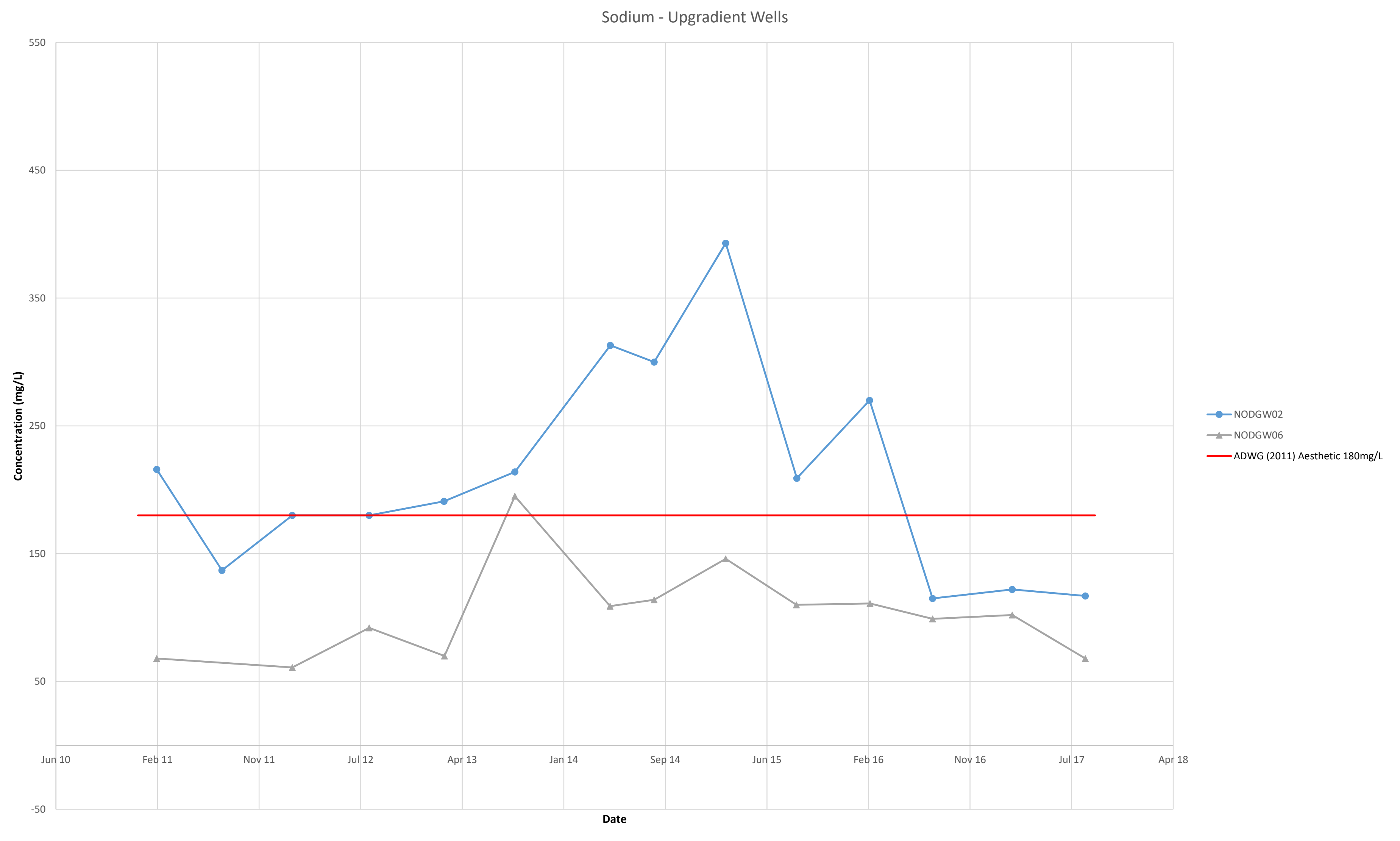


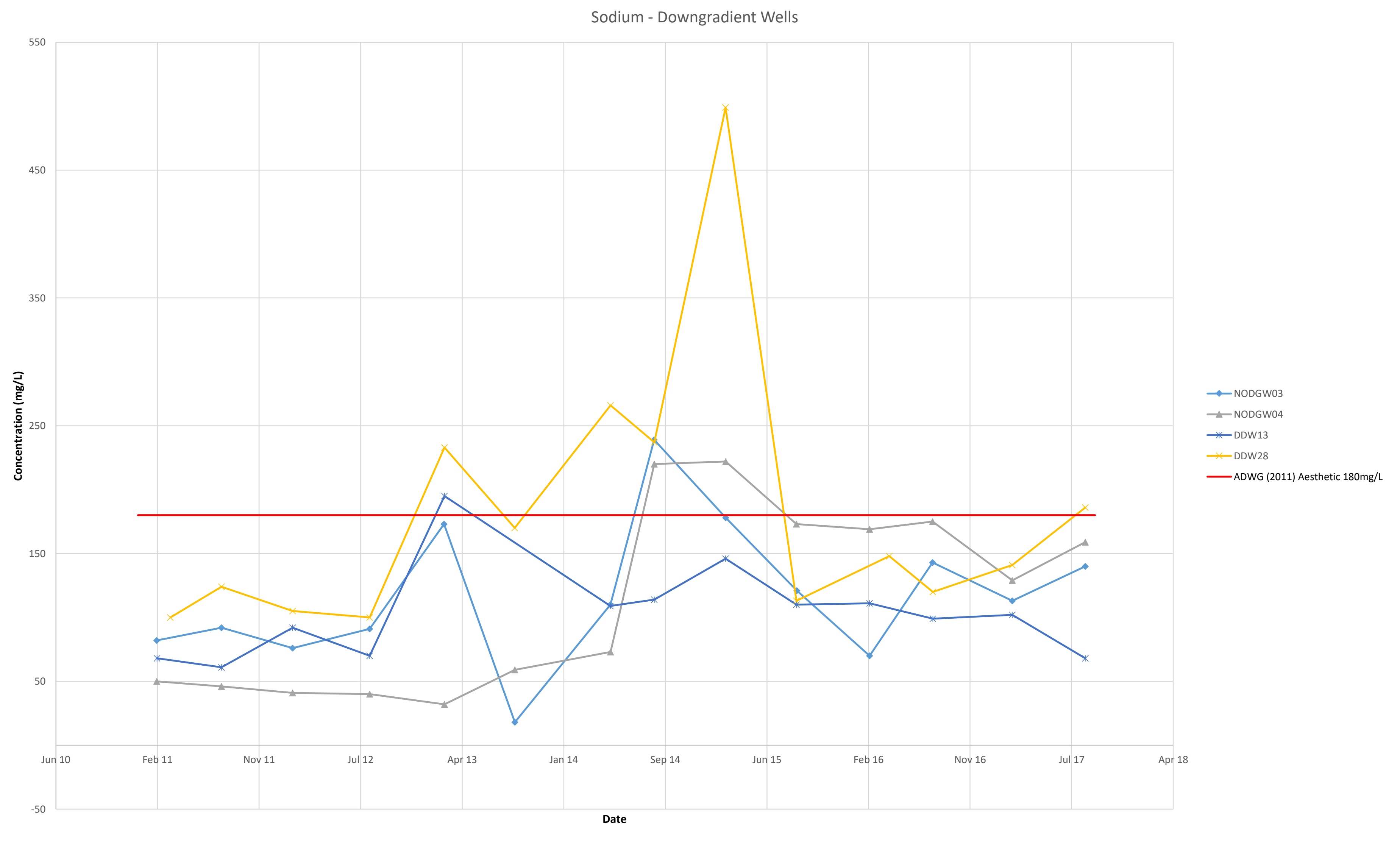
Nitrogen	Newsquare Nominees Preliminary Site Investigation and Data Gaps Review	Appendix P Time Series Plots	ENPOINT Environmental Asset Management



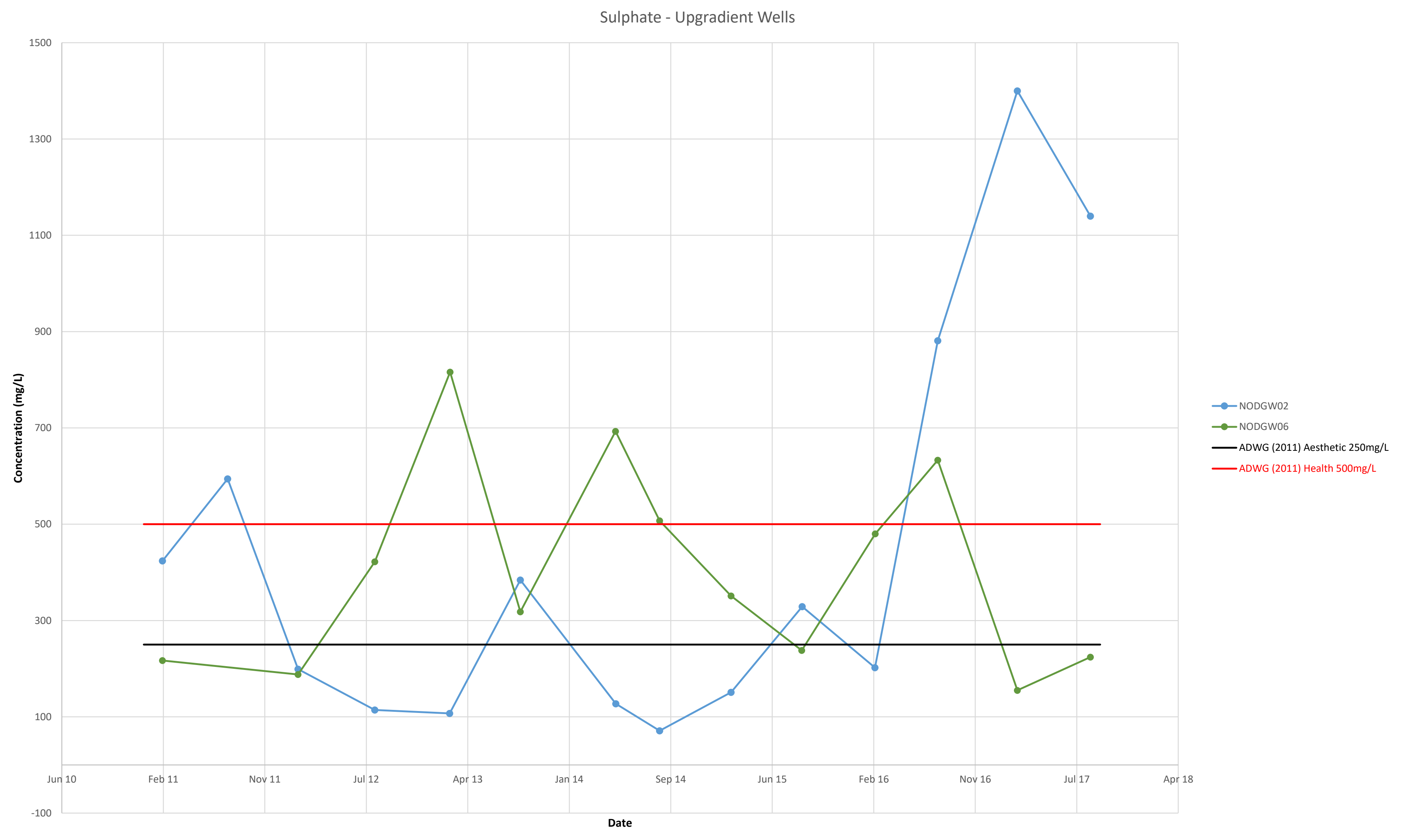


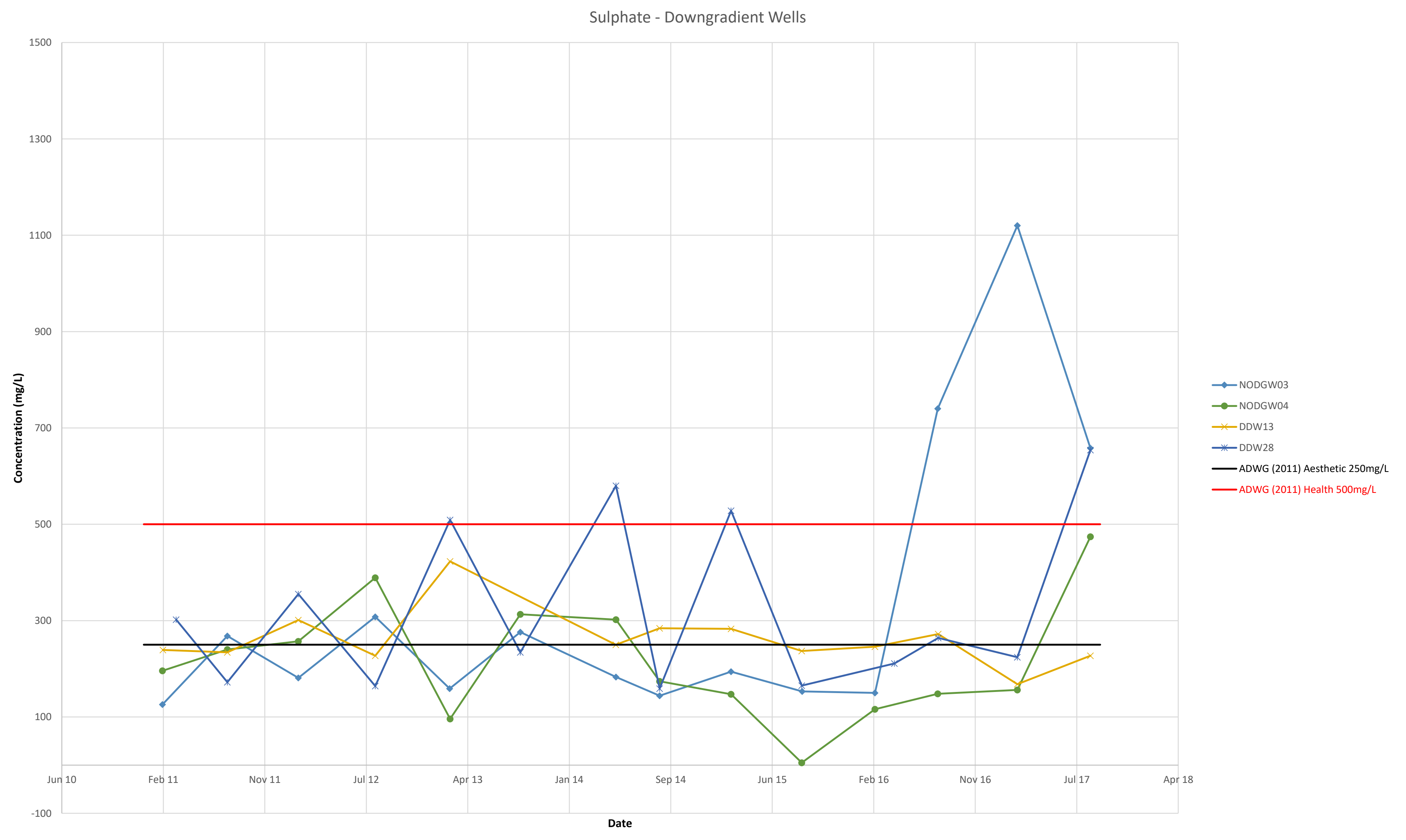
Phosphorus	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management



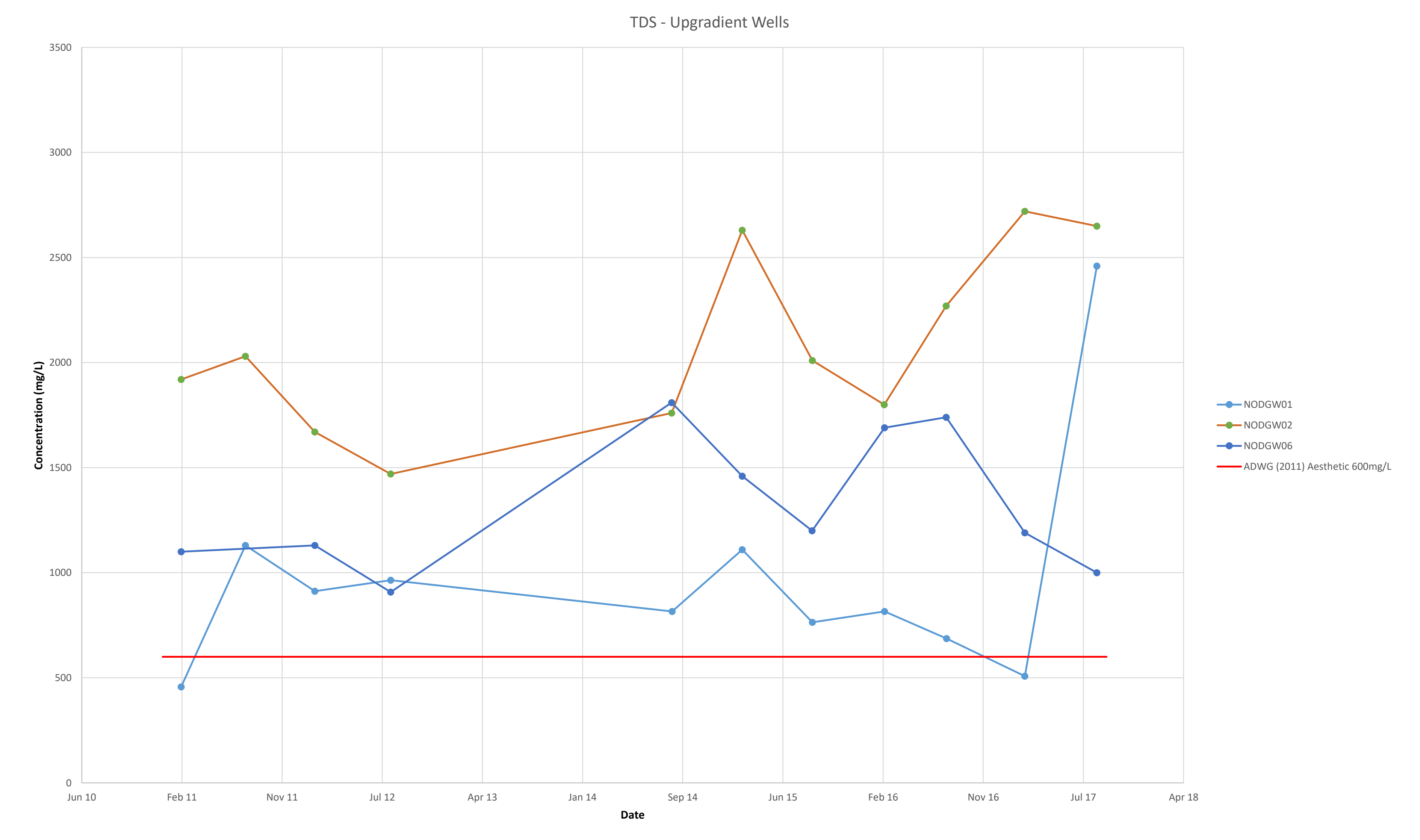


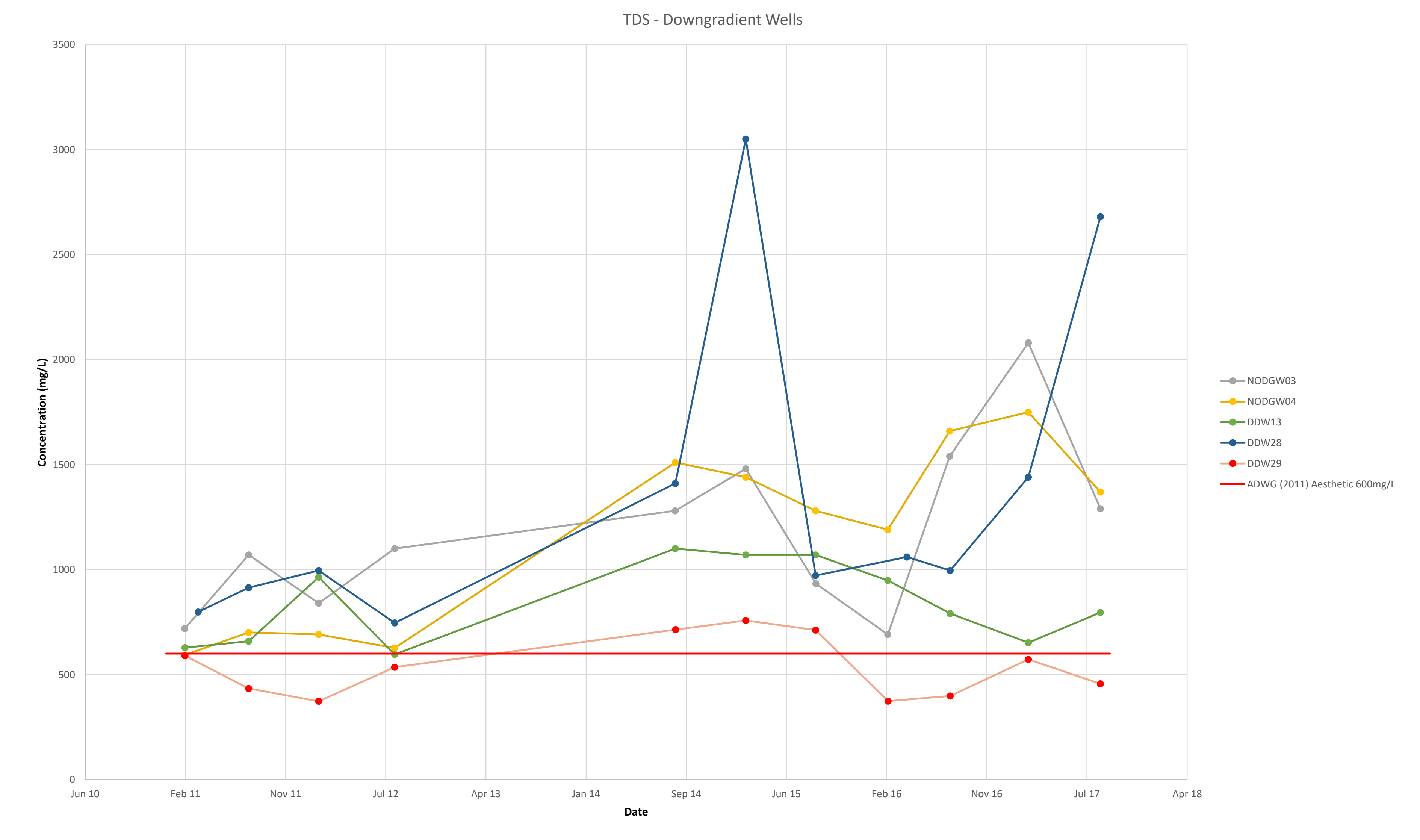
Sodium	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management





Sulphate	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management





TDS	**Newsquare Nominees** **Preliminary Site Investigation and Data Gaps Review**	**Appendix P** **Time Series Plots**	ENPOINT Environmental Asset Management

APPENDIX R

SUMMARY OF LANDFILL GAS MONITORING DATA

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2012 Landfill Gas Monitoring Data

	Initial					Event 2					Event 3					Event 4				
	6/02/2012					23/05/2012					21/08/2012					16/11/2012				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30	0.3	29.4	0.0882	1.1	0.0033	0.2	7.6	0.015	3.1	0.0062	--	--	--	--	--	--	--	--	--	--
G30 Replacement Well	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	0.3	18.3	0.0549	0	0
Boundary Wells																				
G31	0.1	0.4	0.0004	1.7	0.0017	0	0	0	1.4	0.0014	0.2	0	0	2.4	0.0048	0.1	0.1	0.0001	1.7	0.0017
G32	0	0	0	4.5	0.0045	0	0	0	7	0.007	0.1	0.1	0.0001	5.8	0.0058	0.1	0.1	0.0001	2.4	0.0024
G33	0	0.1	0.0001	1.6	0.0016	0	0	0	1.9	0.0019	0.1	0.1	0.0001	3.6	0.0036	0	0.1	0.0001	1.7	0.0017
NODG01	0	0	0	3.9	0.0039	0.1	0	0	2.9	0.0029	0	0	0	7.2	0.0072	0	0.1	0.0001	3.1	0.0031
NODG02	0.1	0	0	8.9	0.0089	0.1	0	0	5.5	0.0055	0.5	0	0	6.2	0.031	0	0.1	0.0001	3.4	0.0034
Gas Regime - GSV (Per Monitoring Event)	0.3	29.4	0.0882	8.9	0.0267	0.2	7.6	0.015	7	0.014	0.5	0.1	0.0005	7.2	0.036	0.3	18.3	0.0549	3.4	0.0102

	CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
	CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
	CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)
na	Monitoring well not yet installed
--	Monitoring well not monitored

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2013 Landfill Gas Monitoring Data

	Event 1					Event 2					Event 3					Event 4				
	1/03/2013					22/05/2013					29/08/2013					28/11/2013				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30 Replacement Well	0.5	25.8	0.129	3.6	0.018	0.2	20.9	0.0418	3.7	0.0074	0.2	21.3	0.0426	4	0.008	0.2	21.3	0.0426	4.1	0.0082
Boundary Wells																				
G31	0.1	0.5	0.0005	1.3	0.0013	0.1	0.2	0.0002	1.3	0.0013	0.1	0.2	0.0002	1.4	0.0014	0	0.2	0.0002	1.4	0.0014
G32	0.2	0.5	0.001	7.4	0.0148	0.2	0.2	0.0004	2.2	0.0044	0	0.2	0.0002	2.2	0.0022	0	0.2	0.0002	2.2	0.0022
G33	0.1	0.5	0.0005	2.5	0.0025	0	0.1	0.0001	1.9	0.0019	0	0.1	0.0001	1.7	0.0017	0	0	0	1.8	0.0018
NODG01	0.1	0.5	0.0005	2.7	0.0027	0.1	0.5	0.0005	2.7	0.0027	0.1	0.1	0.0001	2.4	0.0024	0.2	0.2	0.0004	1.7	0.0034
NODG02	0.1	0.5	0.0005	4	0.004	0.1	0.5	0.0005	4	0.004	0	0.2	0.0002	3.5	0.0035	0	0.3	0.0003	3.6	0.0036
Gas Regime - GSV (Per Monitoring Event)	0.5	25.8	0.129	7.4	0.037	0.2	20.9	0.0418	4	0.008	0.2	21.3	0.0426	4	0.008	0.2	21.3	0.0426	4.1	0.0082

CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2014 Landfill Gas Monitoring Data

	Apr-14					May-14					Aug-14					Nov-14				
	30/04/2014					28/05/2014					21/08/2014					4/11/2014				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30 Replacement Well	0.4	9.1	0.0364	1.9	0.0076	0.5	22.6	0.113	3.3	0.0165	0	19.1	0.0191	3.5	0.0035	0.1	19.2	0.0192	4.2	0.0042
Boundary Wells																				
G31	0	0.4	0.0004	1.2	0.0012	0.1	0	0	1.6	0.0016	0	0.2	0.0002	1.9	0.0019	0	0	0	1.5	0.0015
G32	0	0.4	0.0004	3.1	0.0031	0.1	0	0	0.9	0.0009	0	0	0	2.5	0.0025	0	0	0	2.1	0.0021
G33	0	0.4	0.0004	1.5	0.0015	0.1	0	0	2.2	0.0022	0	0	0	3.4	0.0034	0	0	0	1.8	0.0018
NODG01	0	0.4	0.0004	3.5	0.0035	0	0	0	0.1	0.0001	0	0	0	3.9	0.0039	0.1	0.1	0.0001	3	0.003
NODG02	0.1	0.4	0.0004	3.4	0.0034	0	0	0	0	0	0	0	0	4.7	0.0047	0	1	0.001	3.7	0.0037
Gas Regime - GSV (Per Monitoring Event)	0.4	9.1	0.0364	3.5	0.014	0.5	22.6	0.113	3.3	0.0165	0	19.1	0	4.7	0	0.1	19.2	0.0192	4.2	0.0042

CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2015 Landfill Gas Monitoring Data

	Round 1					Round 2					Round 3					Round 4				
	20/02/20115					15/05/2015					20/08/2015					9/11/2015				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30 Replacement Well	0.7	21.7	0.1519	4.4	0.0308	0.7	16.1	0.113	4.2	0.0294	0.4	18.6	0.0744	3.9	0.0156	0	17.4	0.0174	3.7	0.0037
Boundary Wells																				
G31	0	0	0	1.1	0.0011	0.6	0	0	1.3	0.0078	0.1	0.1	0.0001	0.1	0.0001	0	0	0	1.2	0.0012
G32	0	0	0	1.5	0.0015	0.7	0	0	2.3	0.0161	0	0	0	0.3	0.0003	0	0	0	1.6	0.0016
G33	0	0	0	1.5	0.0015	0	0	0	2.3	0.0023	0.1	0	0	0.1	0.0001	0	0	0	1.4	0.0014
NODG01	0	0.1	0.0001	3.5	0.0035	0.2	0	0	0.6	0.0012	0.2	0.2	0.0004	0.2	0.0004	0	0	0	3	0.003
NODG02	0	0	0	2.7	0.0027	0.1	0	0	4.4	0.0044	0.1	0.1	0.0001	0.3	0.0003	0	0	0	2.5	0.0025
Gas Regime - GSV (Per Monitoring Event)	0.7	21.7	0.1519	4.4	0.031	0.7	16.1	0.113	4.4	0.031	0.4	18.6	0.0744	3.9	0.016	0	17.4	0.0174	3.7	0.0025

Colour	Classification
Red	CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
Orange	CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
Green	CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2016 Landfill Gas Monitoring Data

	Round 1 (Feb/Mar)					Round 2 (May)					Round 3 (Aug)					Round 4 (Nov)				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30 Replacement Well	0.1	16	0.016	0.1	0.0001	0	16.2	0.016	4.4	0.0044	0.1	14.8	0.015	3.7	0.0037	0.2	21.2	0.042	3.8	0.0076
G37	0	0	0	0.2	0.0002	0	0	0	0.2	0.0002	0	0	0	0.1	0.0001	0.1	0	0	6.6	0.0066
G38	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0001	0	0	0	5.4	0.0054
Boundary Wells																				
G31	0	0	0	0.1	0.0001	0	0	0	0.2	0.0002	0	0	0	1.3	0.0013	0.1	0	0	1.7	0.0017
G32	0	0	0	0.1	0.0001	0	0	0	0.3	0.0003	0	0	0	1.3	0.0013	0	0	0	3	0.003
G33	0	0	0	0	0	0	0	0	2.3	0.0023	0.1	0	0	2.9	0.0029	0.2	0	0	1.7	0.0034
G34	0.1	0	0	4.4	0.0044	0	0	0	6.9	0.0069	0	0	0	8.9	0.0089	0.2	3.8	0.008	7	0.014
G35	0.1	0	0	5.4	0.0054	0	0	0	0.4	0.0004	0	0	0	7.7	0.0077	0	0	0	6.6	0.0066
G36	0.1	0	0	4.5	0.0045	0	0	0	0	0	0	0	0	6.8	0.0068	0.1	0	0	6.6	0.0066
NODG01	0	0	0	0.1	0.0001	0	0	0	3.1	0.0031	0	0	0	3.1	0.0031	0	0	0	4.8	0.0048
NODG02	0	0	0	0	0	0	0	0	3.2	0.0032	0	0	0	4.3	0.0043			0		0
Gas Regime - GSV (Per Monitoring Event)	0.1	16	0.016	5.4	0.0054	0	16.2	0	6.9	0	0.1	14.8	0.015	8.9	0.0089	0.2	21.2	0.042	7	0.014

CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)

Newsquare Nominees
Preliminary Site Investigation and Data Gaps Review
Summary of 2017 Landfill Gas Monitoring Data

	Round 1 (Feb)					Round 2 (May)					Round 3 (Aug)					Round 4 (Nov)				
Well ID	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV	Flow (L/hr)	CH_4 (%v/v)	CH_4 GSV	CO_2 (%v/v)	CO_2 GSV
On-site																				
G30 Replacement Well	0	22.2	0.022	3.9	0.0039	0	17.2	0.017	4.1	0.0041	0.1	16.7	0.017	3.9	0.0039	0	17.9	0.018	3.8	0.0038
G37	0	0	0	0	0	0	0	0	13.5	0.0135	0	0	0	10.8	0.0108	0	0	0	10.3	0.0103
G38	0	0	0	0	0	0	0	0	5.9	0.0059	0	0	0	7.7	0.0077	0	0	0	3.7	0.0037
Boundary Wells																				
G31	0	0	0	1.9	0.0019	0	0	0	1.8	0.0018	0	0	0	2.8	0.0028	0	0	0	2.7	0.0027
G32	0	0	0	3.5	0.0035	0	0	0	2.1	0.0021	0	0	0	2.4	0.0024	0	0	0	2.4	0.0024
G33	0	0	0	2.2	0.0022	0	0	0	2.5	0.0025	0	0	0	2.7	0.0027	0	0	0	2.6	0.0026
G34	0	0	0	8.4	0.0084	0	0	0	5	0.005	0	0	0	8.9	0.0089	0	0	0	4.7	0.0047
G35	0	0	0	5.2	0.0052	0	0	0	8.2	0.0082	0	0	0	9.2	0.0092	0	0	0	7.7	0.0077
G36	0	0	0	6.1	0.0061	0	0	0	5.1	0.0051	0	0	0	4.8	0.0048	0	0	0	4.5	0.0045
NODG01	0	0	0	0.4	0.0004	0	0	0	3.7	0.0037	0	0	0	4.7	0.0047	0	0	0	4.5	0.0045
NODG02	0	0	0	8	0.008	0	0	0	5.5	0.0055	0	0	0	5.5	0.0055	0	0	0	3.8	0.0038
Gas Regime - GSV (Per Monitoring Event)	0	22.2	0	8.4	0	0	17.2	0	13.5	0	0.1	16.7	0.017	10.8	0.0108	0	17.9	0	10.3	0

CIRIA Characteristic Situation 3, DETR Classification C (Moderate risk)
CIRIA Characteristic Situation 2, DETR Classification B (Low risk)
CIRIA Characteristic Situation 1, DETR Classification A (Very low risk)

APPENDIX 4 – GEOTECHNICAL SUMMARY REPORT

TECHNICAL MEMORANDUM

To:	Handle Property Group	From:	Matt Watts
Attention:	Andrew De Hass	Date:	14 March 2018
Email:		Reference:	PER2017-0193AB, Rev0
Cc:		Pages:	
Subject:	**Proposed Landfill Re-Development - Desktop Review Plus Draft Borehole and CPT Logs**		

1 INTRODUCTION

CMW Geosciences Pty Ltd (CMW) was authorised by Handle Property Group to carry out a geotechnical investigation of an existing construction waste landfill located on Driver Road, Darch, WA. The scope of work of our engagement is detailed in our services proposal letter dated 19 July 2017 (Ref: PER2017-0193AA, Rev 1).

The site occupies an approximate area of 35ha and is bound to the north by Furness Road, to the east by Mirrabooka Avenue / Madeley Street, to the west by Driver Road and to the south by existing residential development.

Non Organic Disposals currently operate a Class I inert landfill and waste recycling facility at the north-western portion (Cell 6) of the broader site under an Environmental Protection Act 1986 Licence number L6832/1997/12 (EP Act Licence – Attachment A) and is listed as a “prescribed premises” under category numbers 13, 62 and 63 within Schedule 1 of the Environmental Protection Regulations 1987.

Due to commercial reasons, following project award and during the geotechnical investigation, Handle Property Group decided not to pursue the development of the landfill. As a result, CMW were advised to stop work and cancel the remaining portion of our investigation. Before this decision was made CMW had carried out a desktop review of available geotechnical resources and completed the majority of the geotechnical investigation.

This technical memorandum provides a summary of the notes made during the desktop study and the draft borehole and CPT logs from the investigation. It is important note that our investigation was incomplete, and the information provided in this document is preliminary and factual and no geotechnical assessment was made.

2 DESKTOP STUDY

2.1 Previous Environmental and Geotechnical Reports

2.1.1 Soil & Rock Engineering (2002)

Quality Plan for filling Operations Landsdale Non-Organic Waste Facility, dated 16 October 2002 by Soil & Rock Engineering Pty Ltd, ref: dcb 5105_03_02QMrep.doc.

The objective of the quality plan was to set out construction procedures for placement of non-organic waste in the completed sand pit excavation so that the finished landform could be developed as a residential subdivision. The document sets out requirements for independent quality audits, hold points, testing, reporting and survey of ground levels to measure fill settlement. The document specifies that records must be kept for a minimum of two years. Appendix A of the document contained a technical specification for fill placement and material classification. Appendix A defines fill materials as follows:

- **Suitable materials**: being '*Class G1*' clean sand and 'Class G2' mixtures of sand, gravel, limestone and asphalt with a maximum particle size of 50mm;
- **Materials requiring specified treatment/blending/placement**: being '*Class G3*' mixtures of sand, bricks, small concrete and small quantities of inert demolition materials, '*Class G4*' clean concrete up to 100mm across, and '*Class G5*' reinforced concrete and mixed loads containing G1 to G6 materials; and
- **Unsuitable materials**: being '*Class G6*' excavated grass / lawn mixture comprising sand, root mat material and mown grass surface suitable in POS areas only (also includes any material with more than 20% grass/root matter), and '*Class G7*' all other unsuitable material including metal, plastic, timber, paper, motor oil, food waste, grass cuttings, etc.

The fill placement procedure in appendix A can be generalised as:

- Stripping ground surface of fill/topsoil and proof rolling;
- Fill placed in layers not exceeding 500mm loose lift thickness followed by application of water application and compaction;
- Fill to be placed in such a way that the level of entire work area is raised relatively uniformly. Where more than one class of material to be placed, material to be blended to avoid sharp transitions between material types;
- Recommendations also provided for placement of large metal sheets and concrete pieces to prevent the formation of voids in the fill;

2.1.2 Golder Associates Pty Ltd (2004)

Geotechnical Study Proposed Lifestyle Village Development Lot 8000 Driver Road Darch, dated September 2004, by Golder Associates Pty Ltd, ref: 04642209-R01 Rev 1.

The report summarises the findings of a geotechnical investigation undertaken in the north-east corner of the site. The report notes that filling of the portion of the site investigated commenced in 1989. At the time, it was proposed to develop the site as a lifestyle village. The investigation included:

- Twelve boreholes denoted as BHG01 to BHG12 drilled using reverse circulation air core techniques to depths of up to 20m. Approximate test locations are shown on the attached plan;
- Review of settlement monitoring data collected by Soil & Rock Pty Ltd. The monitoring comprised 20 monuments denoted as FM001 to FM020. It was noted that FM012, FM019 and FM020 had been damaged and where no longer in place.

The subsurface conditions encountered in the boreholes is summarised as:

- **FILL SAND, loose to medium dense**, containing various amounts of gravel and building rubble. ***From surface to 1m to 7.5m depth***; overlying
- **FILL SAND / RUBBLE, loose to medium dense**, containing bricks, concrete, crushed aggregate, rock pieces in a sand matrix. ***Base of layer 13.4m to 18.8m depth***; overlying
- **NATURAL SAND, medium dense**.

Groundwater was encountered in BH04 at RL 39.4m AHD (16m depth), and at BH05 at RL 37.4m AHD (17m depth).

Deleterious material in the boreholes was described as thin layers of timber, metal, carpet, tin, plastic bags, straps, bottles, fibrous chipboard, copper pipe and rubber. The only exception to the above is a layer of fibrous chipboard from 7.0m to 7.5m depth in BH03. The amount of deleterious material encountered in the boreholes was summarised in Appendix C of the report, and ranged from 0.5% to 3.5%;

Based on the investigation results, Golders Associates recommended the following:

- The amount of deleterious material encountered in the boreholes (referred to as '*bio-degradable*' in the report) was below the limits set out in the Department of Environment's '*Guideline for acceptance of solid waste to landfill*' dated January 2001;
- Settlements measured at monuments between July 2000 and October 2003 measured reasonably constant settlement rates of 2mm to 5mm per year, with the exception of monuments FM001, FM016, FM017 and FM020 which measured settlements of 10mm to 12mm per year. Measurements at FM001, FM016, FM017 and FM020 were ignored in the Golder Associates study as they were outside the boundary of the study area. Based on the settlement data, long term (30 year) creep settlements of 7mm to 50mm were estimated for the area. Golders considered that creep settlements for the site were difficult to predict;
- Classification in accordance with AS2870 was not considered suitable for the site. However, the site was deemed suitable for '*development as a Lifestyle Village comprising single storey steel framed buildings (with timber floors) supported on short adjustable legs founded on individual concrete pad footings or a thin ground slab*'. Construction recommendations were also provided, including:
    - **Structure footings** to be no smaller than 0.5m square with no less than 0.3m embedment, and a maximum bearing pressure of 50kPa. Any slab on grade was to be designed based on a '*Class M*' site classification with a maximum bearing pressure of 50kPa;
    - **Stormwater** from structures and roadways to be collected and disposed of off-site;
    - **Services** to be designed with flexible joints and / or couplings;
    - **The development of a Management Plan** to control ingress of stormwater into the ground and establish a regime of settlement monitoring, including new and existing settlement monitoring points;
- Golders Associates considered it '*very difficult*' to establish a suitable scope of work that '*would adequately assess the subsurface conditions*'. However, Golders noted that the subsurface conditions encountered at the boreholes was similar, and settlements measured at monuments was relatively homogenous.

2.1.3 Infratech Pty Ltd (2008)

Seismic Refraction Survey, dated 27 June 2008, by Infratech Pty Ltd, ref: 432.1.ss.nn.

The report summarises the findings of a seismic refraction survey undertaken at the site comprising four seismic refraction traverses from 320m to 400m in length. The survey identified three layers being landfill, overlying natural sand, overlying cemented sand (possibly limestone). Only one of the four interpreted figures showing the seismic refraction results was provided to CMW (Line 1-1). Infratech estimated along Line 1-1 that the thickness of the surficial landfill layer ranged from nominally 8m to 25m, and the depth to cemented sand (possible limestone) ranged from 29m to 42m. The interpretation by Infratech was not correlated to borehole data and therefore is not relied upon by CMW.

2.1.4 WSP Environmental Pty Ltd (2008)

Sampling and Analyses Plan, dated August 2008, by WSP Environmental Pty Ltd, ref: 008R02b - SAQP

Information not considered relevant for the purposes of this report.

2.1.5 WSP Environmental Pty Ltd (2008)

Landfill Gas Sampling and Analysis Plan, dated September 2008, by WSP Environmental Pty Ltd, ref: 008R02b - Gas SAQP

Information not considered relevant for the purposes of this report.

2.1.6 Endpoint Pty Ltd (2016)

2015 Annual Environmental Report, dated February 2016 , by Endpoint Pty Ltd, ref: W15025_01, Rev 0

The report was prepared in accordance with Condition 25 of the Environmental Protection Act 1986 to satisfy the sites waste disposal licence conditions (Licence number L6832/1997/12). Table B of the report summarises the general conditions of the site's waste disposal licence including reporting requirements.

Appendix F presents a landfill gas and groundwater monitoring report. Figure 2 and Table 8, appendix D of the appended report provide groundwater level measurements from wells across the site on 19 February 2015 and 19 August 2015 ranging from RL 37.559m AHD to RL 39.391m AHD.

2.1.7 Endpoint Pty Ltd (2016)

2015 Asbestos Sampling Results – Interpretive Summary, dated February 2016, by Endpoint Pty Ltd, ref: W16016_04

Information not considered relevant for the purposes of this report.

2.1.8 Endpoint Pty Ltd (2017)

2016 Annual Environmental Report, dated 31 January 2017, by Endpoint Pty Ltd, ref: W16016_01, Rev 0

The report was prepared in accordance with Condition 4.2 of the Environmental Protection Act 1986 to satisfy the sites waste disposal licence conditions (Licence number L6832/1997/12).

Appendix F presents a landfill gas and groundwater monitoring report. Figure 2 and Table 8, appendix M of the appended report provide groundwater level measurements from wells across the site in 24 February 2016 and 2 August 2016 ranging from RL 37.665m AHD to RL 40.685m AHD.

2.1.9 WSP Environmental Pty Ltd (2017)

Preliminary Site Investigation, dated 19 August 2017, WSP Environmental Pty Ltd, ref: 008R05a rev 0

The report summarises the results of a environmental investigation, which included drilling 20 boreholes. Twelve of the boreholes were developed as groundwater monitoring wells, and the remaining 7 developed as gas monitoring wells. The investigation also included monitoring of the installed and pre-existing wells.

Section 12.2 and Figure 9 summarise groundwater levels measured in the installed groundwater wells measured between 28 May 2008 and 31 July 2008, ranging from RL 37.615m AHD to RL 39.331m AHD.

Appendix G presents the results of a Registered Bore Search. Groundwater measurements between RL 40.7m AHD and RL 38.5m AHD have been collected by the Department of Water from a monitoring well adjacent the site on Furniss Road from 1974 to 2008. It is noted that since 1978, levels have not exceeded nominally RL 40.1m AHD.

Section 13 summarises results of gas monitoring of installed and pre-existing gas monitoring wells. Concentrations of methane, carbon dioxide, hydrogen sulphide and carbon monoxide have been recorded above the guideline values in several locations across.

2.1.10 RPS Bowman Bishaw Gorham (2005)

Preliminary Site Investigation, dated August 2005, by RPS Bowman Bishaw Gorham, ref: D04248

The report summarises the results of an environmental investigation, which included sampling from 40 excavations up to 3m deep (appendix D), and drilling of 13 boreholes up to 23.8m deep (appendix E & F), including installation of groundwater and gas monitoring wells.

The base of the fill layer measured in the boreholes ranged from 16.0m to >23.8m. The base of the fill was only observed in the three groundwater monitoring bores.

Groundwater levels of approximately RL 41m AHD were measured in the groundwater monitoring boreholes in February 2005.

Methane and carbon dioxide was detected in gas monitoring wells.

2.1.11 Environmental Strategies WA (2014)

Suitability of Use of Waste Derived Fill, dated 20 November 2014, by Environmental Strategies WA, ref: W14036_LTR01_v01

The letter summarises the method which waste is received and processed at the landfill site and provides recommendations in relation to reuse of the material in regard to environmental considerations. Table 3 of the report provides a summary of the process, which comprised waste acceptance, pre-sorting, primary screening, hand picking, crushing and secondary screening. The report concluded that several issues needed clarification from the DER regarding reuse of materials.

2.2 Available Aerial Photograph Assessment

2.2.1 Photographic Observations

The below table provides the observations made during our assessment of available aerial photographs:

Year of Photograph	Observations
1953*	• Site is generally vacant apart from minor sand tracks and possible fence lines • Vegetation comprises grasses, small shrubs and trees
1965	• Site is vacant of development and remains naturally vegetated • Distinct tracks / firebreaks / fence lines have been cleared to the north and south of the site • Land to the south of the site has been sub-divided. Land-use is assumed to be small-scale farming / market gardens • Possible sand mining occurring to the west of the site
1968	• Vegetation stripping of the western portion of the site has commenced • Sand mining operations within the western portion of the site appears to have commenced • Unsealed access road to the site has been constructed from the south-west • The remainder of the site remains naturally vegetated
1970	• Sand mining activities have expanded • Vegetation stripping has occurred within the south-west corner of the site • Land has been cleared to the north of the site for possible farming
1975	• Sand mining activities have extended to both the south and the east affecting approximately the eastern half of the site • Active mining face in the north-west portion of the site • An oval track has been constructed in the south-western portion of the site as a possible horse racing / trotting track • Small buildings have been constructed along the main access road through to the site possibly related to the oval track • The cleared eastern portion has been partitioned into six sections, possible horse paddocks associated with the race / trotting track
1981	• The entire north-west portion of the site is an active sand quarry. The mining face is along the northern edge of the site and is deepest towards the northern central portion where visible groundwater is ponding • Sand mining activities occur to the north-west and west of the site • An unsealed access track has been constructed from the south-west corner of the site to the north-west corner
1985	• Sand mining focused in the central portion of the site • Paddocks in the eastern central area have been stripped of vegetation possibly in preparation for sand mining activities

	• Possible stockpiled material is visible in the north-west portion. Stockpiles are brown in colour and are possible composed of organic material. • Tip edge filling operations are occurring from the northern edge of the site. The tip face is estimated to be approximately 3-5m in depth
1987	• Sand mining activities have extended into the eastern third of the site • Filling activities in the north-west are extending south and south-east • The oval horse track is still visible
1988	• Vegetation has been stripped to the extent of the eastern boundary of the site • Residential buildings are visible to the south of the site
1990	• Sand mining has advanced towards the east of the site • Industrial / commercial buildings have begun to be constructed north-west of the site
1995	• Sand mining in the north-western portion of the site appears to have ceased and is focused on the southern central and north eastern portion of the site • The southern central area remains undeveloped • The oval horse track is still visible with minor landfill operations and structures are visible in the south west corner
2000	• Filling of the north-eastern portion of the site appears mostly complete. A fill tip face is visible in the central eastern section estimated to be approximately >10m high. This face appears partially filled by 2001 • Landfill activities are visible in the central western portion of the site and stockpiles of material are visible towards the north-west corner • Residential development to the east of the site is complete • Sites to the south still appear to be used for market gardening and sites to the west are largely vacant. Subdivision appears to be underway on the northern end of the adjoining lot to the west
2003	• Screening / stockpiling plant are visible and appear to be part of the landfill operations • Sand mining / fill recycling activities appears to be underway within the north-west corner and southern central portions of the site
2005	• The majority of filling appears to have been completed in the eastern portion of the site though continues in the south-central portion and northwest corner • Market gardens to the south have ceased and residential development is partially complete
2006	• Land fill stockpiles are visible in the far north-western portion of the site • Filling in the south-central portion of the site almost complete
2008	• Site appears similar to 2017 aerial photograph • The eastern portion of the site appears to be gradually re-vegetating • Active landfill operations continue in the western portion of the site • Residential land use is apparent to the west, south and east of the site. Land to the north remains undeveloped
2010	• Active landfill operations continue within the western portion of the site. Activities include stockpiling of landfill, screening and sorting of landfill and loading out of screened product by trucks via the south-west access road
2012	• Landfill operations continue similar to 2010 photograph • Residential land is now developed to the west, south and east of the site and commercial development is underway to the north of the site.
2017	• Landfill operations continue within the north-west portion of the site

2.2.2 Summary of Historic Aerial Photograph Assessment

Based on the photographs land use at the site can be summarised as follows:

Agricultural / Recreational early 1970's to late 1980's

Sand Mining 1960's – early to mid-1990's

Filling Approx. 1985 to current

Based on our assessment, the following general comments can be made:

- The deepest areas of sand mining appear to have been against the northern portion of the site;
- The north-western portion of the site has seen the most protracted land use having being mined the earliest and has possibly experience several episodes of excavation and filling to the current day;
- Earthwork machinery is visible in some photographs suggesting that fill was placed with at least some degree of compaction however, several tip faces are also visible throughout the sites history suggesting that potentially deep sections of uncontrolled fill may exist and only partially compacted at the surface; and,
- The nature of the fill is largely unknown. There may have been periods of organic waste disposed of periodically. The concentrated methane readings suggest that either this is likely or several horses were buried on the site.

3 INVESTIGATION COMPLETED

The field investigation was carried out between 22 August 2017 and 6 September 2017. All fieldwork was carried out under the direction of CMW Geosciences Pty Ltd in general accordance with AS1726 (2018), Geotechnical Site Investigations. The scope of fieldwork completed was as follows:

- A walkover survey of the site to assess the general landform and site conditions;
- Twenty three boreholes were drilled with a geotechnical site investigation drilling rig up to a depth of 24m, or to refusal using sonic drilling techniques to assess the condition and composition of the landfill material; and,
- Thirty-one mechanical Cone Penetrometer Tests, denoted CPT01 to CPT22 including CPT2A, 3A, 11A to 13A, 16A, 19A and 20A, were advanced to depths of up to 17m to assess the relative density of the fill layers. All tests refused within the fill. Results of the CPT's, presented as traces of tip resistance (qc) are attached to this document;

4 FINAL COMMENT

Although the above data was not subject to detailed geotechnical analysis, it is CMW's view that the Driver Road landfill is likely to be geotechnical suitable for residential development subject to a series of remediation measures. The key to limiting the remediation required is defining the proposed built form and establishing a project team at the planning phase which includes civil, environmental and geotechnical consultants so all parties can collaborate towards the desired outcome.

5 CLOSURE

The findings contained within this report are the result of limited discrete investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, can it be considered that these findings represent the actual state of the ground conditions away from our investigation locations.

If the ground conditions encountered during construction are significantly different from those described in this report and on which the conclusions and recommendations were based, then we must be notified immediately.

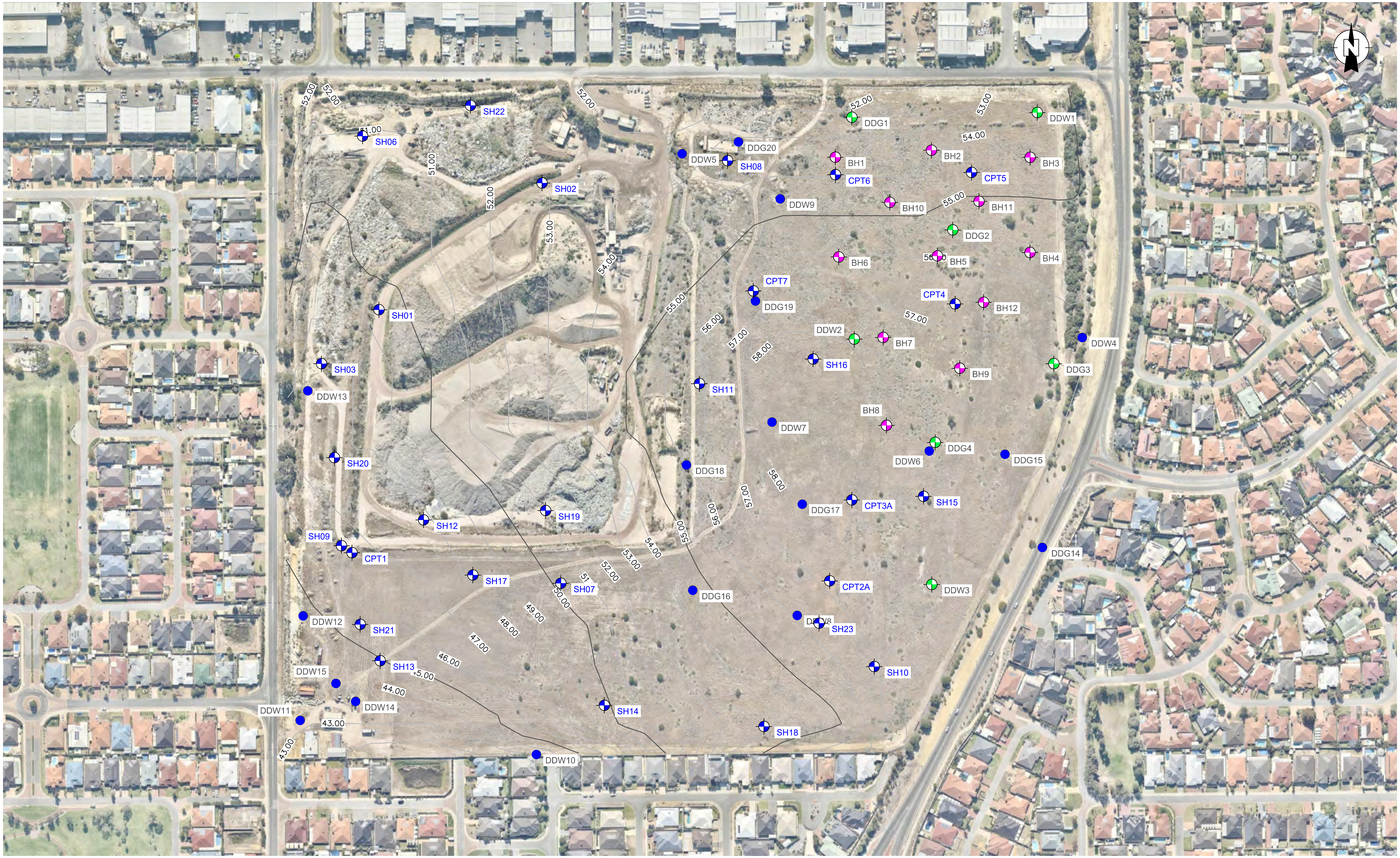
This report has been prepared for use by Pritchard Francis in relation to the proposed chiller tank at the University of Western Australia on Stirling Highway, Crawley, WA project in accordance with generally accepted consulting practice. No other warranty, expressed or implied, is made as to the professional advice included in this report. Use of this report by parties other than Pritchard Francis and their respective consultants and contractors is at their risk as it may not contain sufficient information for any other purposes.

For and on behalf of
CMW Geosciences Pty Ltd

Matt Watts
Senior Engineering Geologist

Phil Chapman
Managing Director

Distribution: 1 copy to Handle Property Group (electronic) Original held by CMW Geosciences Pty Ltd



LEGEND:

	BH1	BOREHOLE LOCATION (GOLDER JUNE 2004)
	DDW15	MONITORING WELL LOCATION (GOLDER JUNE 2008)
	DDG1	BOREHOLE LOCATION (RPS FEB 2005)
	CPT/SH	CMW TEST LOCATION

NOTES:

1. IMAGE FROM NEARMAP 28.04.17
2. CONTOURS SUPPLIED

0 30 60 90 120 150 m

1:3000

CMW Geosciences

CLIENT: HANDLE PROPERTY GROUP	DRAWN: DE	PROJECT: PER2017-0193
PROJECT: LANDFILL REDEVELOPMENT DRIVER ROAD, DARCH, WA	CHECKED: MW	FIGURE: 01
	REVISION: 0	SCALE: 1:3000
TITLE: SITE INVESTIGATION PLAN	DATE: 03.08.17	SHEET: A3 L

BOREHOLE LOG - SH01

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 23/08/2017

1:50 Sheet 1 of 2

Logged by: DJP	Position: E.391165m N.6480418m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0 – 2.7		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, pale brown mottled grey; gravel, angular, medium to coarse grained, of concrete and brick; with silt, trace cobbles.			
		1.8-2.0	B							
							... at 2.10m, wood fragment			
					2.7 – 3.2		FILL: Sandy GRAVEL: angular to subrounded, fine to coarse grained, red brown, of brick; sand, fine to coarse grained, with cobbles.			
					3.2 – 10.0		FILL: SAND: subangular to subrounded, fine to medium grained, dark brown; with gravel, fine to coarse grained, of brick, concrete, tile, plastic, asphalt and glass; with cobbles; trace organic fines.			
							... from 5.00m to 5.10m, trace rootlets	M		
		7.2-7.3	B				*... from 7.20m to 7.30m, trace rootlets*			
							... at 8.40m, wood fragments			

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH01

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 23/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391165m N.6480418m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: subangular to subrounded, fine to medium grained, dark brown; with gravel, fine to coarse grained, of brick, concrete, tile, plastic, asphalt and glass; with cobbles; trace organic fines. *... at 10.20m, trace wood chips* *... at 10.40m, decomposed wood fragments*			
					11		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)			
					12		Borehole terminated at 12.0 m			
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH02

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 23/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391304m N.6480526m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, pale brown mottled grey; gravel, angular, medium to coarse grained, of concrete and brick; with silt, trace cobbles.			
		0.8-0.9	B				*... from 0.80m to 1.10m, trace fragments of wood; trace organic fines*			
					1					
					2		FILL: SAND: subangular to subrounded, fine to medium grained, black mottled dark brown; trace gravel of brick, concrete, tile, plastic and glass; trace organic fines.			
		2.8-3.0	B							
					3					
					4		FILL: Sandy GRAVEL: angular to subrounded, fine to coarse grained gravel, red brown, of brick.			
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, mottled grey brown; gravel, angular, medium to coarse grained, pale brown, of concrete and brick; trace silt, trace cobbles, trace boulders.			
					5		*... at 5.20m, piece of chipboard*			
					6					
							... at 6.70m, piece of chipboard			
							... at 6.90m, aesbestos sheeting			
					7					
							... at 7.40m, cardboard and woody fragments			
					8					
							... at 8.80m, metal strapping			
					9					
					10					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH02

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 23/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391304m N.6480526m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests Depth	Samples & Insitu Tests Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, mottled grey brown; gravel, angular, medium to coarse grained, pale brown, of concrete and brick; trace silt, trace cobbles, trace boulders.			
					11					
							... at 11.20m, woody fibres			
							... at 11.30m, copper wire/electronic waste			
		11.4-11.5	B							
							FILL: SAND: subangular to subrounded, fine to medium grained, black mottled brown; trace gravel of brick, concrete, tile, plastic and glass; trace organic fines.			
					12					
							... from 12.20m to 12.70m, clay laminations, orange-brown, medium plasticity			
	▼				13					
							... from 13.30m to 13.60m, Sandy GRAVEL, pale grey, with fines			
							SW: SAND: subangular to subrounded, fine to coarse grained sand, white streaked pale grey. (Bassendean Sand)			
					14					
							Borehole terminated at 14.5 m			
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH03

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

CMW Geosciences

1:50 Sheet 1 of 1

Logged by: DJP	Position: E.391116m N.6480372m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0 – 6.4		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown mottled brown; with gravel of brick and concrete, with cobbles, trace fines.			
					4		*... at 4.00m, wood fragment*			
					6.4 – 9.0		SW: SAND: subangular to subrounded, fine to coarse grained sand, yellow. (Bassendean Sand)			
					7.8		*... from 7.80m to 9.00m, pale grey*			
					9		Borehole terminated at 9.0 m			

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH04

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 22/08/2017

1:50

Logged by: TM | Position: E.391550m N.6480195m (MGA 50) | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests Depth	Samples & Insitu Tests Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0		FILL: SAND: fine to medium grained, dark grey to grey mottled yellow-brown and white; trace gravel of limestone, brick and concrete.			
					1					
		1.7-1.8	1 B							
					2					
							... from 2.30m to 3.00m, black colour			
					3					
							... from 3.20m to 3.30m, PVC fragments			
					4					
					5					
		5.8-6.0	2 B							
					6		*... at 6.00m, fragments of metal*			
					7					
							... from 7.20m to 7.35m, trace wood fragments			
					8					
		8.3-8.5	3 B							
							... at 8.80m, chipboard			
					9					
		9.6-9.8	4 B				*... from 9.50m to 10.20m, fragments of metal and wood*			
					10					

Termination Reason: Target Depth Reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH04

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 22/08/2017

1:50

Logged by: TM | Position: E.391550m N.6480195m (MGA 50) | Plant used: Commachio C205

Checked by: MW | Elevation: | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: fine to medium grained, dark grey to grey mottled yellow-brown and white; trace gravel of limestone, brick and concrete.			
					11					
							... from 11.60m to 11.80m, fragments of wood and plastic strapping			
					12					
							... from 12.30m to 12.45m, wood pieces			
		12.5-12.8	5 B							
					13					
					14					
							... from 14.50m to 15.00m, fragments of wood, wire and plastic strapping			
					15			D to M		
					16					
					17					
		17.1-17.3	6 B							
							... from 17.50m to 17.70m, fragments of wood			
					18					
					19					
		19.2-19.4	7 B							
					20					

Termination Reason: Target Depth Reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH04

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 22/08/2017

CMW Geosciences

1:50

Logged by: TM | Position: E.391550m N.6480195m (MGA 50) | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: fine to medium grained, dark grey to grey mottled yellow-brown and white; trace gravel of limestone, brick and concrete.			
					21		SP: SAND: fine to medium grained, pale grey, trace fines. (Bassendean Sand)	W		
							Borehole terminated at 21.0 m			
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					

Termination Reason: Target Depth Reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH06

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 24/08/2017

1:50 Sheet 1 of 2

Logged by: DJP	Position: E.391151m N.6480566m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0.0–1.2		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown mottled brown; with gravel of brick, concrete and plastic; trace cobbles, trace fines.			
		2.0-2.1	B		1.2–4.0		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, insulation fibres and plastic; with fines, trace cobbles.			
		3.5-3.6	B							
					4.0–9.9		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled brown; trace gravel of brick, concrete and plastic; trace cobbles, trace fines.	D to M		
					8.0		*... at 8.00m, trace wood fragments*			

Termination Reason: Target depth reached
Remarks:

BOREHOLE LOG - SH06

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 24/08/2017

1:50

Logged by: DJP	Position: E.391151m N.6480566m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
		10.7-11.2	B				FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled brown; trace gravel of brick, concrete and plastic; trace cobbles, trace fines. *... at 10.20m, decomposed wood board* *... from 10.60m to 11.70m, black; with plastic, metal, wood and brick; strong HS2 odour*			
					11					
					12		FILL: SAND: subangular to subrounded, fine to coarse grained, brown mottled pale brown; trace gravel of limestone.			
					13					
							SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	M to W		
					14		Borehole terminated at 14.0 m			
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH07

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 24/08/2017

1:50 Sheet 1 of 1

Logged by: DJP | Position: E.391320m N.6480185m | Hole Diameter: 114mm | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0.00		SW: SAND: subangular to subrounded, fine to coarse grained sand, dark grey; trace gravel.			0.00m: Grass on the surface
					5.40		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
							... from 6.30m to 6.45m, crushed glass			
							... at 7.30m, wood fibres			
		7.8-7.9	B							
					9					9.00-9.50m: potential loose zone/perched groundwater. Continual collapse of the borehole
					10		Borehole terminated at 10.0 m			

Termination Reason: Hole collapse due to perched groundwater
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH08

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

1:50

Logged by: DJP	Position: E.391462m N.6480545m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests Depth	Samples & Insitu Tests Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–10		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, limestone, insulation fibres and plastic; trace fines, trace cobbles.			
					7.40		*... at 7.40m, fibreglass fragments*			
		9.5-9.6	B							

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH08

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391462m N.6480545m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					10–12.4		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, limestone, insulation fibres and plastic; trace fines, trace cobbles.			
					12.4–15.0		SW: SAND: subangular to subrounded, fine to coarse grained sand, pale grey streaked dark grey. (Bassendean Sand)			
					15.0		Borehole terminated at 15.0 m			

Depth scale (m): 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH09

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 24/08/2017

1:50 Sheet 1 of 1

Logged by: DJP | Position: E.391133m N.6480217m | Hole Diameter: 114mm | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0		FILL: SAND: subangular to subrounded, fine to coarse grained, brown streaked grey brown; trace gravel, of concrete and brick; trace fines.			0.00m: Grass on the surface
		2.5-2.6	B		2.2		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, brown mottled grey black; gravel, angular to subrounded, fine to coarse grained, of concrete, bitumen, limestone and brick; trace silt, with cobbles, trace boulders. *... at 2.20m, wood fragments*			
		7.0-7.1	B				*... from 7.20m to 7.20m, fibrous insulation* *... from 7.50m to 7.90m, with glass and carpet*			
					8.0		SW: SAND: subangular to subrounded, fine to coarse grained sand, white streaked pale grey. (Bassendean Sand)			
					9.0		Borehole terminated at 9.0 m			

Termination Reason: Target depth reached
Remarks:

BOREHOLE LOG - SH10

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 25/08/2017

CMW Geosciences

1:50

Logged by: DJP | Position: E.391587m N.6480114m | Hole Diameter: 114mm | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–2		SW: SAND: subangular to subrounded, fine to coarse grained, brown mottled yellow brown; trace gravel of brick and concrete; trace cobbles.			
					2		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled grey brown; trace gravel of brick and concrete; with cobbles, trace boulders, trace fines.			
							... from 5.60m to 5.70m, wood fragments and copper wire			
		6.8-6.9	B				*... at 6.60m, metal sheeting* *... at 6.70m, plastic bag*			
							... at 8.90m, wood fragments			
					10		*... from 9.80m to 10.00m, carpet*			

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH10

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 25/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391587m N.6480114m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled grey brown; trace gravel of brick and concrete; with cobbles, trace boulders, trace fines.			
					11					
							... at 11.40m, wood fragments			
					12					
							... at 12.40m, wood fragments			
					13					
					14					
					15					
							... at 15.80m, wood fragments			
		16.1-16.2	B		16					
					17					
					18					
							... from 18.20m to 18.50m, trace root matter			
					19					
							SW: SAND: subangular to subrounded, fine to coarse grained, pale grey streaked dark grey. (Bassendean Sand)			
							Borehole terminated at 19.5 m			
					20					

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH11

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 25/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391438m N.6480355m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0		SW: SAND: subangular to subrounded, fine to coarse grained, brown; trace gravel of brick and concrete.			0.00m: Grass on the surface
					1					
		2.1-2.2	B		2					
					3					
					4					
					5		*... from 5.00m to 5.80m, becoming dark brown streaked black*	D to M		
					6		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled grey brown; trace gravel of brick and concrete; trace cobbles, trace boulders, trace fines.			
					7		*... at 6.90m, wood fragment*			
							... at 7.40m, styrofoam fragment			
					8		*... at 7.90m, aluminium can*			
		8.2-8.3	B							
							... at 8.50m, wood fragment			
					9					
					10					

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH11

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 25/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391438m N.6480355m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					10–14		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled grey brown; trace gravel of brick and concrete; trace cobbles, trace boulders, trace fines. *... at 10.00m, plastic sheeting* *... from 11.00m to 12.00m, trace carpet and wood fragments*			
					14–14.9		FILL: Gravelly SAND: subangular to subrounded, fine to coarse grained, grey and red; gravel, angular to subrounded, fine to coarse grained, of brick and concrete; with cobbles, trace boulders, trace fines.			
		15.2-15.3	B		14.9–18.8		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown black mottled grey brown; trace gravel of brick and concrete; trace cobbles, trace boulders, trace fines. *... at 15.70m, metal fragments*			
					18.8–19.5		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	W		
					19.5		Borehole terminated at 19.5 m			

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH12

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 24/08/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391203m N.6480239m	Hole Diameter: 114mm	Plant used: Commachio C205
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Envirotech

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0 – 2.2		FILL: SAND: subangular to subrounded, fine to coarse grained, brown mottled pale brown; trace gravel of concrete.	D to M		
					2.2 – 4.5		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	D to M (to 4.3); W		
					4.5		Borehole terminated at 4.5 m			

Depth scale (m): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH13

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

CMW Geosciences

1:50

Position: E.391166m N.6480119m
Hole Diameter: 114mm
Checked by: MW
Elevation:
Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests Depth	Samples & Insitu Tests Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0.0–5.0		SW: SAND: subangular to subrounded, fine to coarse grained, brown mottled grey brown; trace gravel, trace fines.	D to M		
		3.7-3.8	B							
					5.0–6.0		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	M to W		
					6.0		Borehole terminated at 6.0 m			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH14

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

1:50

Logged by: DJP	Position: E.391357m N.6480081m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0		SW: SAND: subangular to subrounded, fine to coarse grained, brown mottled grey brown; trace gravel, trace fines.			
					3		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.	D to M		
							... at 3.90m, plastic bag			
		6.7-6.8	B				*... from 6.80m to 7.30m, concrete rubble*			
							... at 8.30m, fragment of insulation			
							... at 8.50m, metal fragments			
					9.3		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)			
					10					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH14

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

CMW Geosciences

1:50

Logged by: DJP | Position: E.391357m N.6480081m | Hole Diameter: 114mm | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					11		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	M		
					12		Borehole terminated at 12.0 m			
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached
Remarks:

BOREHOLE LOG - SH15

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

CMW Geosciences

1:50

Checked by: MW
Position: E.391629m N.6480259m
Elevation:
Hole Diameter: 114mm
Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests – Depth	Samples & Insitu Tests – Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: subangular to subrounded, fine to coarse grained, brown mottled pale brown; trace gravel of concrete.			
					1		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
					2					
					3					
					4					
					5					
					6		*... at 5.90m, wood fragments*			
					7					
					8					
					9					
					10					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH15

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

1:50

Position: E.391629m N.6480259m
Hole Diameter: 114mm
Checked by: MW
Elevation:
Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
					11					
					12					
					13					
					14					
					15			D to M		
					16					
					17					
					18					
		18.2-18.3	B							
					19					
					20					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH15

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

1:50

Position: E.391629m N.6480259m
Hole Diameter: 114mm
Checked by: MW
Elevation:
Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
					21		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	M to W		
					22					
					23					
					24		Borehole terminated at 24.0 m			
					25					
					26					
					27					
					28					
					29					
					30					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH16

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

CMW Geosciences

1:50 Sheet 1 of 3

Logged by: DJP	Position: E.391535m N.6480376m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: SAND: subangular to subrounded, fine to coarse grained, pale brown mottled pale brown; trace gravel of limestone and concrete.			
					1					
					2		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
					3					
					4		*... from 3.80m to 4.00m, with glass fragments*			
					5			D to M		
							... from 5.50m to 5.80m, chipboard			
					6					
		6.7-6.8	B							
					7					
					8					
					9		*... at 9.10m, wood fragment*			
					10					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH16

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

1:50

Logged by: DJP | Position: E.391535m N.6480376m | Hole Diameter: 114mm | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark brown mottled black; gravel, angular, medium to coarse grained, of concrete, brick, bitumen, tile, glass, metal and plastic; trace fines, trace cobbles.			
					11		*... from 10.90m to 11.10m, with glass fragments*			
					12					
					13					
					14					
					15					
					16					
					17		*... from 17.70m to 17.90m, wood fragments*			
					18		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)			
					19			M to W		
					20					

Termination Reason: Target depth reached

Remarks:

BOREHOLE LOG - SH16

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 05/09/2017

1:50

Logged by: DJP	Position: E.391535m N.6480376m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests		RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
		Depth	Type & Results							
							SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)			
					21		Borehole terminated at 21.0 m			
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH17

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

1:50

Logged by: DJP | Position: E.391245m N.6480192m | Plant used: Commachio C205

Checked by: MW | Elevation: | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–8.2		SAND: subangular to subrounded, fine to coarse grained sand, brown mottled dark grey black, trace fines, trace fine to coarse grained gravel, of brick and concrete.	D to M (0–3.0)		
		4.0-4.1	B		4			M		
					5.2		*... from 5.20m to 6.00m, black, strong HS2 odour*	M		
					8.2–8.8		SAND: subangular to subrounded, fine to coarse grained sand, dark brown, moderate cementation, (coffee rock). (Bassendean Sand)	M		
					8.8–10.1		SAND: subangular to subrounded, fine to coarse grained sand, brown, trace fine to medium grained gravel, of iron cemented sand. (Bassendean Sand)	M		

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH17

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

CMW Geosciences

1:50

Logged by: DJP | Position: E.391245m N.6480192m | Plant used: Commachio C205
Checked by: MW | Elevation: | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests Depth	Samples & Insitu Tests Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							SAND: subangular to subrounded, fine to coarse grained sand, brown, trace fine to medium grained gravel, of iron cemented sand. (Bassendean Sand)			
					11		*... from 11.00m to 12.00m, becoming white*			
					12		Borehole terminated at 12.0 m			
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH18

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391493m N.6480063m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0 – 3		SW: SAND: subangular to subrounded, fine to coarse grained, brown mottled yellow brown; trace gravel, trace fines.	D to M		
					3 – 9.9		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark grey brown streaked red; gravel, angular, medium to coarse grained, of brick, concrete and plastic; trace fines, trace cobbles.	D to M (to ~3.4); W (~3.4–3.9)		

Depth scale (m): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Termination Reason: Equipment refusal

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH18

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

1:50

Logged by: DJP | Position: E.391493m N.6480063m | Hole Diameter: 114mm | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					10.0–17.3		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark grey brown streaked red; gravel, angular, medium to coarse grained, of brick, concrete and plastic; trace fines, trace cobbles.	M		
					11.4		*... at 11.40m, wood fragments*			
		17.3-17.4	B		17.3–18.5		FILL: SAND: fine to medium grained sand, pale brown, with silt.			18.00m: increase in ground vibrations / hard drilling
					18.5		Borehole terminated at 18.5 m			

Termination Reason: Equipment refusal
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH19

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

1:50 Sheet 1 of 1

Logged by: DJP Position: E.391307m N.6480247m Hole Diameter: 114mm Plant used: Fraste Multidrill
Checked by: MW Elevation: Angle from horizontal: 90° Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–3.4		FILL: Gravelly SAND: angular to subangular, fine to coarse grained, dark grey brown mottled black; gravel, angular, medium to coarse grained, of brick, concrete and plastic; trace fines, trace cobbles.	M		
		3.8-4.3	B		3.4–6.3		SW: SAND: subangular to subrounded, fine to coarse grained, brown mottled dark grey brown; trace gravel, with fines. *... from 3.80m to 4.30m, blue grey, trace clay*	W		
					6.3–9.0		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	W		
					9.0		Borehole terminated at 9.0 m			

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH20

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

CMW Geosciences

1:50

Logged by: DJP	Position: E.391127m N.6480292m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–10		FILL: SAND: subangular to subrounded, fine to coarse grained, dark brown mottled black; with gravel of brick and concrete; trace cobbles, trace fines. *... at 4.10m, carpet* *... at 6.10m, plastic sheet*	D to M		

Depth scale (m): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH20

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 06/09/2017

1:50

Logged by: DJP	Position: E.391127m N.6480292m	Hole Diameter: 114mm	Plant used: Fraste Multidrill
Checked by: MW	Elevation:	Angle from horizontal: 90°	Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					11		SW: SAND: subangular to subrounded, fine to coarse grained, white streaked pale grey. (Bassendean Sand)	W		
					12		Borehole terminated at 12.0 m			
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH21

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

1:50 Sheet 1 of 1

Logged by: DJP
Checked by: MW
Position: E.391149m N.6480150m
Elevation:
Angle from horizontal: 90°
Plant used: Fraste Multidrill
Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0–6		FILL: SAND: subangular to subrounded, fine to coarse grained sand, grey brown mottled brown, trace fine to medium grained gravel, trace fines.	D to M		
		4.6-4.7	B				*... from 4.60m to 4.90m, pale brown, silty sand lens*			
					6–9		SAND: subangular to subrounded, fine to coarse grained sand, brown, trace fine to medium grained gravel, of iron cemented sand. (Bassendean Sand)	D to M (to 6.5); M to W		
					9		Borehole terminated at 9.0 m			

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH22

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

CMW Geosciences

1:50 Sheet 1 of 2

Logged by: DJP | Position: E.391243m N.6480592m | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0		FILL: SAND: angular to subangular, fine to coarse grained sand, angular, medium to coarse grained gravel, dark brown mottled black, with fine to coarse grained gravel, with cobbles, of concrete, brick, bitumen, tile, and plastic; trace boulders, of concrete.			
							... at 0.60m, plastic liner			
					1					
					2					
					3					
		3.5-3.6	B				*... at 3.40m, wood fragments*			
					4					
							... at 4.50m, plastic strapping			
					5			D to M		
					6					
							... at 6.40m, steel wire			
					7					
					8					
					9					
					10					

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH22

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

CMW Geosciences

1:50

Logged by: DJP | Position: E.391243m N.6480592m | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					10–12.0		FILL: SAND: angular to subangular, fine to coarse grained sand, angular, medium to coarse grained gravel, dark brown mottled black, with fine to coarse grained gravel, with cobbles, of concrete, brick, bitumen, tile, and plastic; trace boulders, of concrete. *... at 10.50m, wood fragment*			
					12.0–15.0		SAND: subangular to subrounded, fine to coarse grained sand, white. (Bassendean Sand)	M to W		
					15.0		Borehole terminated at 15.0 m			

Depth scale: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

Termination Reason: Target depth reached
Remarks:

BOREHOLE LOG - SH23

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

CMW Geosciences

1:50

Logged by: DJP | Position: E.391540m N.6480151m | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					0 – 0.9		FILL: SAND: subangular to subrounded, fine to coarse grained sand, brown mottled yellow brown, trace fine to coarse grained gravel, trace cobbles, of brick and concrete.			
					0.9 – 10		FILL: Gravelly SAND: subangular to subrounded, fine to coarse grained sand, dark brown black mottled grey brown, trace fine to coarse grained gravel, with cobbles, trace boulders, of brick, glass and concrete; trace fines.			

Depth scale (m): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH23

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

CMW Geosciences

1:50

Logged by: DJP Position: E.391540m N.6480151m Plant used: Fraste Multidrill
Checked by: MW Elevation: Angle from horizontal: 90° Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
							FILL: Gravelly SAND: subangular to subrounded, fine to coarse grained sand, dark brown black mottled grey brown, trace fine to coarse grained gravel, with cobbles, trace boulders, of brick, glass and concrete; trace fines.			
					11					
					12		... *at 12.00m, plastic strapping*			
					13					
					14		... *from 14.10m to 14.90m, concrete and brick fill*			
					15			D to M		
					16					
					17					
					18		... *at 18.10m, wood fragments*			
							... *at 18.50m, plastic strapping*			
					19		... *at 19.00m, glass fragments*			
		20.1-20.2	B		20					

Termination Reason: Target depth reached
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE LOG - SH23

Client: Handle Property Group
Project: Landfill Redevelopment Driver Rd
Location: Driver Rd, Darch
Project ID: PER2017-0193
Date: 08/09/2017

1:50

Logged by: DJP | Position: E.391540m N.6480151m | Plant used: Fraste Multidrill
Checked by: MW | Elevation: | Angle from horizontal: 90° | Contractor: Ecoprobe

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Structure & other observations
					21		FILL: Gravelly SAND: subangular to subrounded, fine to coarse grained sand, dark brown black mottled grey brown, trace fine to coarse grained gravel, with cobbles, trace boulders, of brick, glass and concrete; trace fines.			
					22, 23		SAND: subangular to subrounded, fine to coarse grained sand, white. (Bassendean Sand)	M to W		
					24		Borehole terminated at 24.0 m			
					25, 26, 27, 28, 29, 30					

Termination Reason: Target depth reached

Remarks:

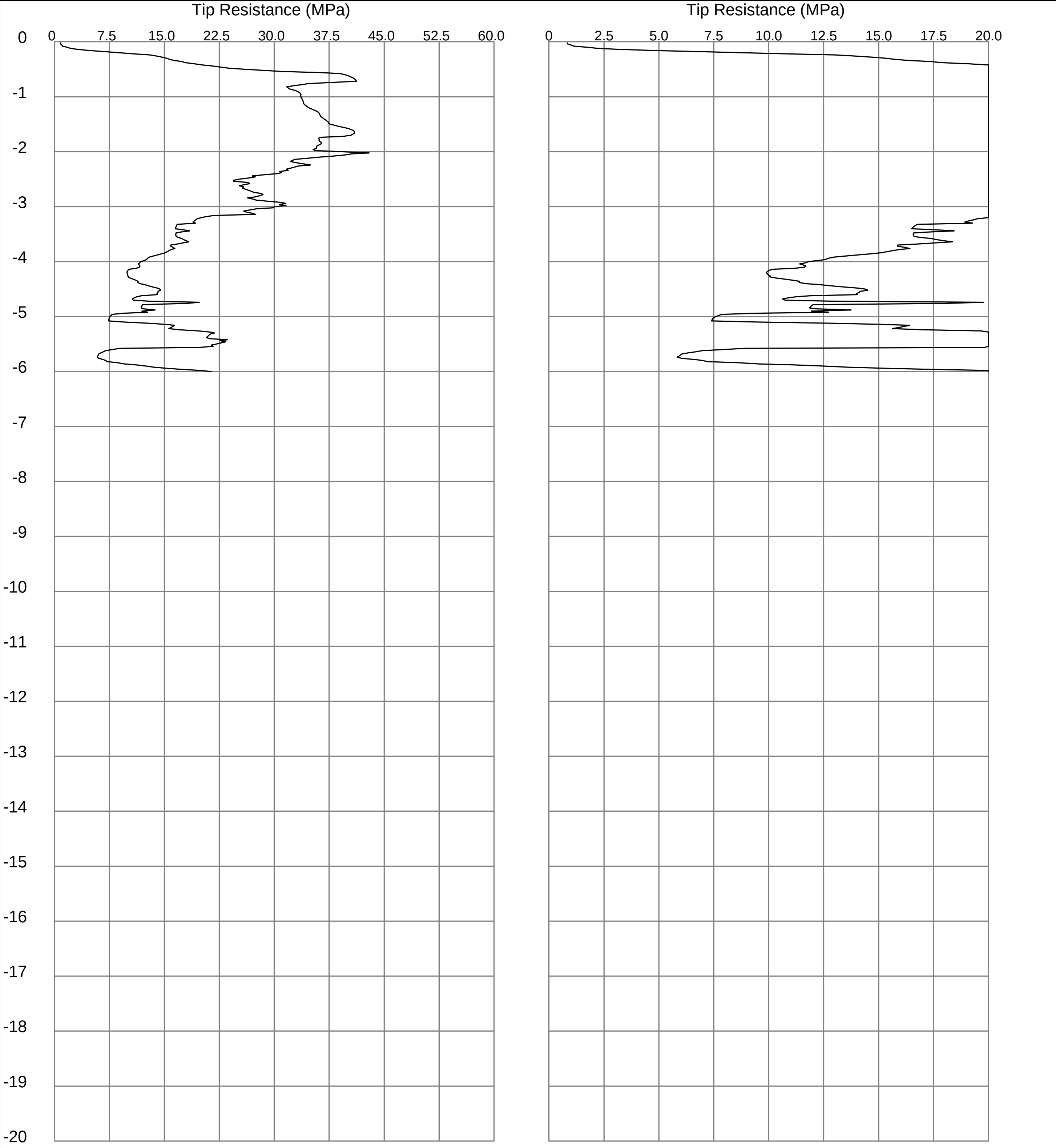
This report must be read in conjunction with accompanying notes and abbreviations.

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum thrust***			Sounding No. **CPT 01**
R/L = 45.54m AHD	Hole open to depth (m) **-**	Total depth (m) **6.00**	Operator **Brad**	File **1**
Co ordinate: X= 391142.38 Y= 6480211.86	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

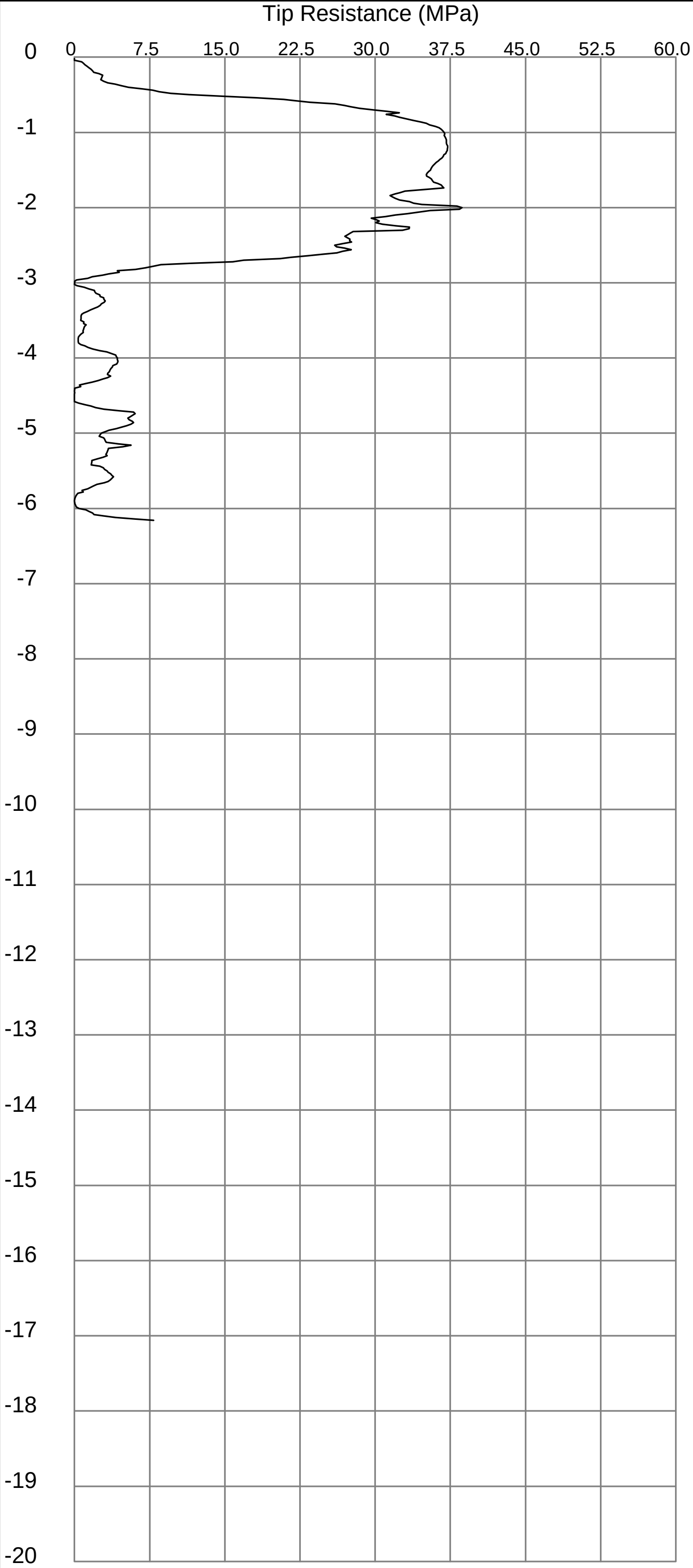
MECHANICAL CONE PENETRATION TEST

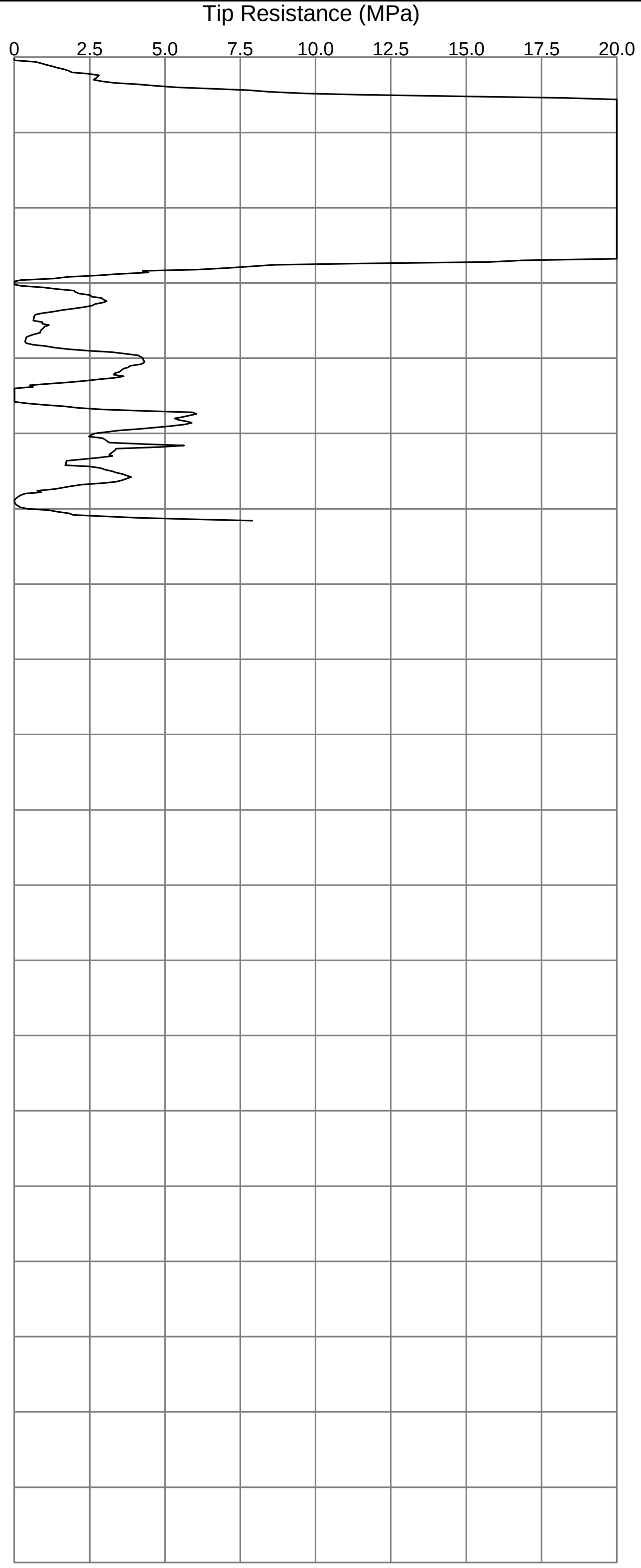
Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks	Sounding No.
3925	***Refusal criteria; Damage to cone***	**CPT 02**

R/L = 58.56m AHD	Hole open to depth (m) **-**	Total depth (m) **6.16**	Operator **Brad**	File **2**
Co ordinate: X= 391549.35 Y= 6480187.70	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

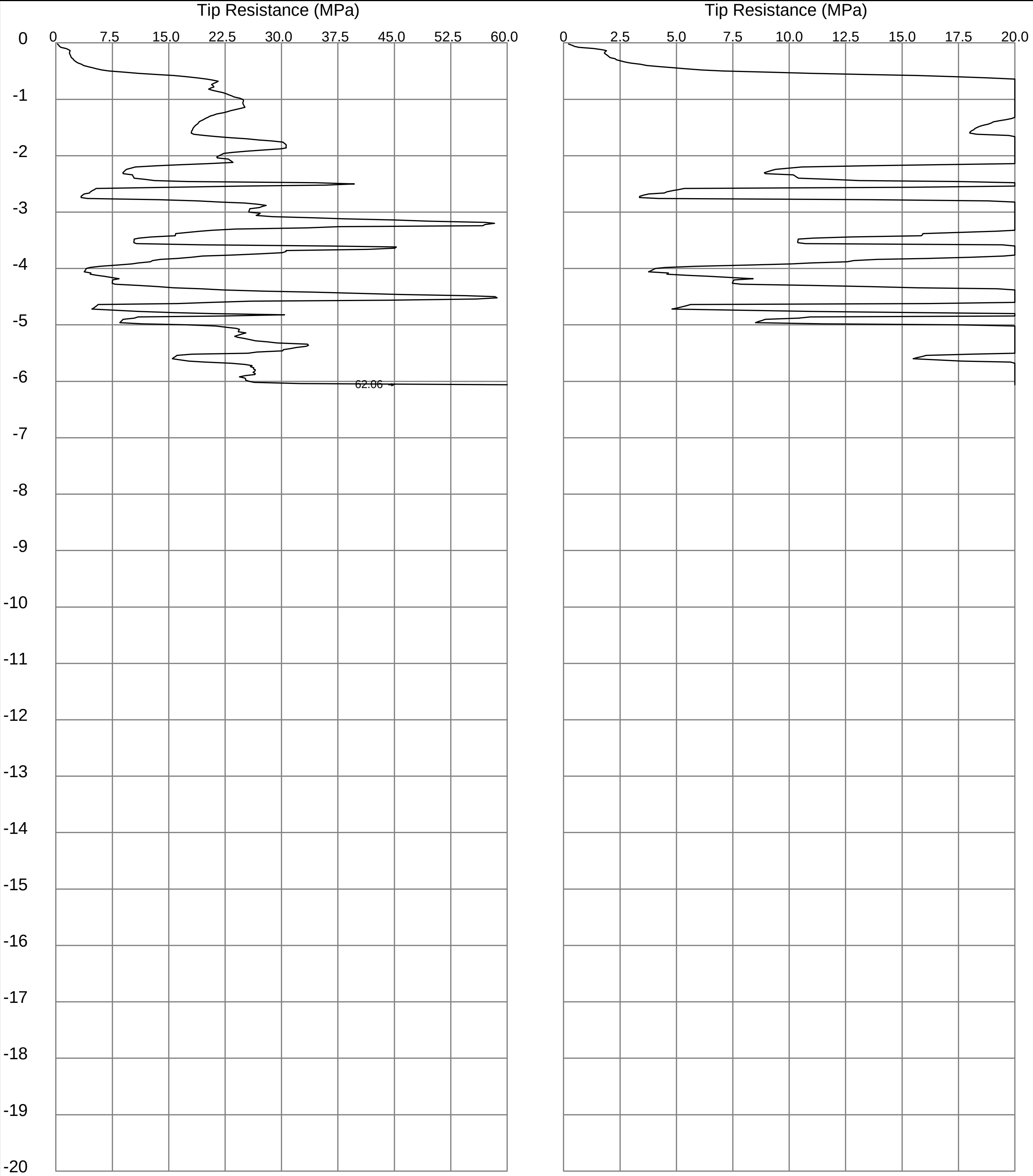
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks	Sounding No.
3925	***Refusal criteria; Maximum cone resistance***	**CPT 02A**

R/L = 58.45m AHD	Hole open to depth (m) **-**	Total depth (m) **6.06**	Operator **Brad**	File **3**
Co ordinate: X= 391549.70 Y= 6480187.48	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

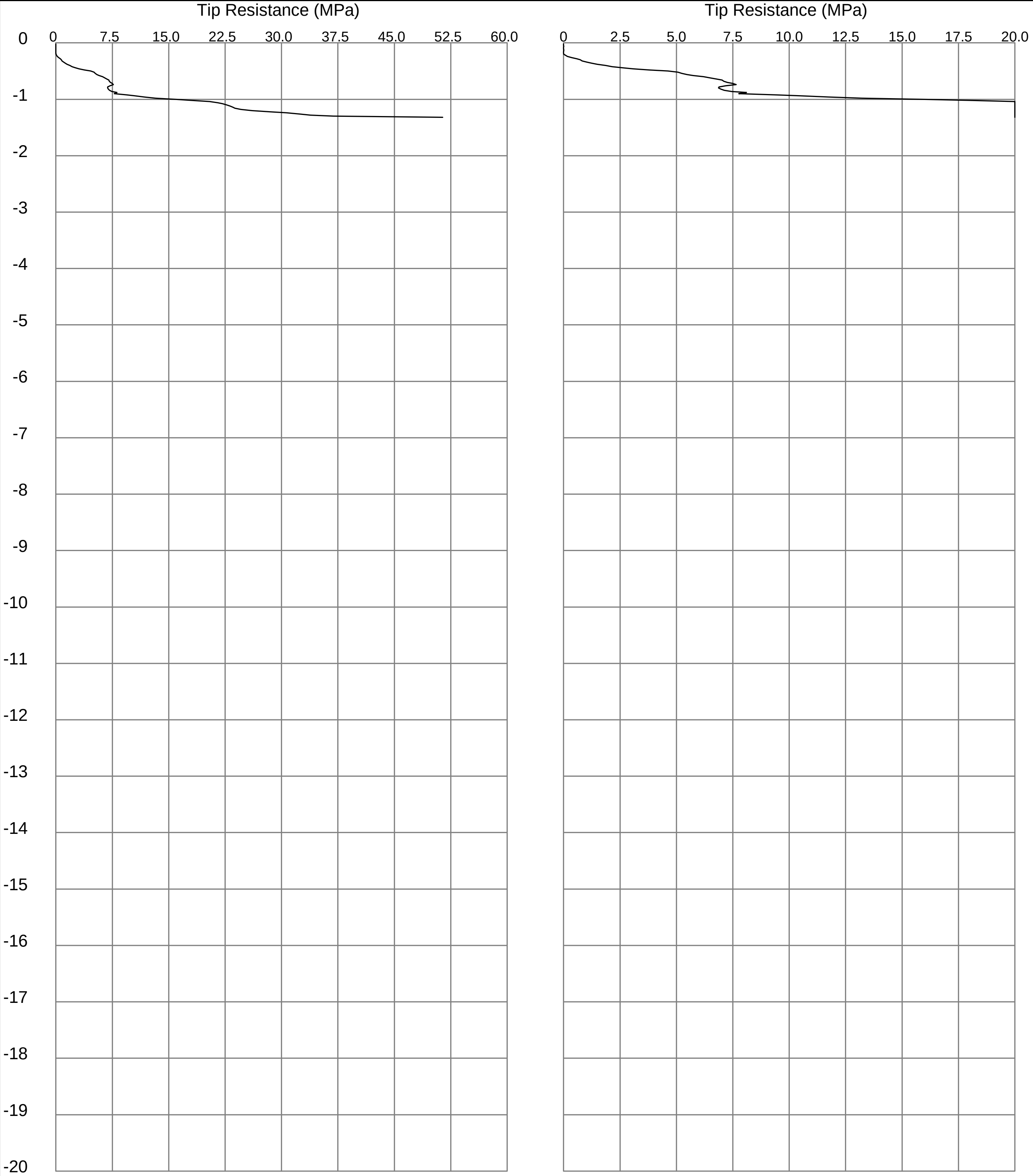
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 03**
R/L = 57.56m AHD	Hole open to depth (m) **-**	Total depth (m) **1.32**	Operator **Brad**	File **4**
Co ordinate: X= 391567.17 Y= 6480253.55	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

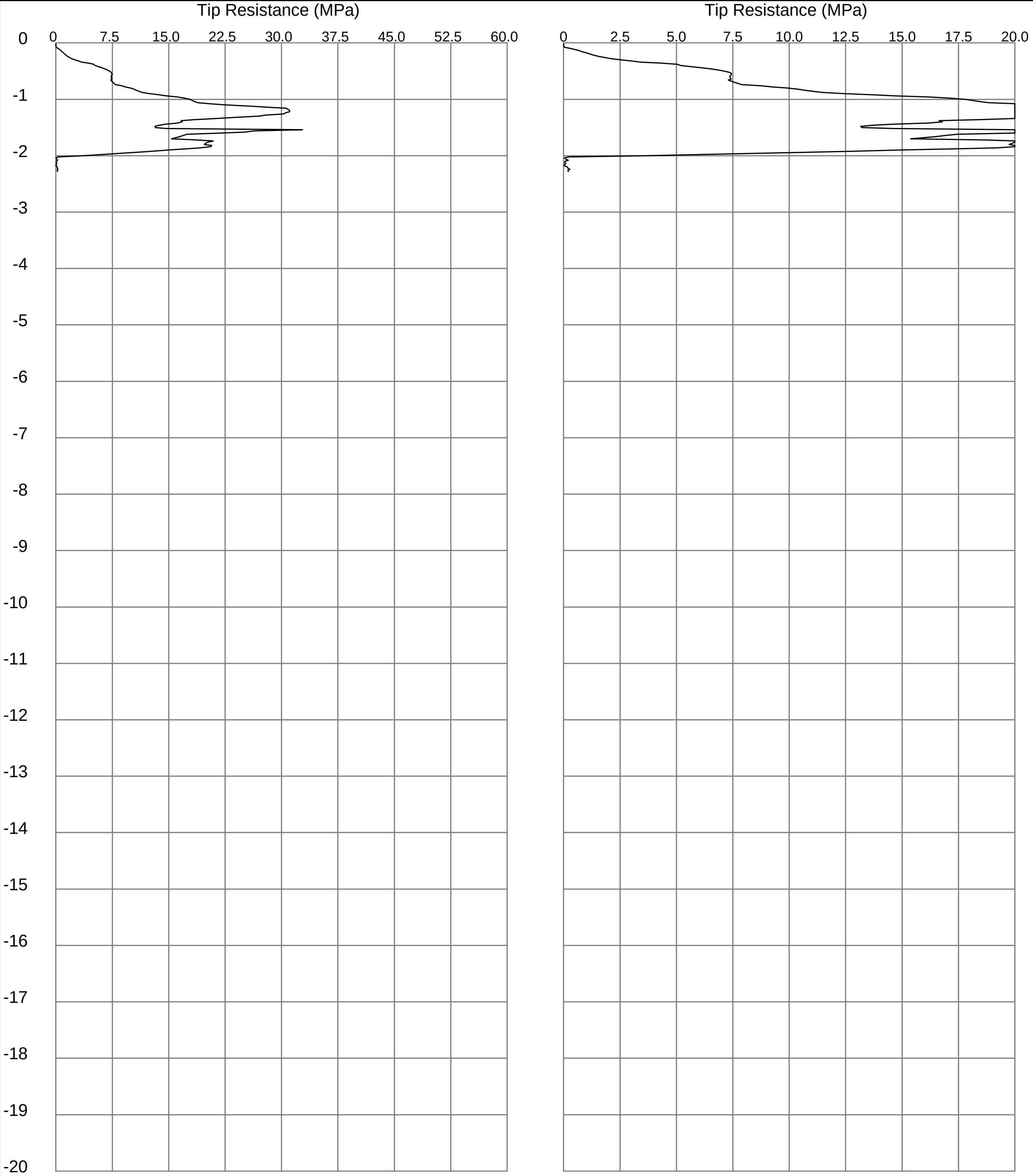
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Damage to cone***			Sounding No. **CPT 03A**
R/L = 57.46m AHD	Hole open to depth (m) **-**	Total depth (m) **2.28**	Operator **Brad**	File **5**
Co ordinate: X= 391568.09 Y= 6480256.79	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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FRICTION REDUCER USED -42 MM

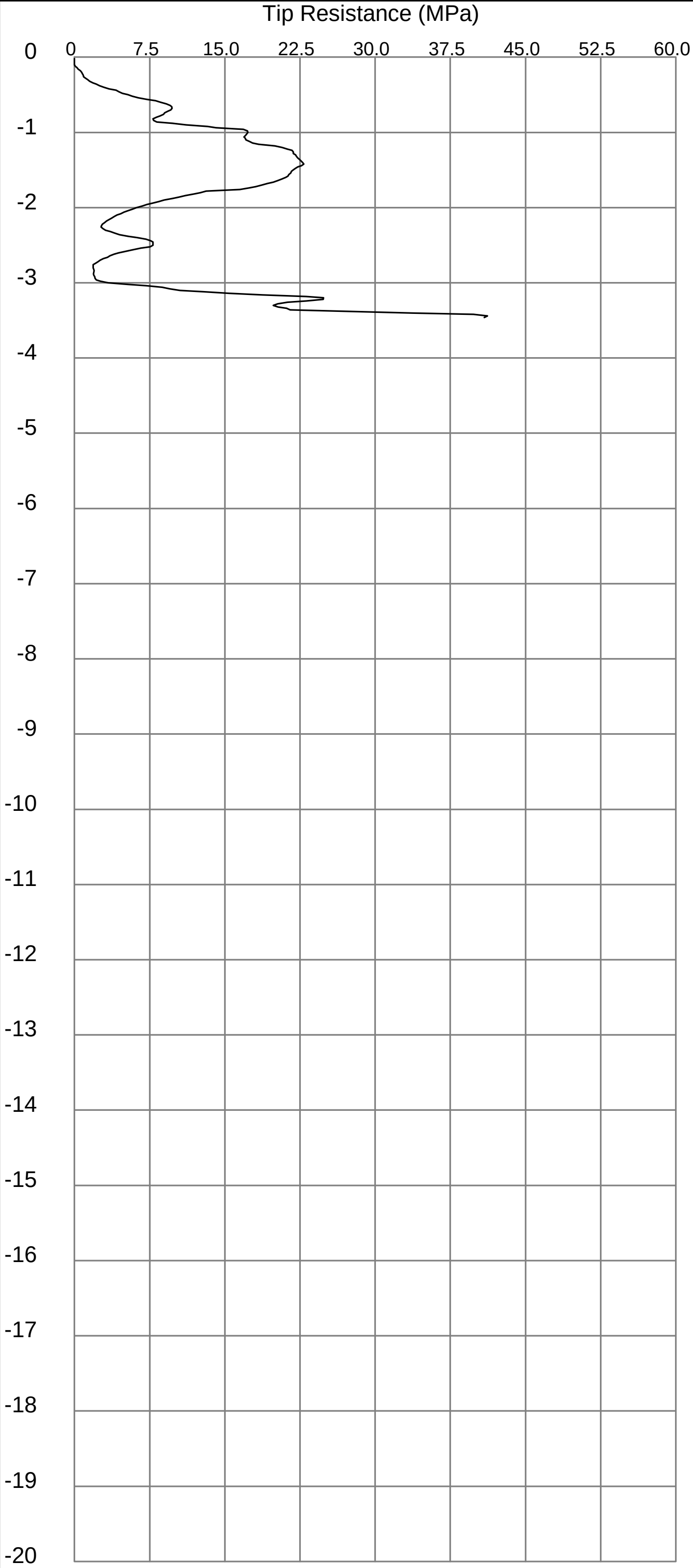
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

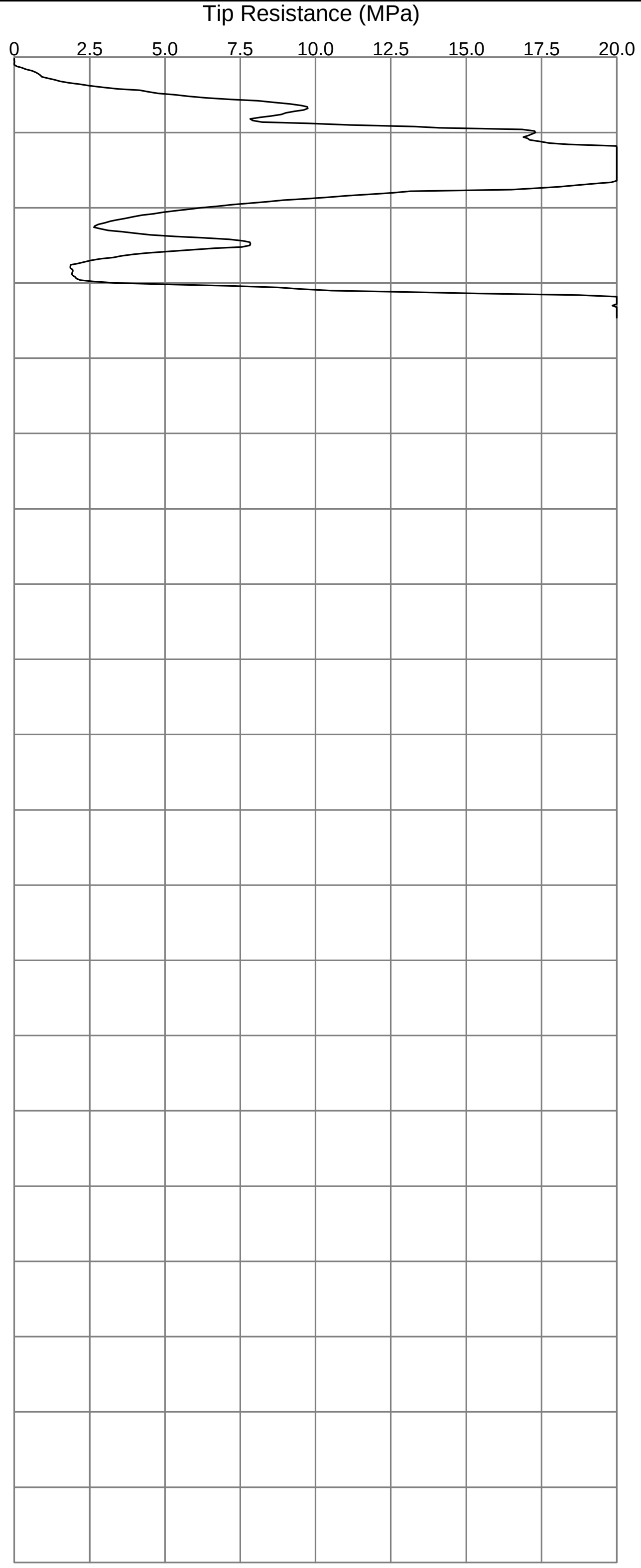
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 04**
R/L = 55.11m AHD	Hole open to depth (m) **-**	Total depth (m) **3.46**	Operator **Brad**	File **6**
Co ordinate: X= 391656.71 Y= 6480423.06	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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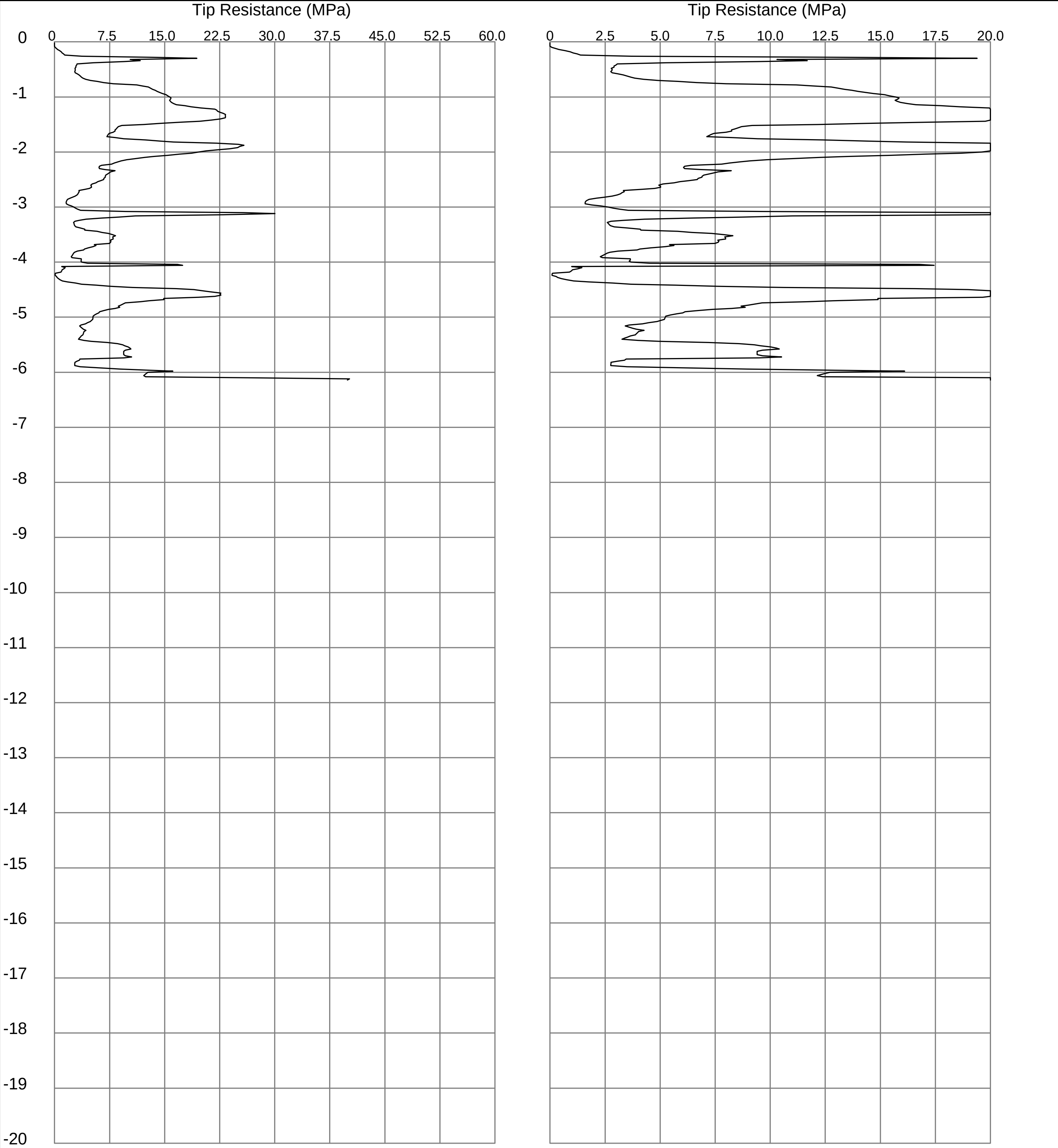
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum cone resistance***			Sounding No. **CPT 05**
R/L = 53.88m AHD	Hole open to depth (m) **-**	Total depth (m) **6.14**	Operator **Brad**	File **7**
Co ordinate: X= 391670.88 Y= 6480535.93	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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FRICTION REDUCER USED -42 MM

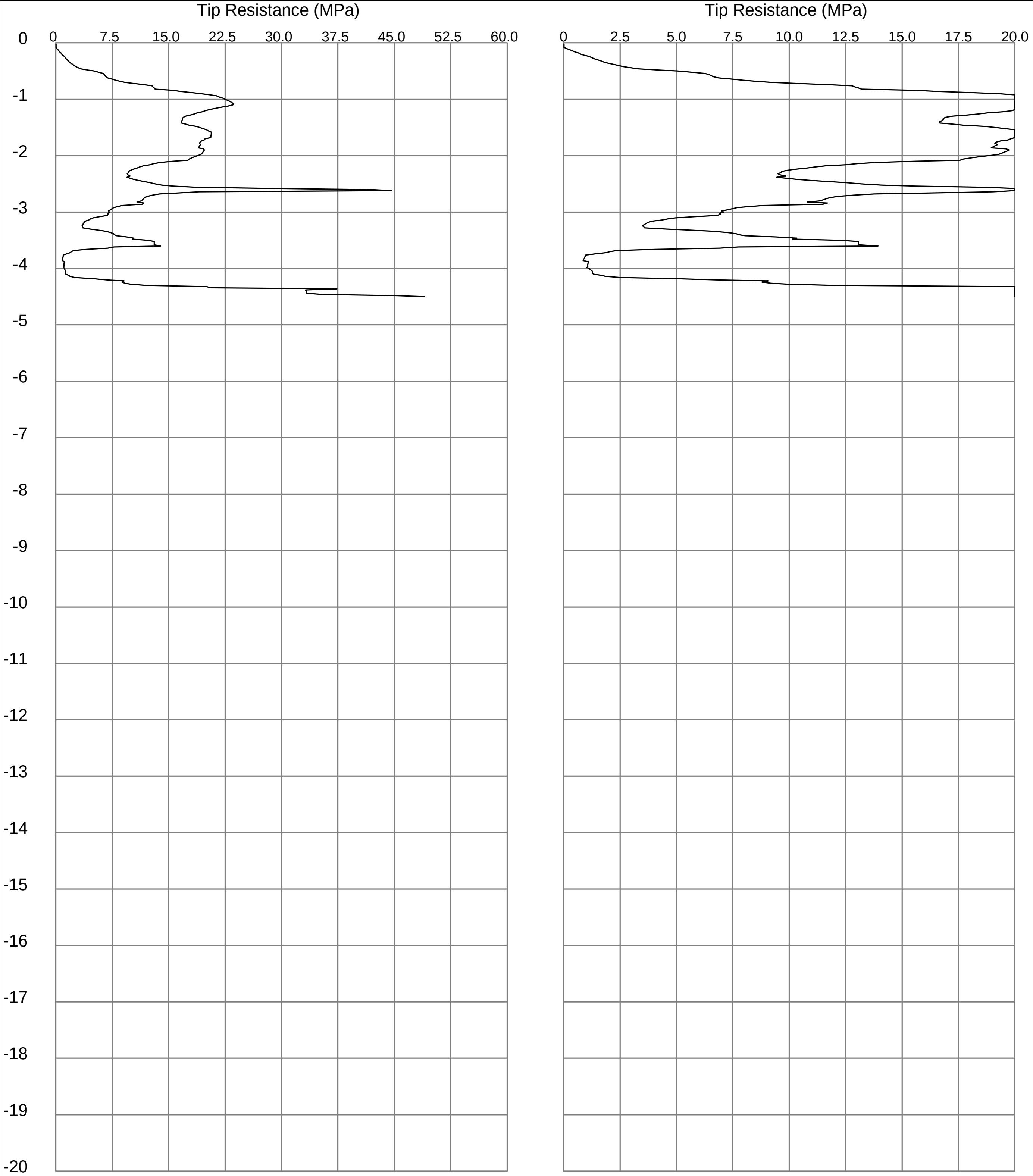
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 06**
R/L = 51.89m AHD	Hole open to depth (m) **-**	Total depth (m) **4.50**	Operator **Brad**	File **8**
Co ordinate: X= 391554.02 Y= 6480533.14	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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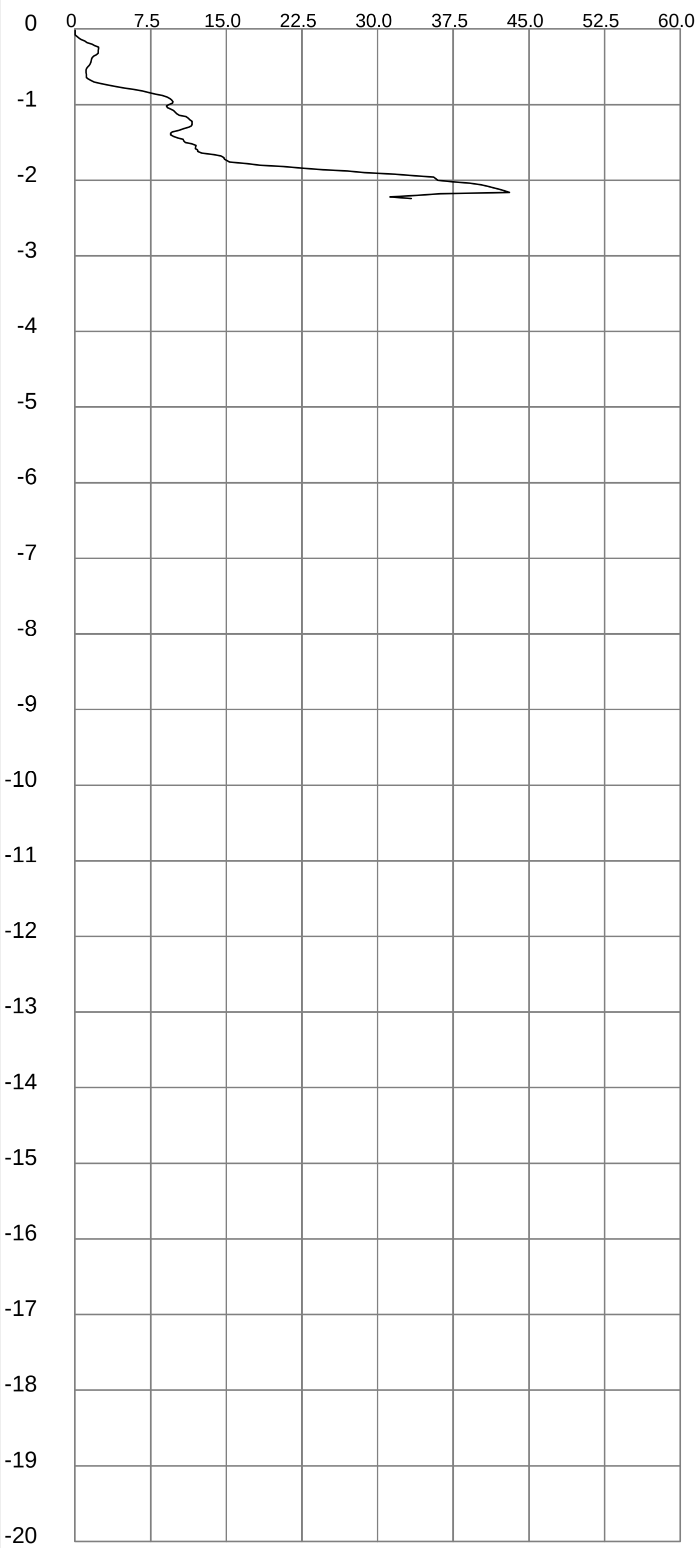
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

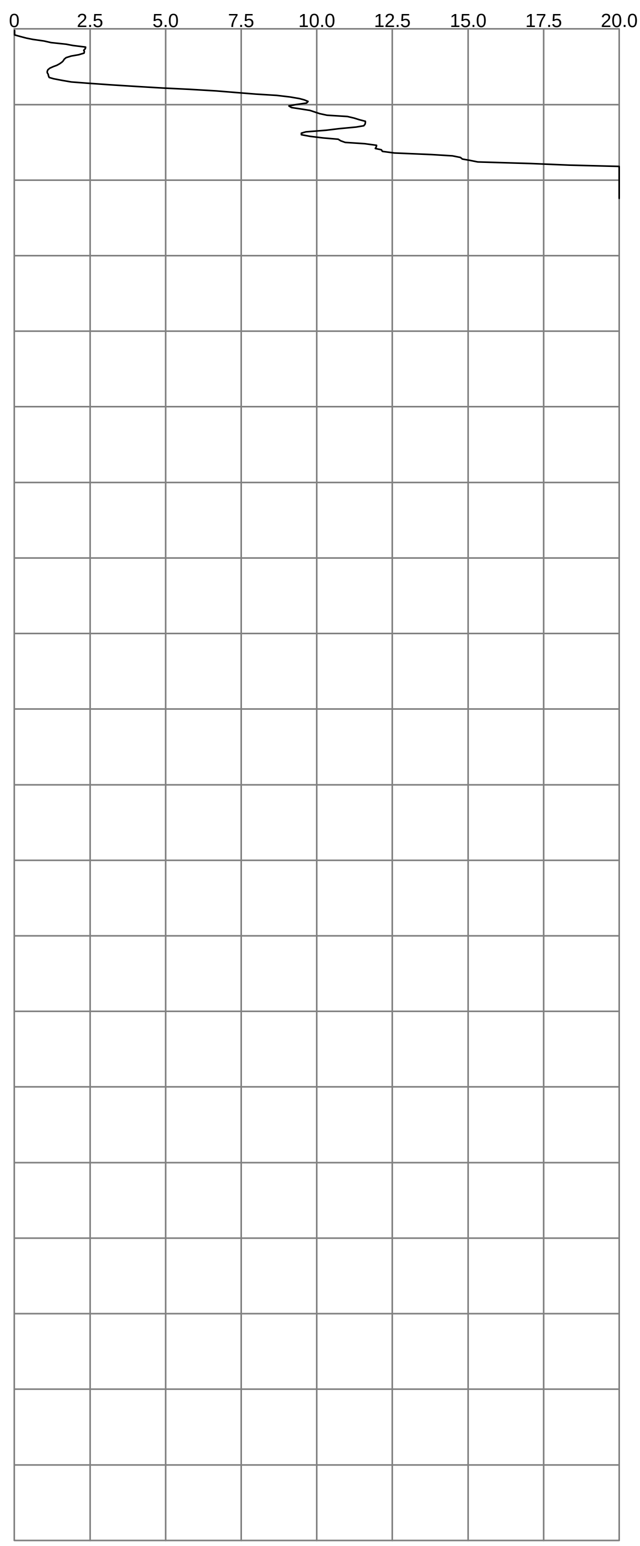
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Damage to cone***			**CPT 07**
R/L = 52.96m AHD	Hole open to depth (m) **-**	Total depth (m) **2.24**	Operator **Brad**	File **9**
Co ordinate: X= 391484.92 Y= 6480434.75	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **28-8-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

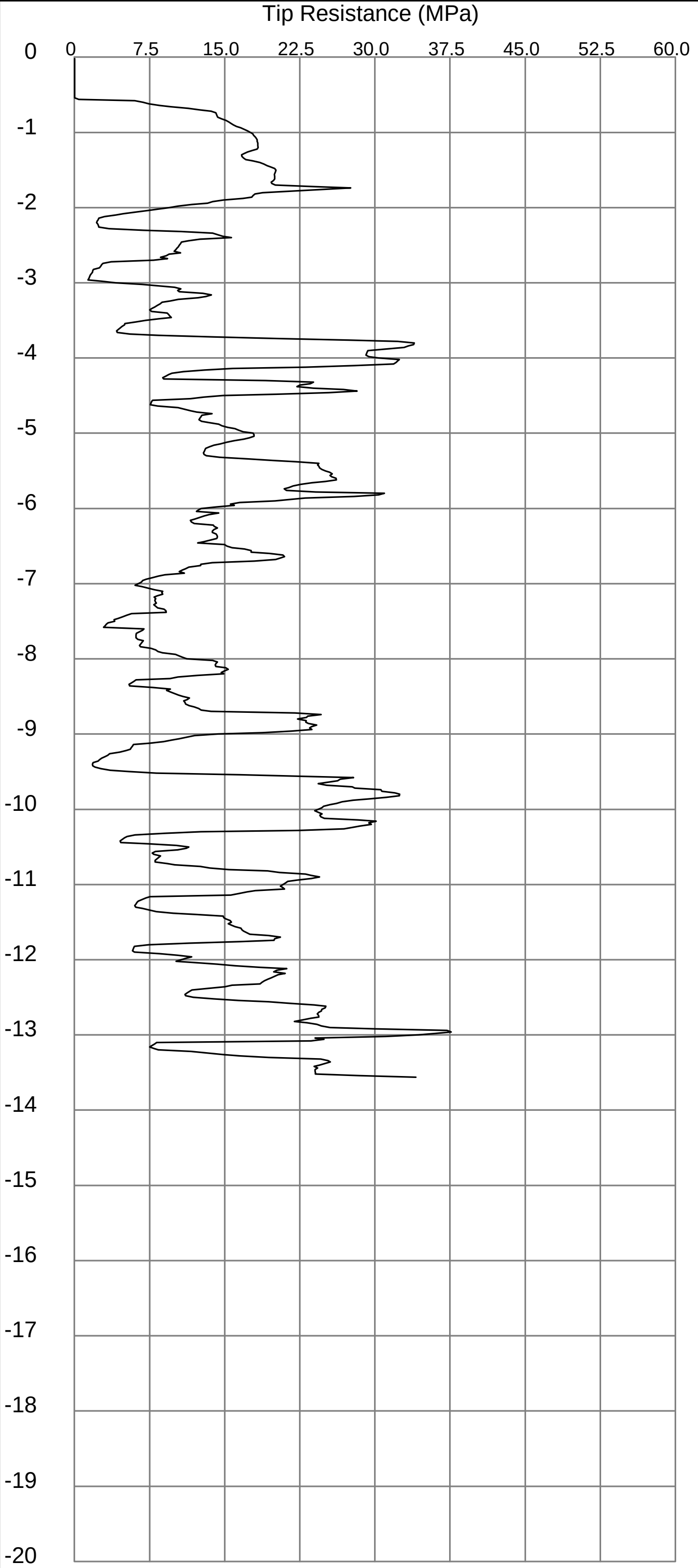
MECHANICAL CONE PENETRATION TEST

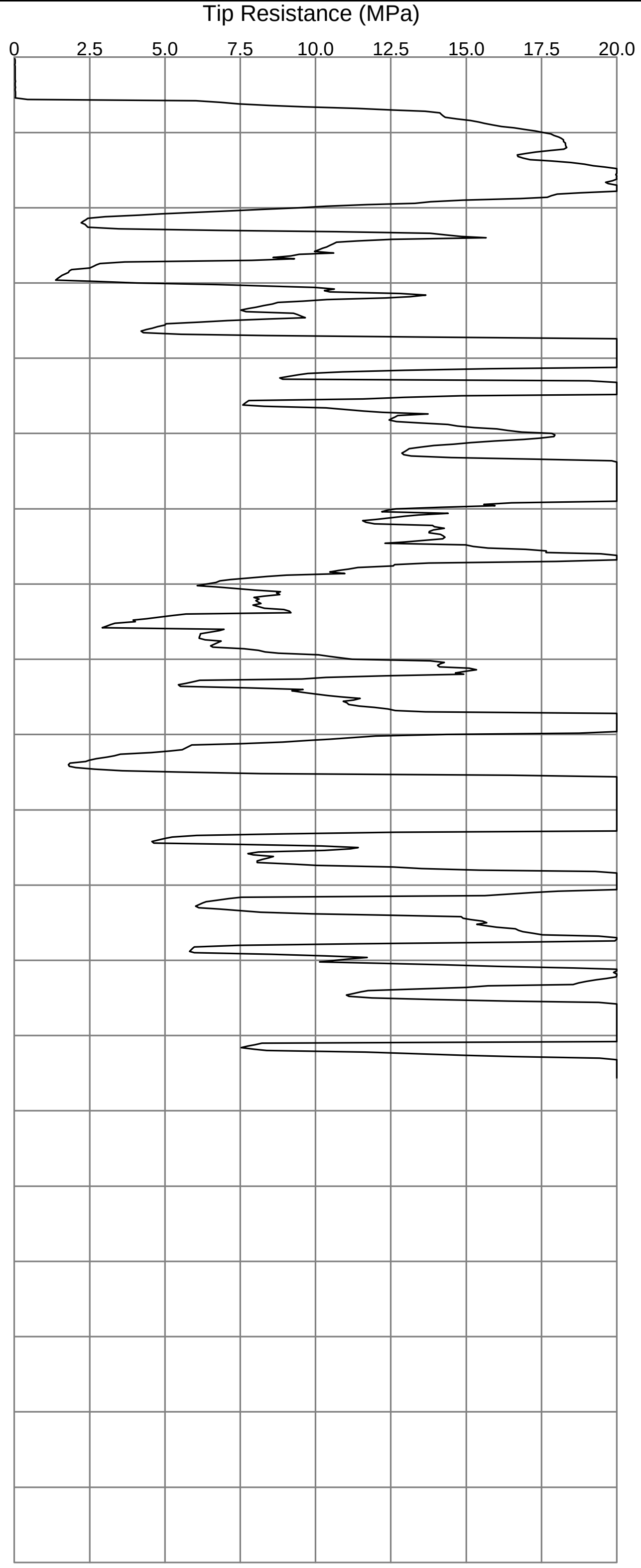
Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks	Sounding No.
3925	***Refusal criteria; Maximum thrust***	**CPT 08**

R/L = 58.43m AHD	Hole open to depth (m) **6.50**	Total depth (m) **13.56**	Operator **Brad**	File **10**
Co ordinate: X= 391554.96 Y= 6480071.87	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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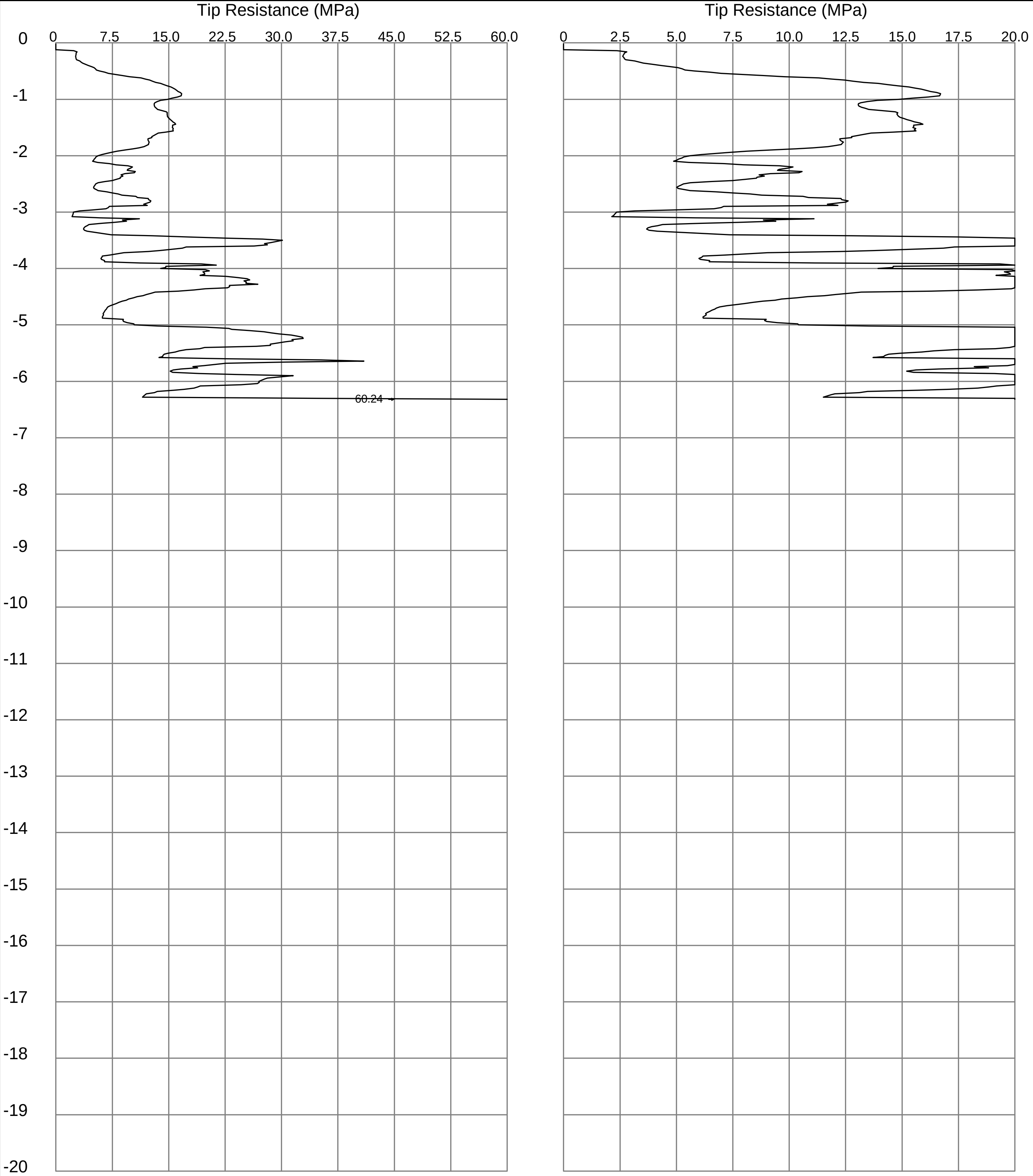
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 09**
R/L = 50.92m AHD	Hole open to depth (m) **-**	Total depth (m) **6.32**	Operator **Brad**	File **11**
Co ordinate: X= 391396.69 Y= 6480147.23	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		

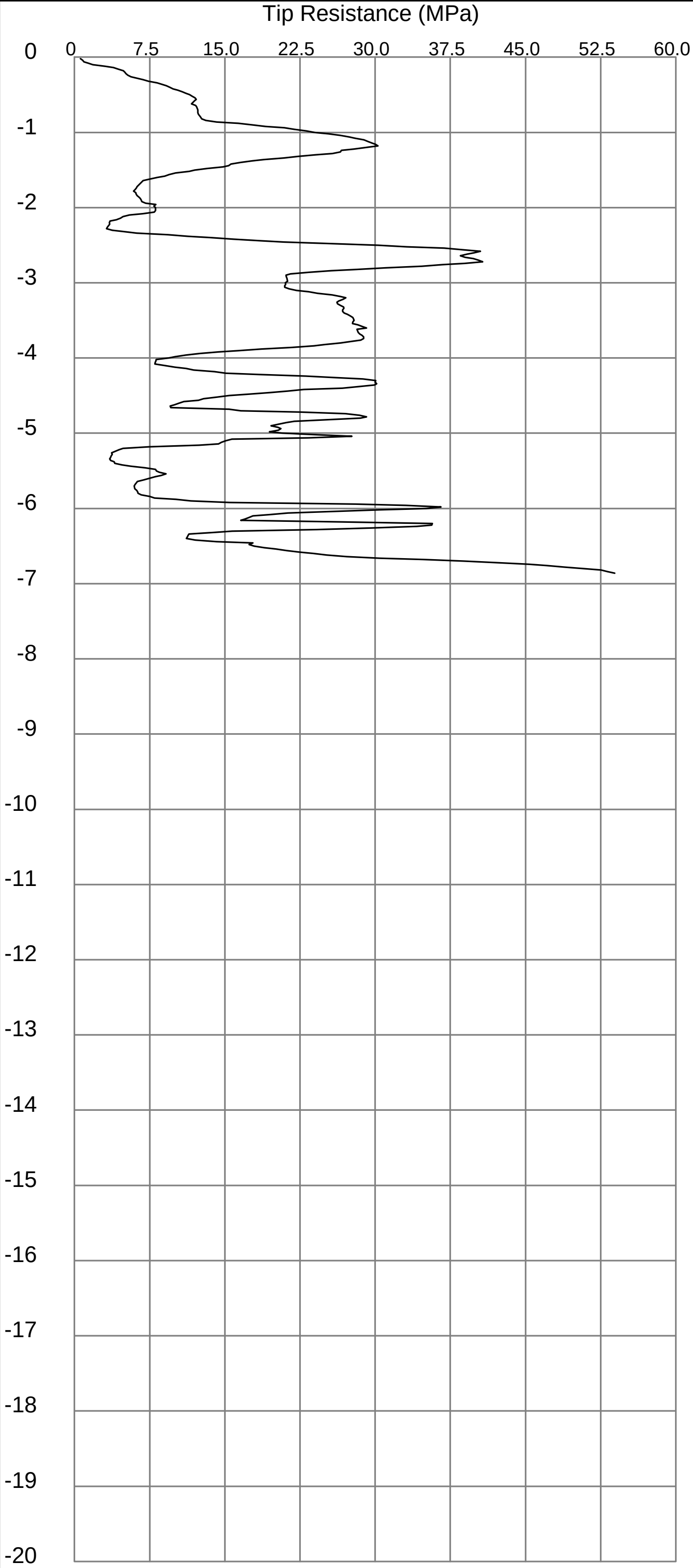


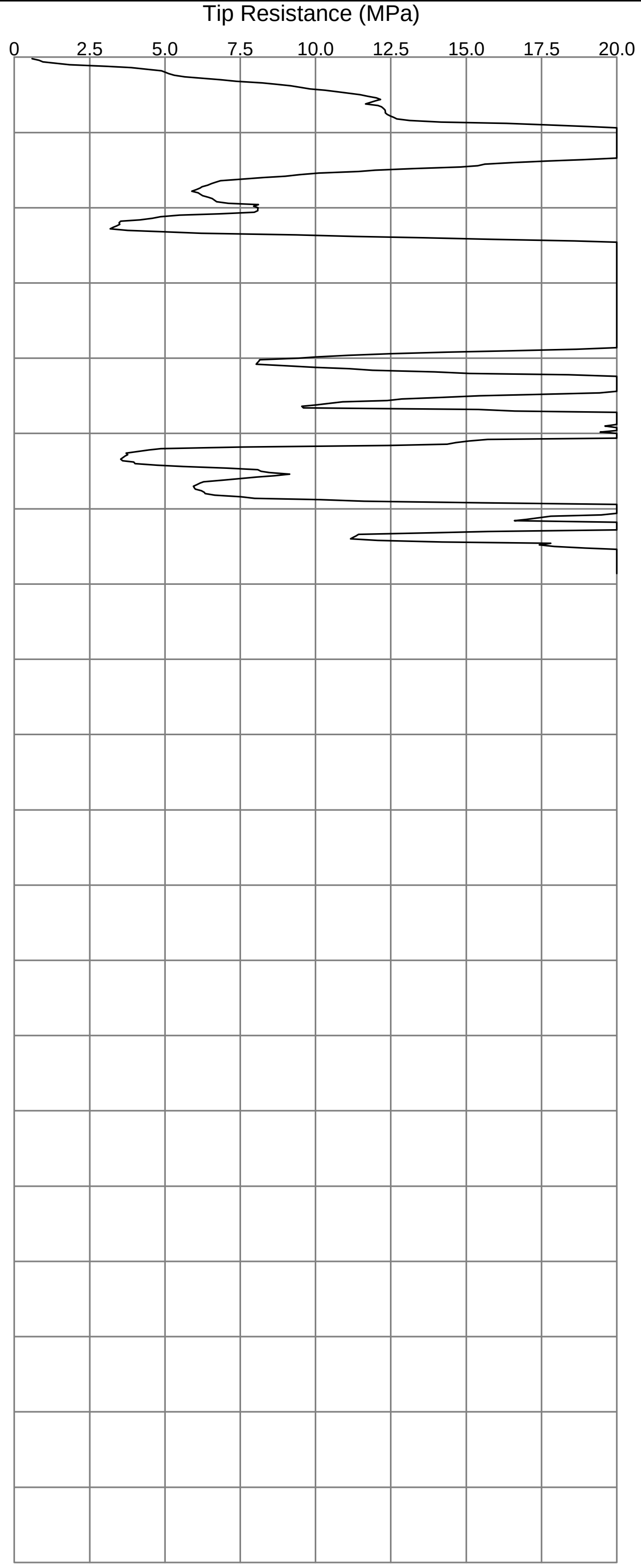
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum thrust***			**CPT 10**
R/L = 44.38m AHD	Hole open to depth (m) **-**	Total depth (m) **6.86**	Operator **Brad**	File **12**
Co ordinate: X= 391284.99 Y= 6480100.95	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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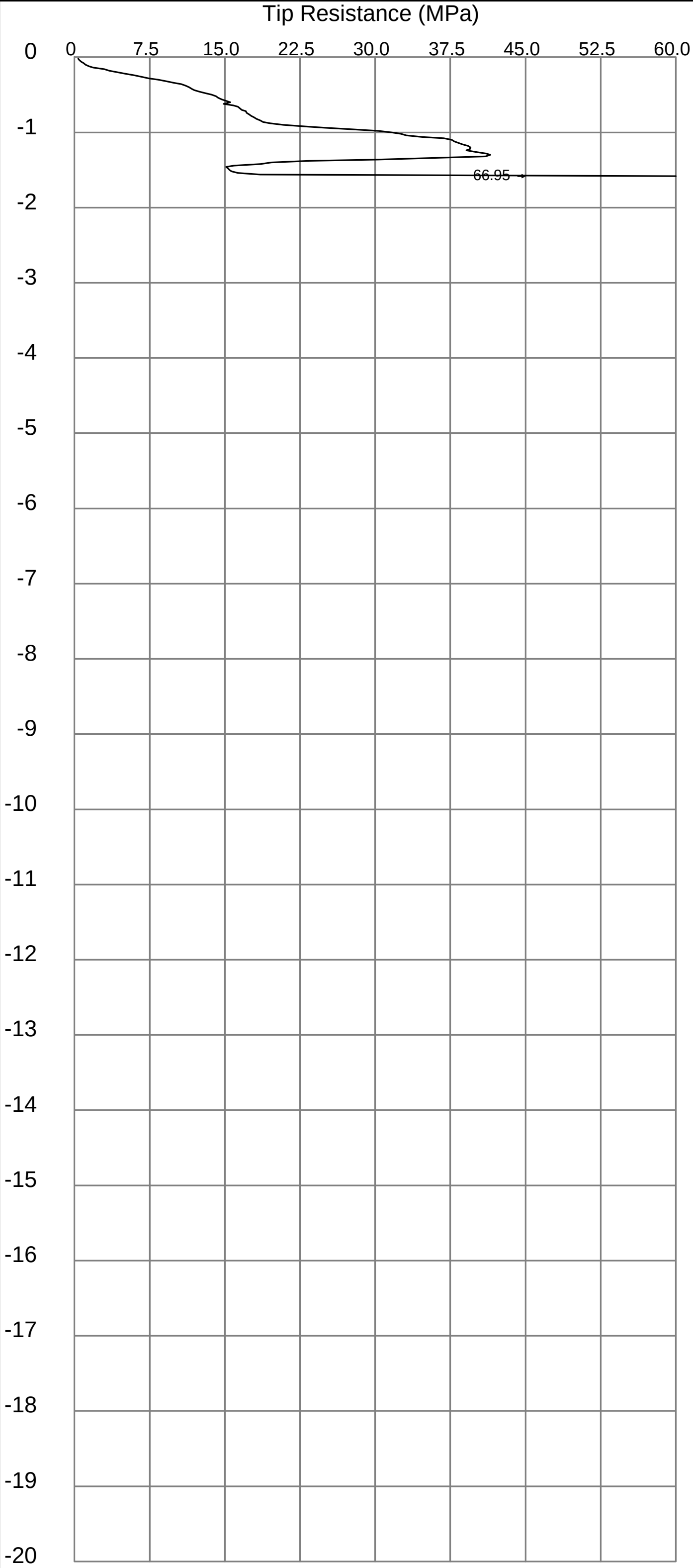
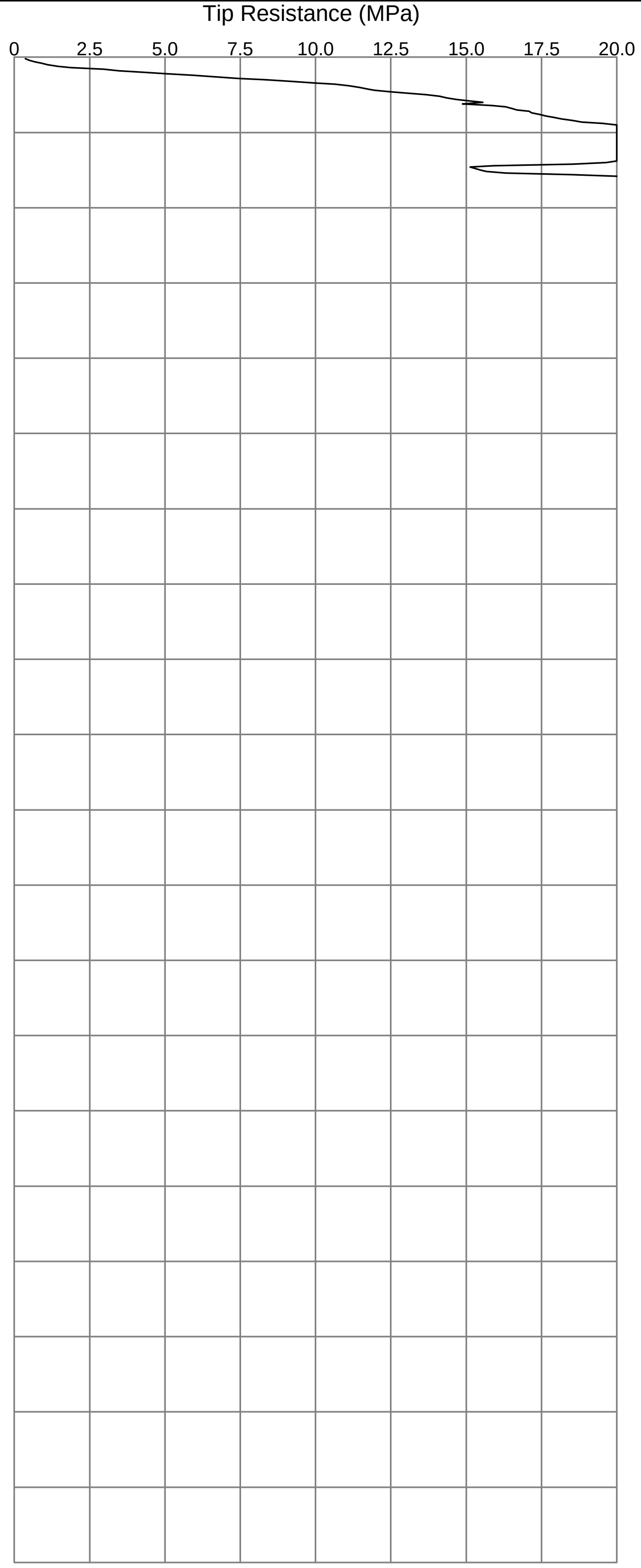
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 11**
R/L = 42.46m AHD	Hole open to depth (m) **-**	Total depth (m) **1.58**	Operator **Brad**	File **13**
Co ordinate: X= 391152.37 Y= 6480101.53	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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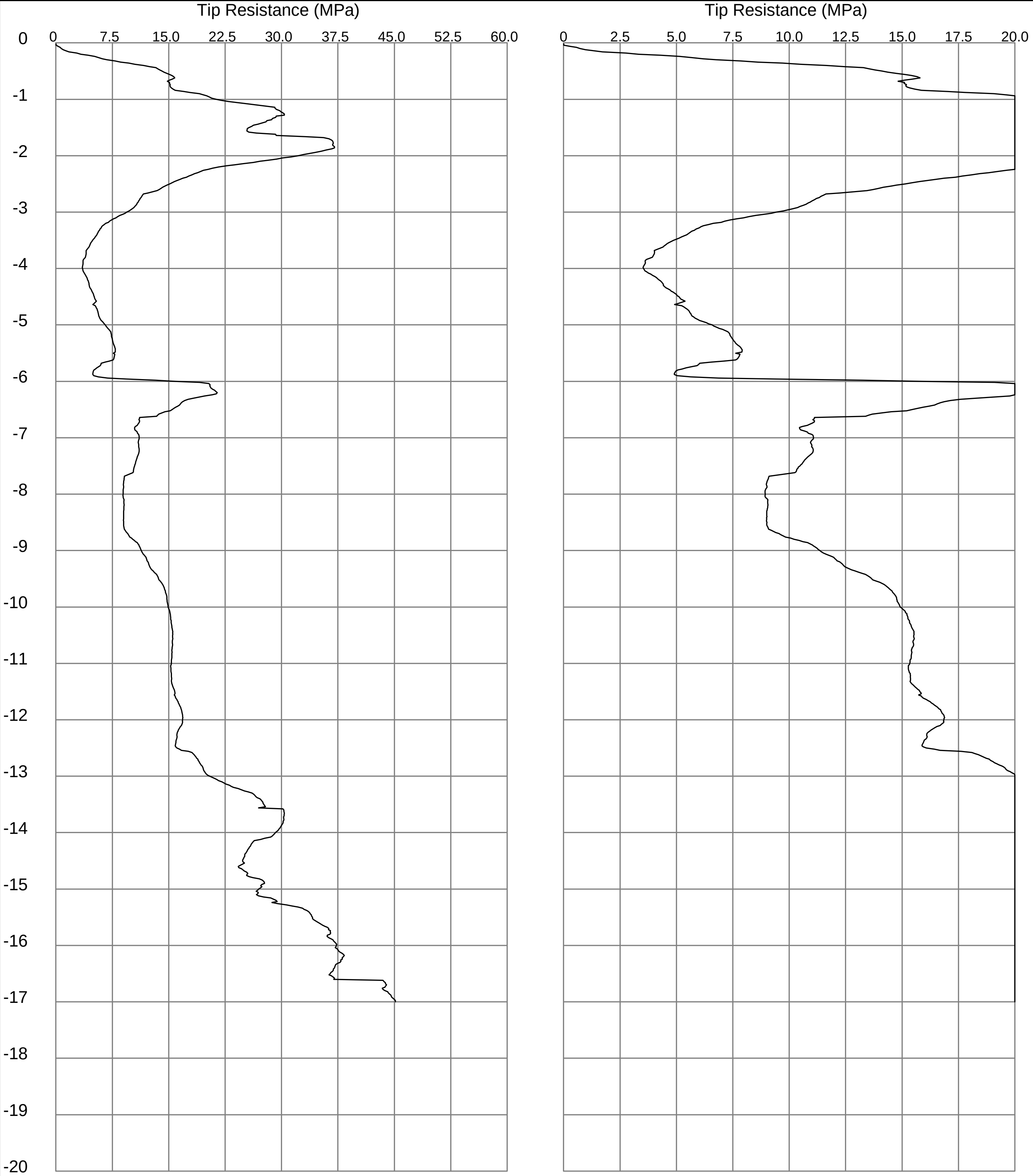
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks		Sounding No. **CPT 11A**
R/L = 42.44m AHD	Hole open to depth (m) **4.10**	Total depth (m) **17.00** / Operator **Brad**	File **14**
Co ordinate: X= 391149.07 Y= 6480101.94	Groundwater Level (m) **4.00**	Cone No. **100709M**	Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**	



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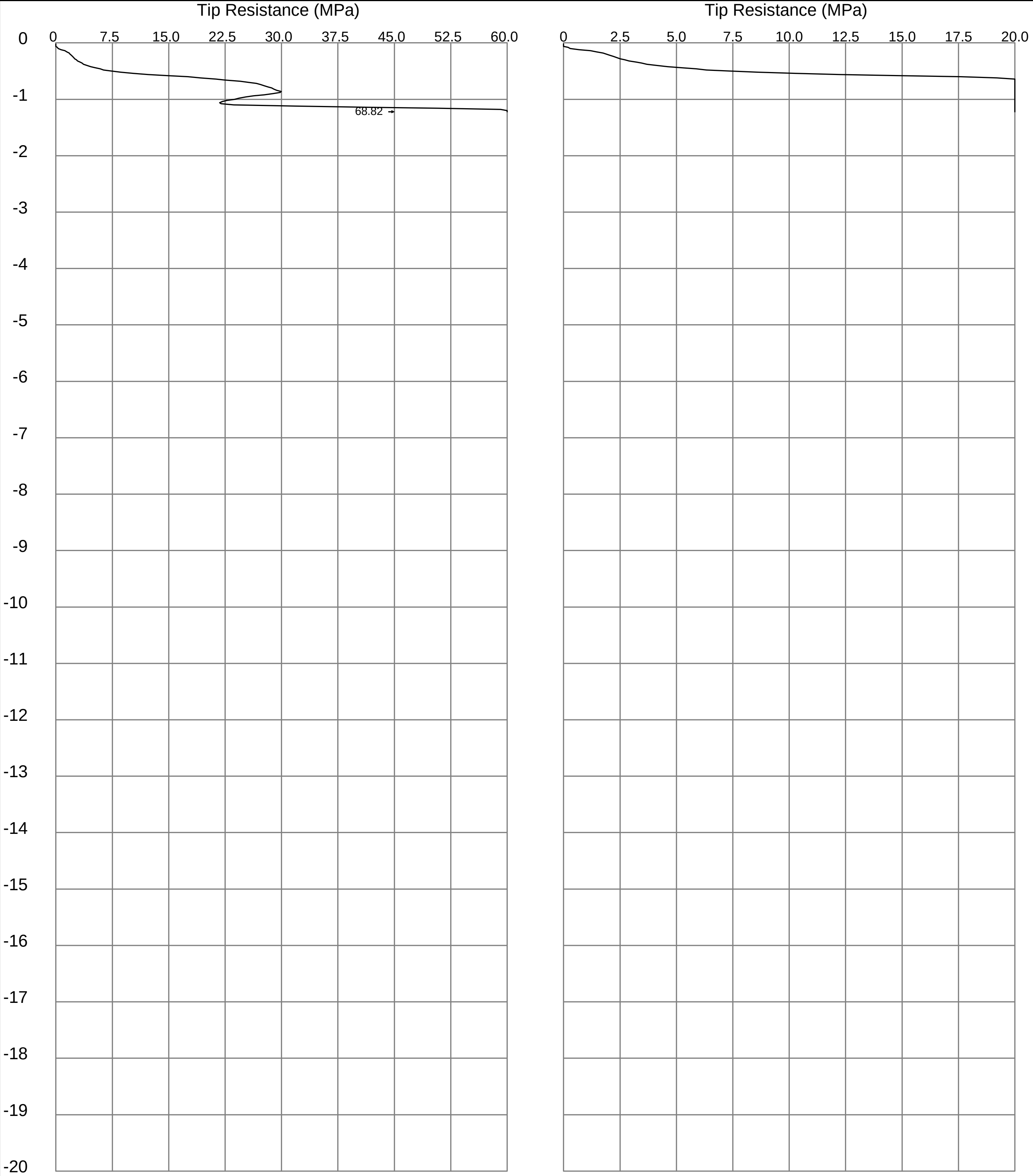
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 12**
R/L = 45.98m AHD	Hole open to depth (m) **-**	Total depth (m) **1.22**	Operator **Brad**	File **15**
Co ordinate: X= 391249.88 Y= 6480181.88	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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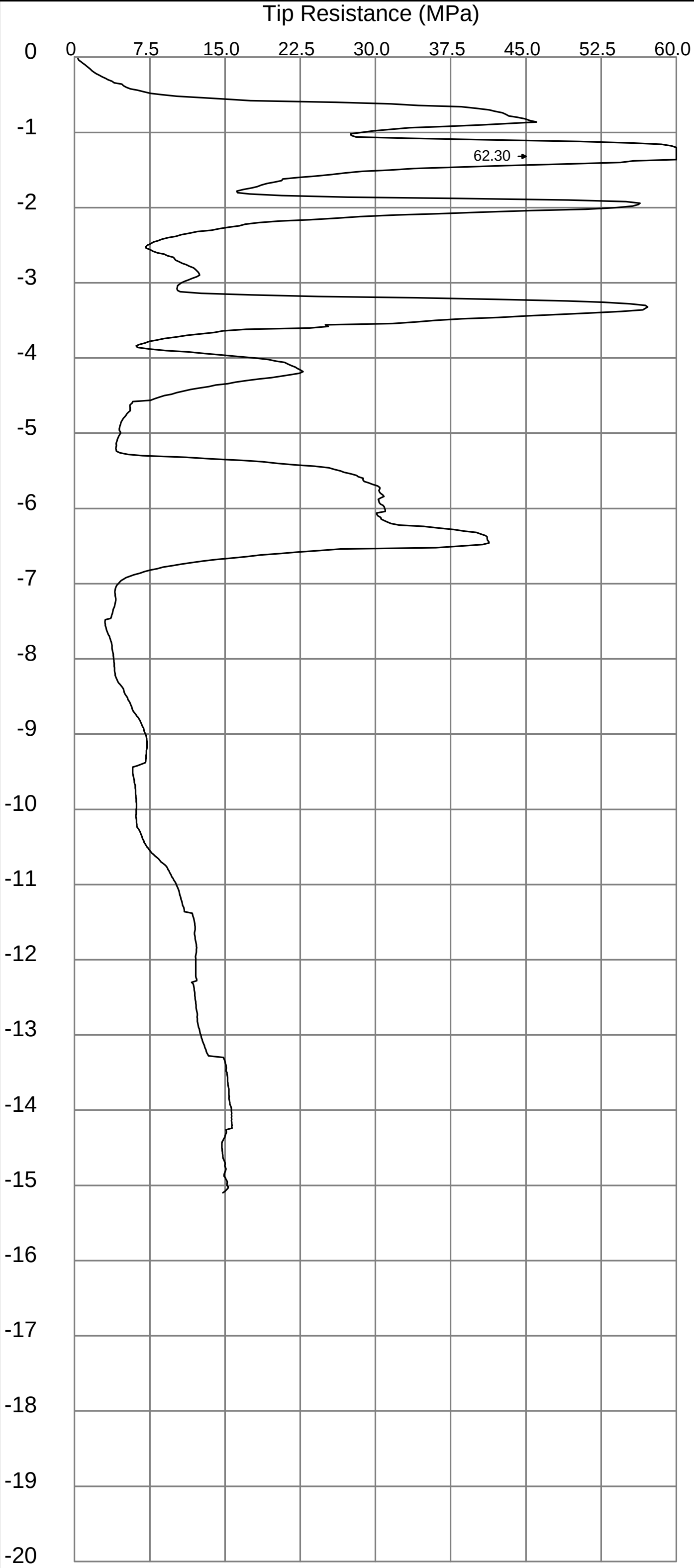
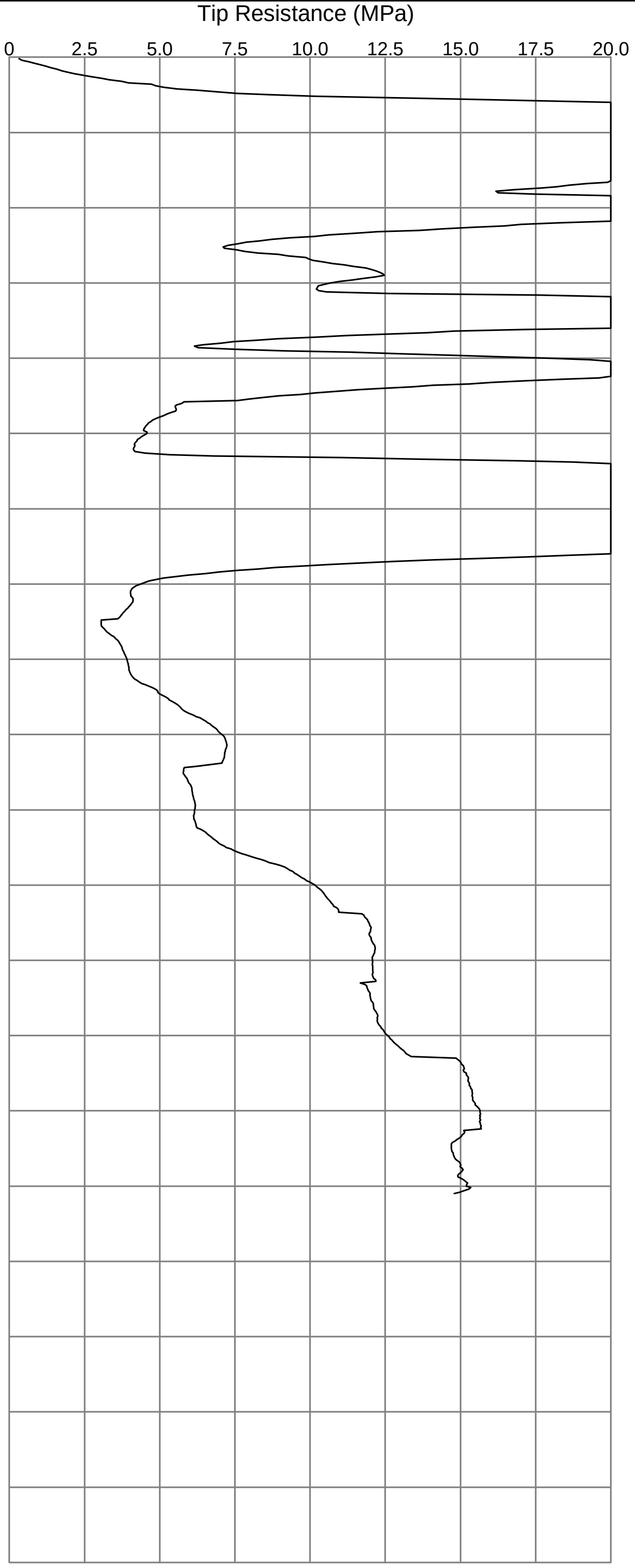
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks			Sounding No. **CPT 12A**
R/L = 46.08m AHD	Hole open to depth (m) **-**	Total depth (m) **15.10**	Operator **Brad**	File **16**
Co ordinate: X= 391253.42 Y= 6480184.58	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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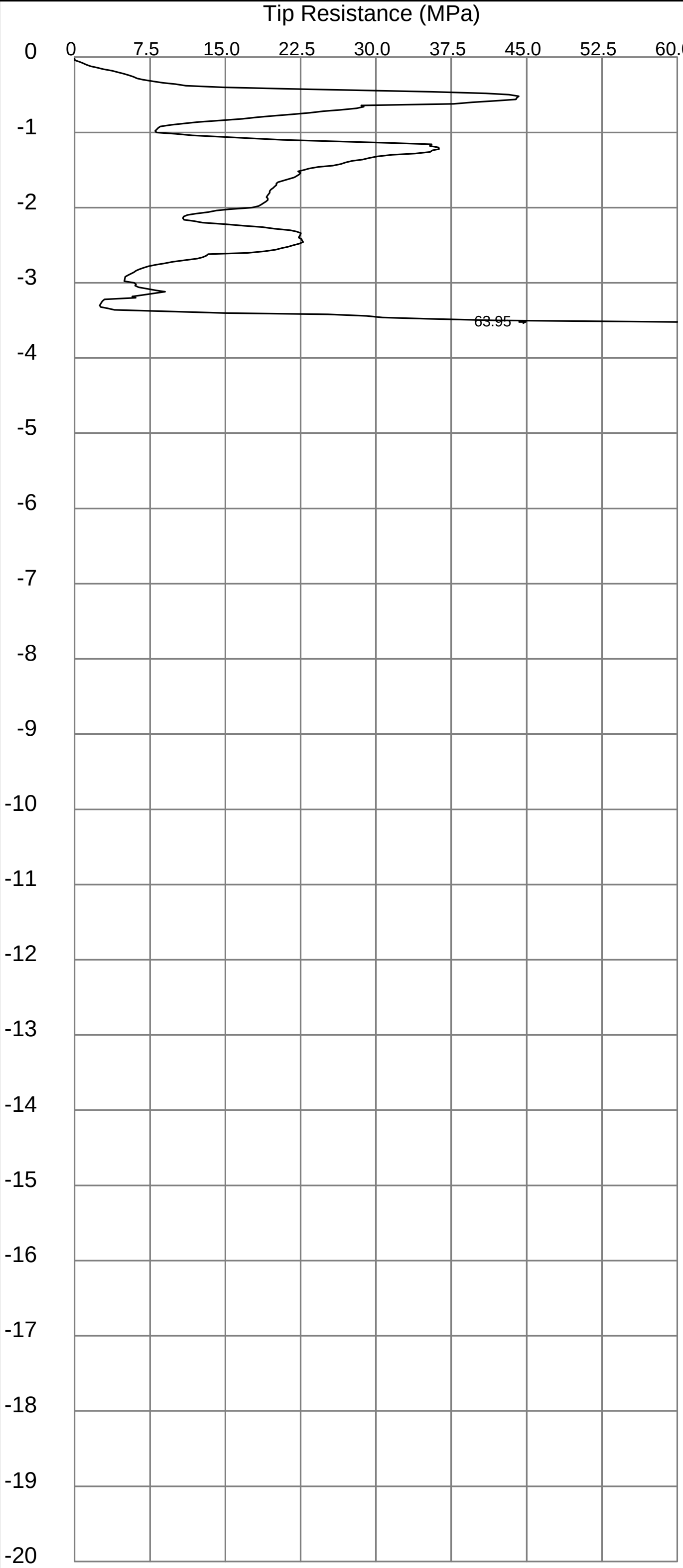
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

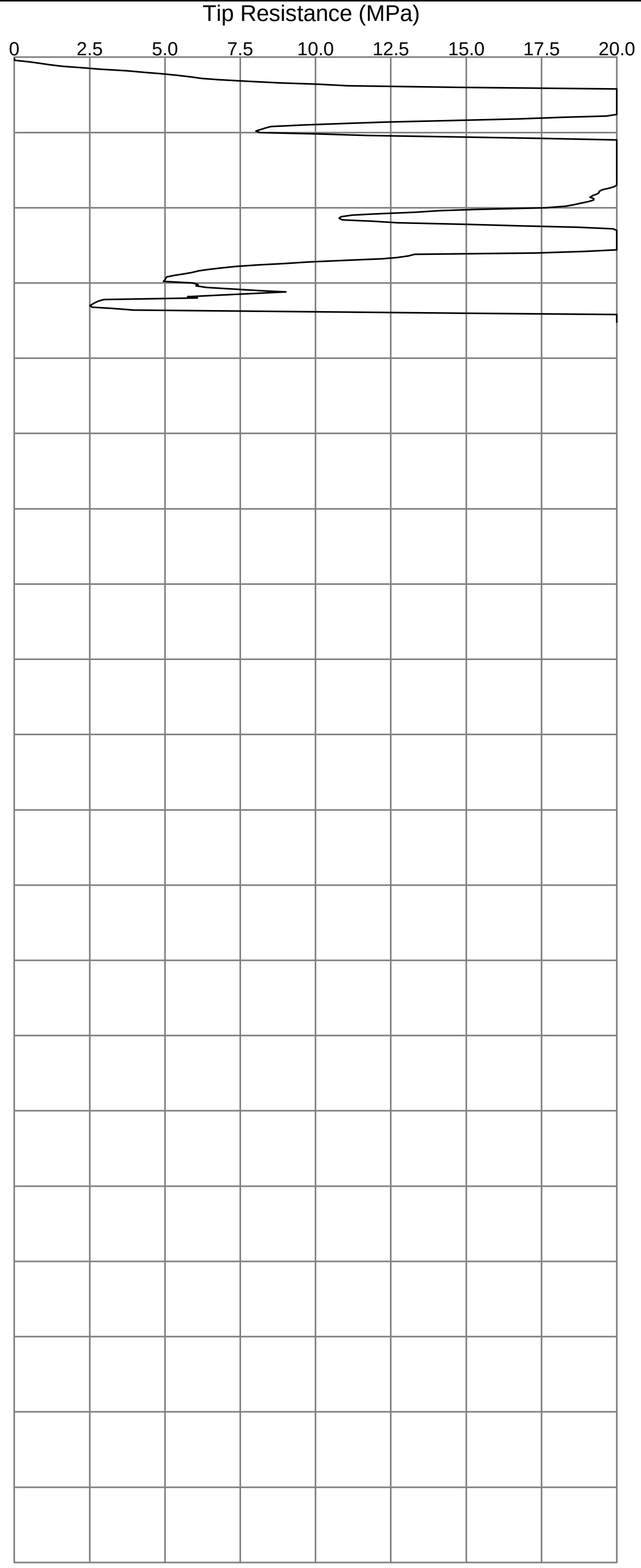
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum cone resistance***			Sounding No. **CPT 13**
R/L = 54.4 m AHD	Hole open to depth (m) **-**	Total depth (m) **3.52**	Operator **Brad**	File **17**
Co ordinate: X= 391435.84 Y= 6480236.17	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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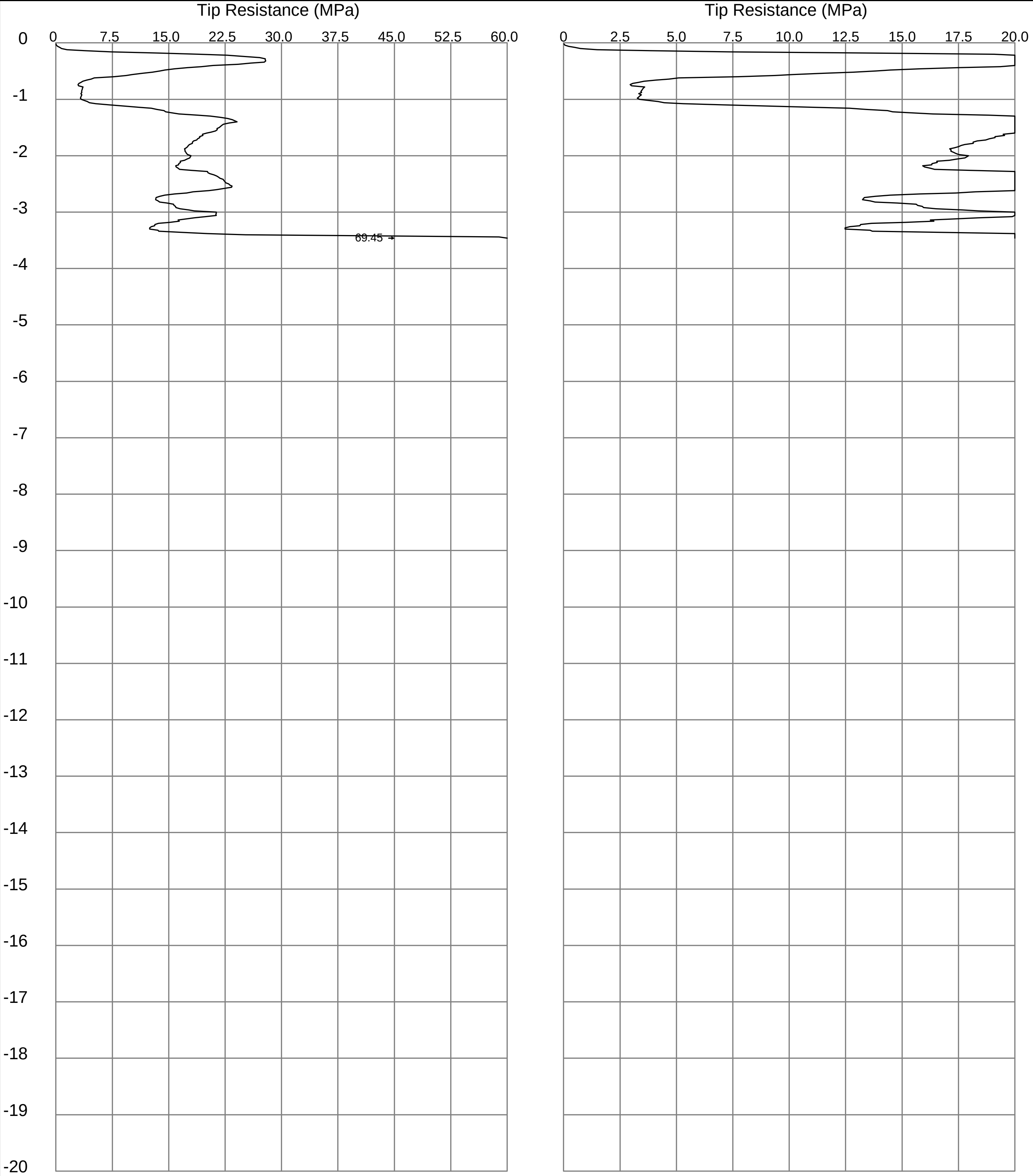
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 13A**
R/L = 54.54m AHD	Hole open to depth (m) **-**	Total depth (m) **3.46**	Operator **Brad**	File **18**
Co ordinate: X= 391435.56 Y= 6480241.73	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

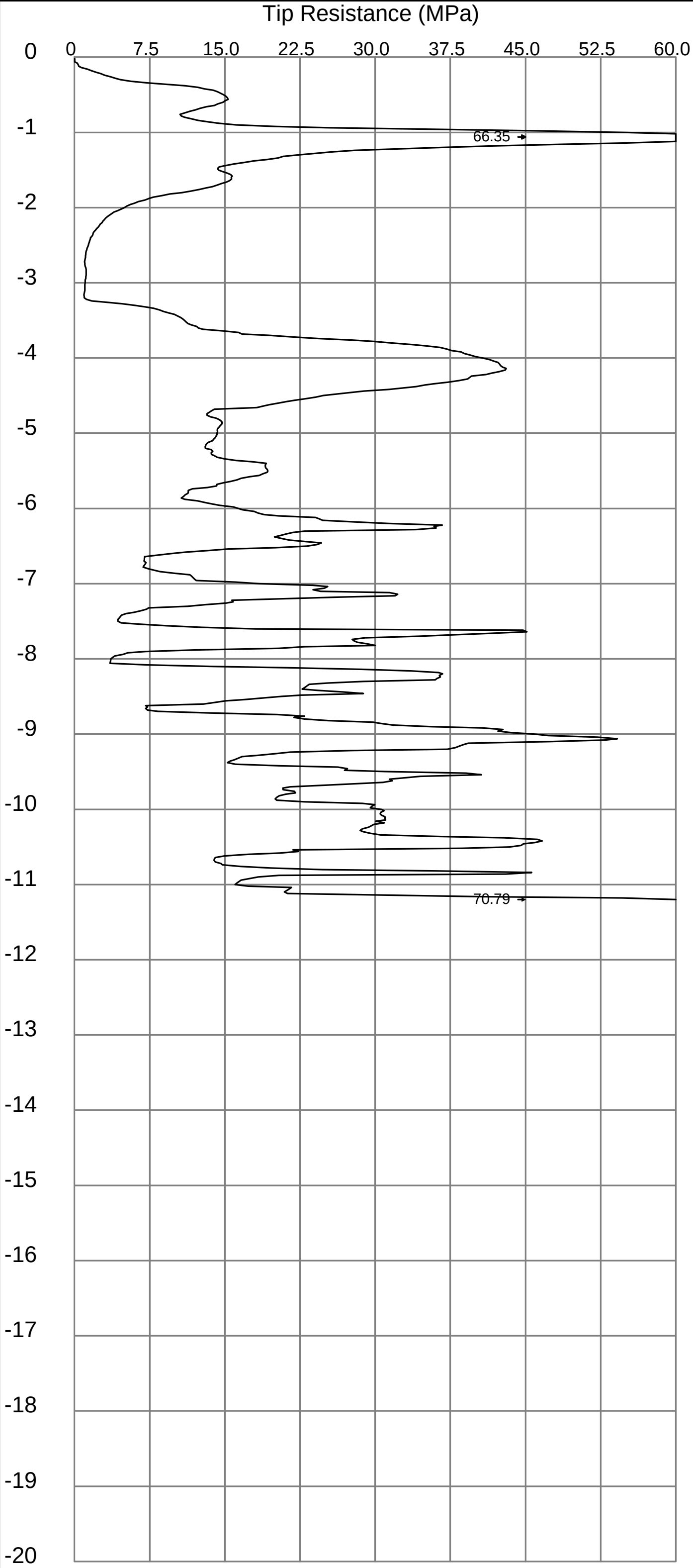
MECHANICAL CONE PENETRATION TEST

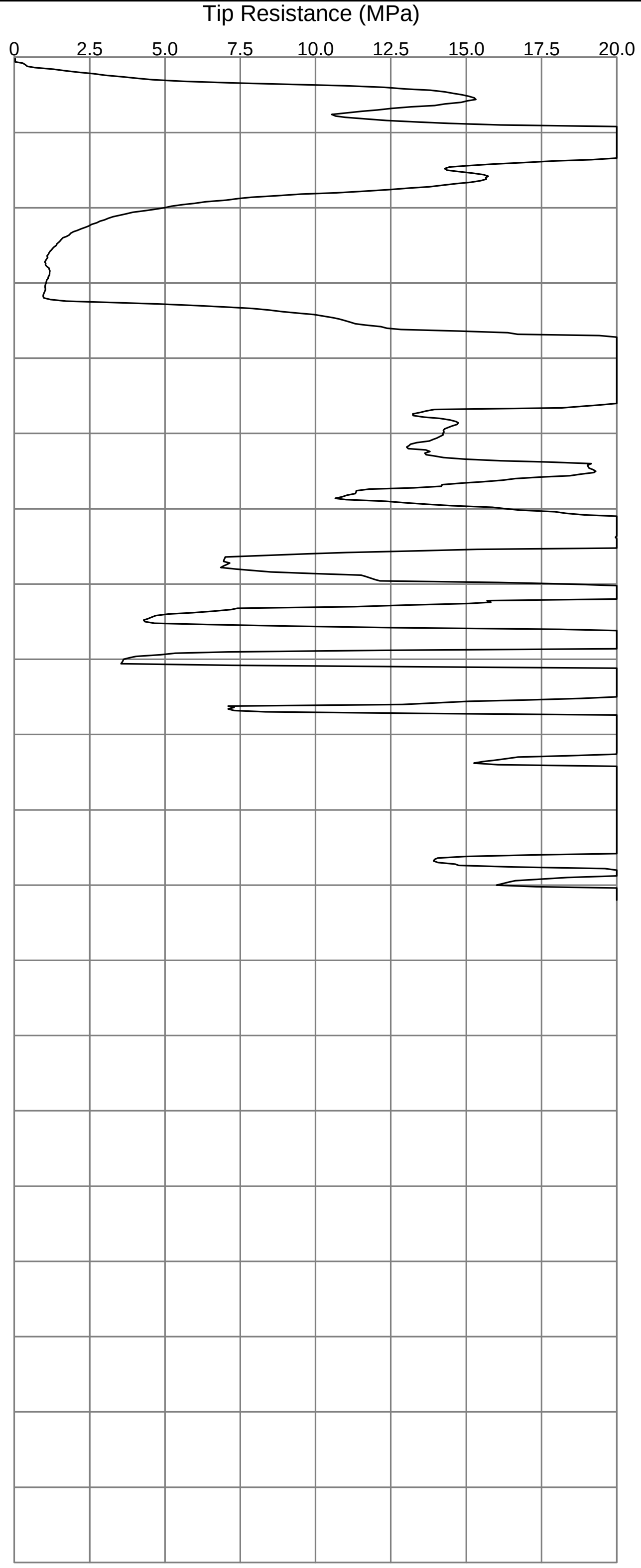
Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks	Sounding No.
3925	***Refusal criteria; Maximum cone resistance***	**CPT 14**

R/L = 56.24m AHD	Hole open to depth (m) **-**	Total depth (m) **11.20**	Operator **Brad**	File **19**
Co ordinate: X= 391436.44 Y= 6480349.29	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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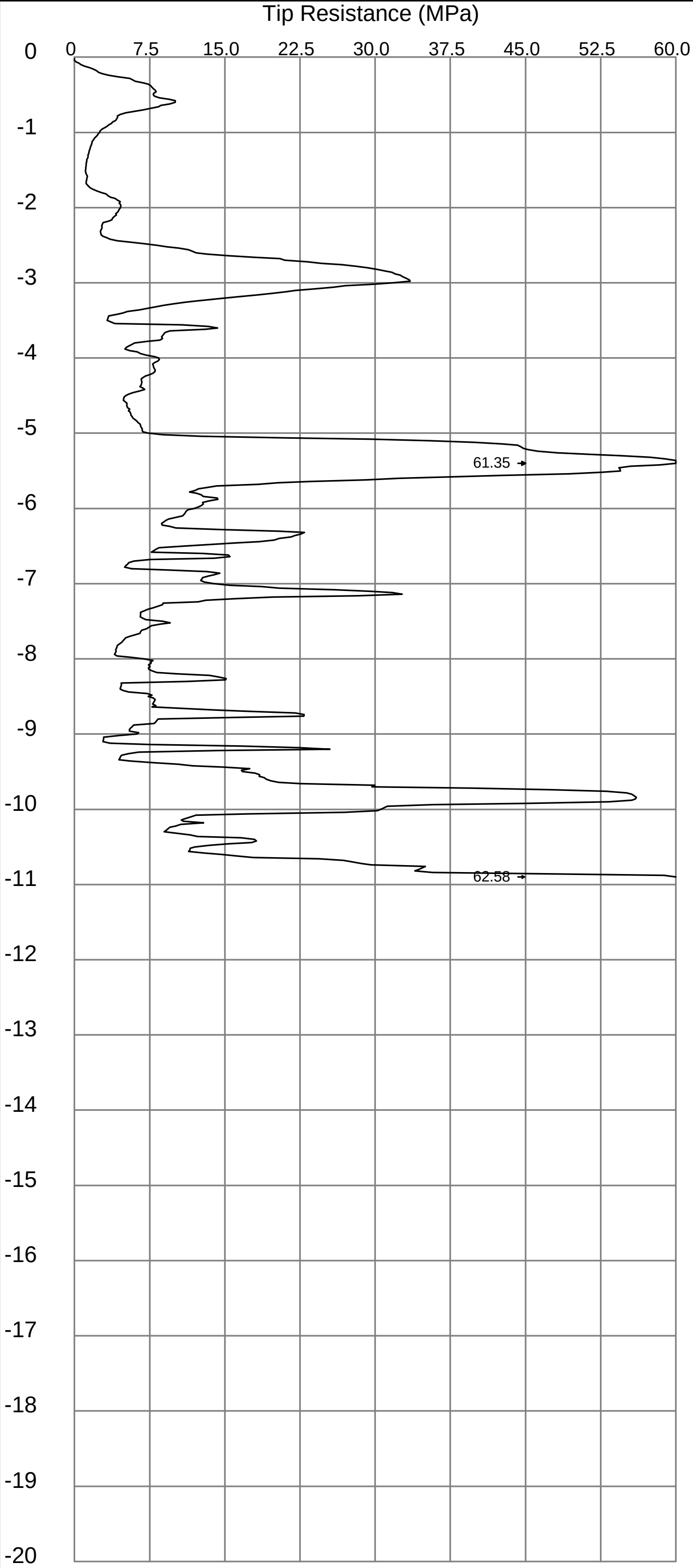
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

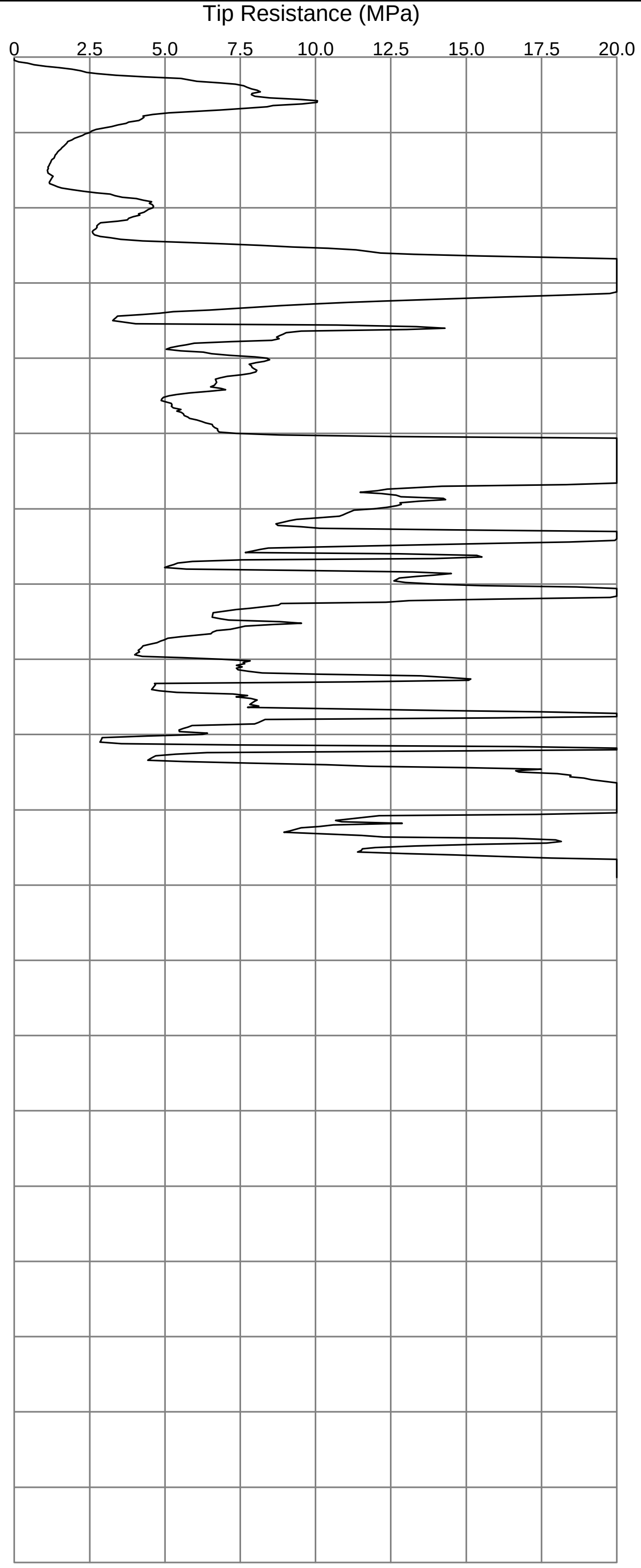
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 15**
R/L = 54.1 m AHD	Hole open to depth (m) **-**	Total depth (m) **10.90**	Operator **Brad**	File **20**
Co ordinate: X= 391434.00 Y= 6480472.03	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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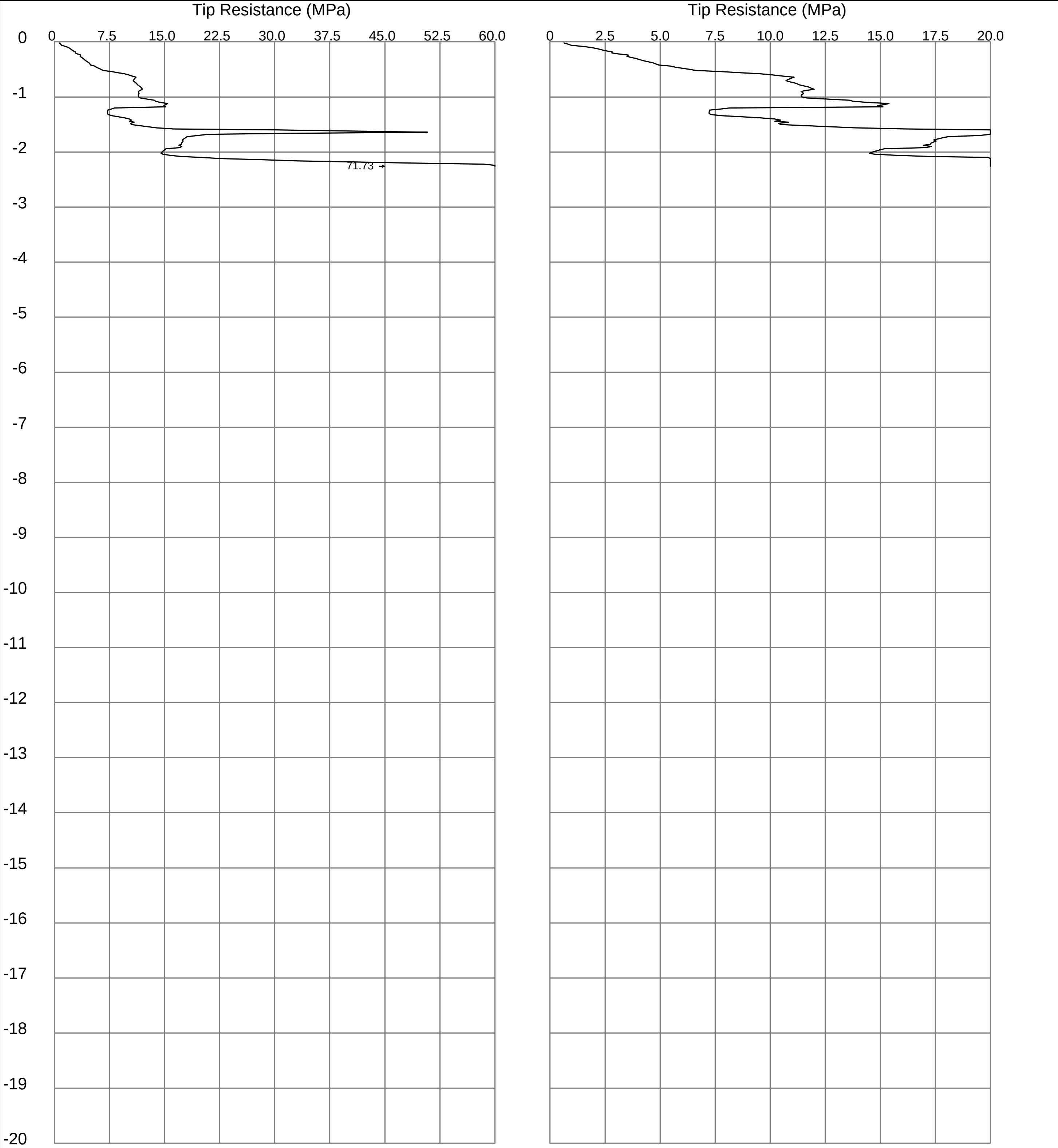
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum cone resistance***			Sounding No. **CPT 15**
R/L = 56.77m AHD	Hole open to depth (m) **-**	Total depth (m) **2.26**	Operator **Brad**	File **21**
Co ordinate: X= 391683.57 Y= 6480325.76	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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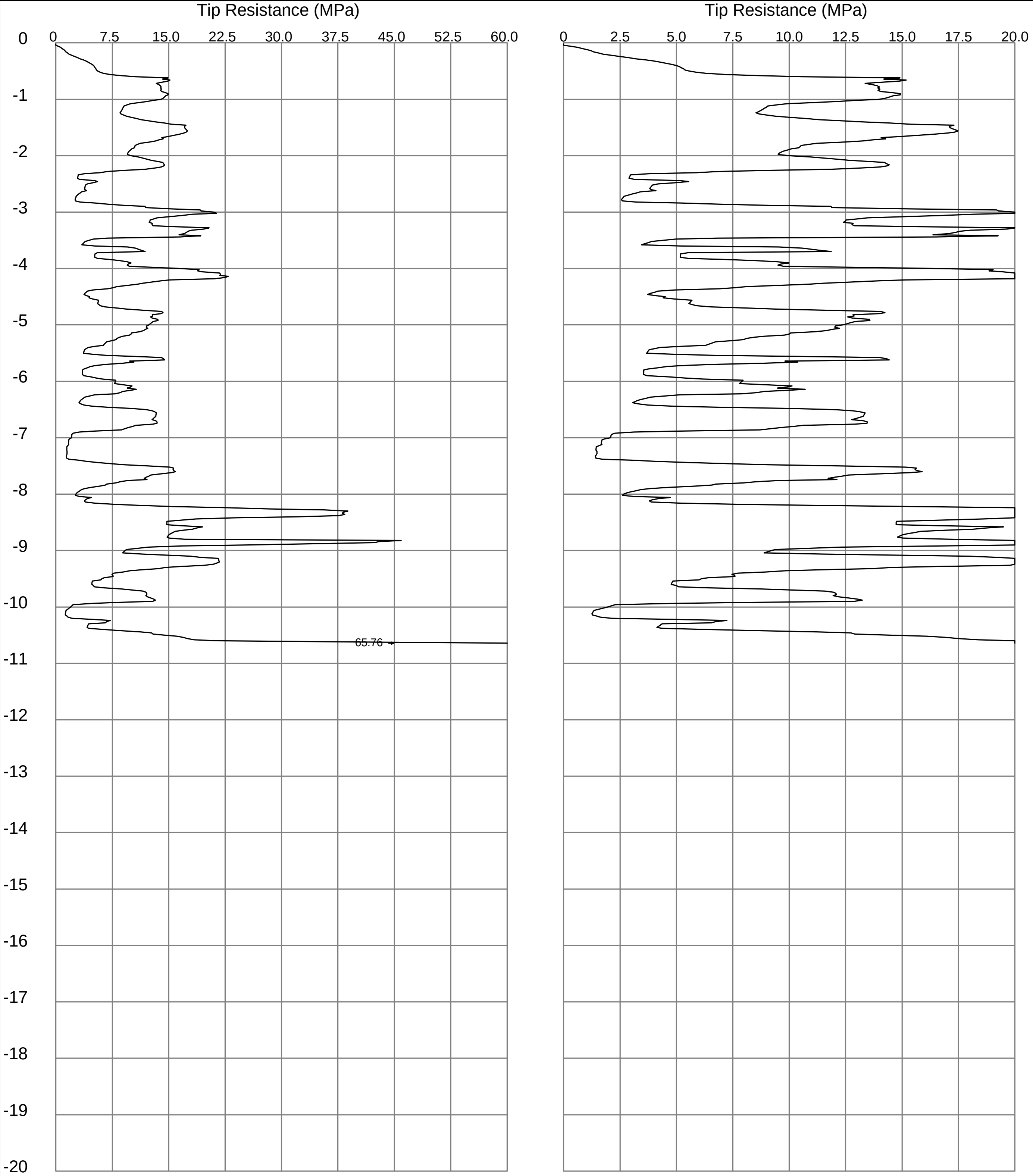
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum cone resistance***			Sounding No. **CPT 16A**
R/L = 56.8 m AHD	Hole open to depth (m) **-**	Total depth (m) **10.64**	Operator **Brad**	File **22**
Co ordinate: X= 391688.85 Y= 6480324.41	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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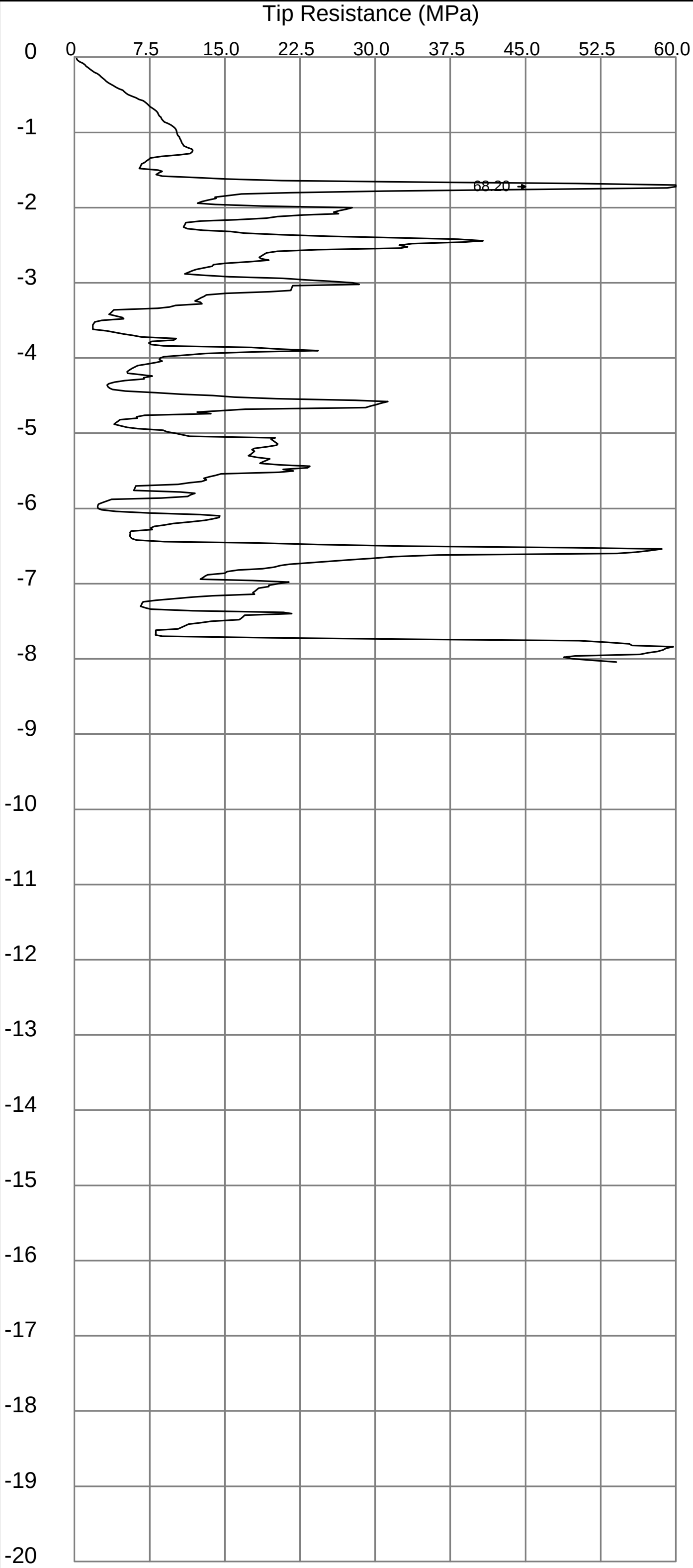
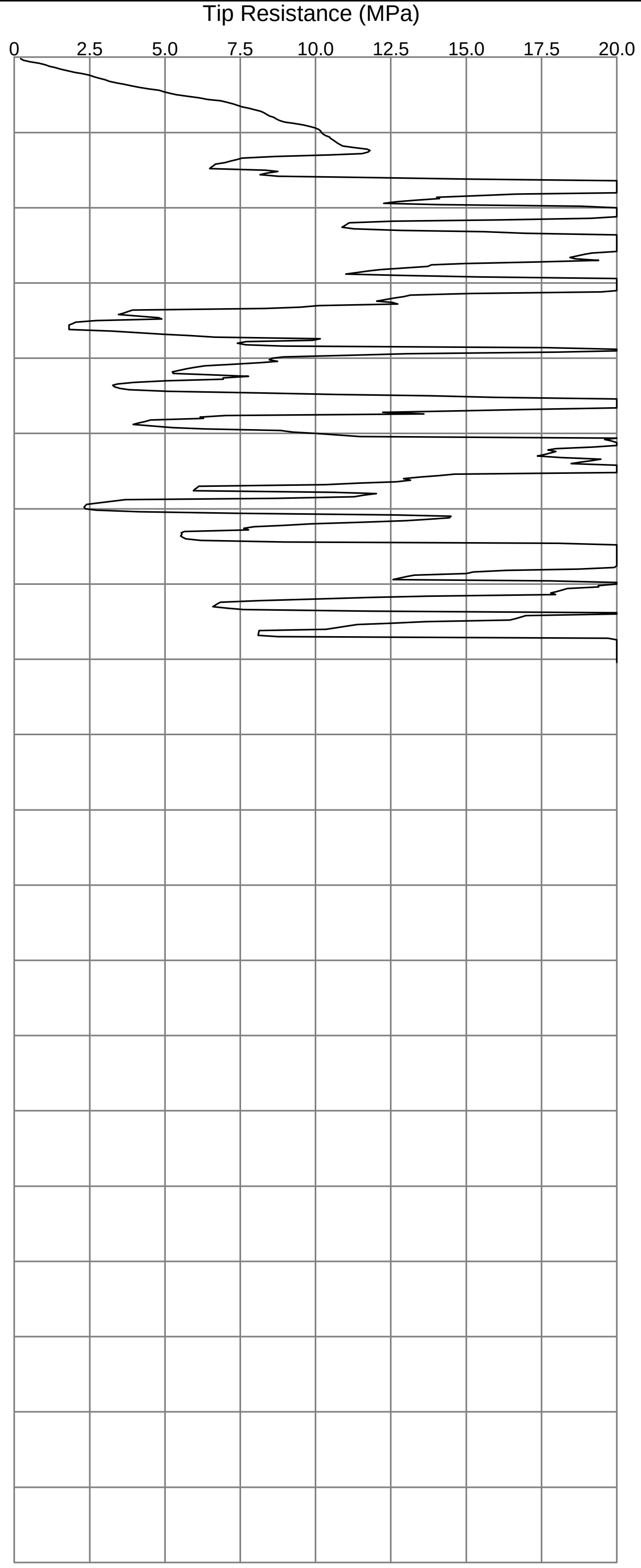
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum thrust***			Sounding No. **CPT 17**
R/L = 56.17m AHD	Hole open to depth (m) **-**	Total depth (m) **8.04**	Operator **Brad**	File **23**
Co ordinate: X= 391552.10 Y= 6480378.74	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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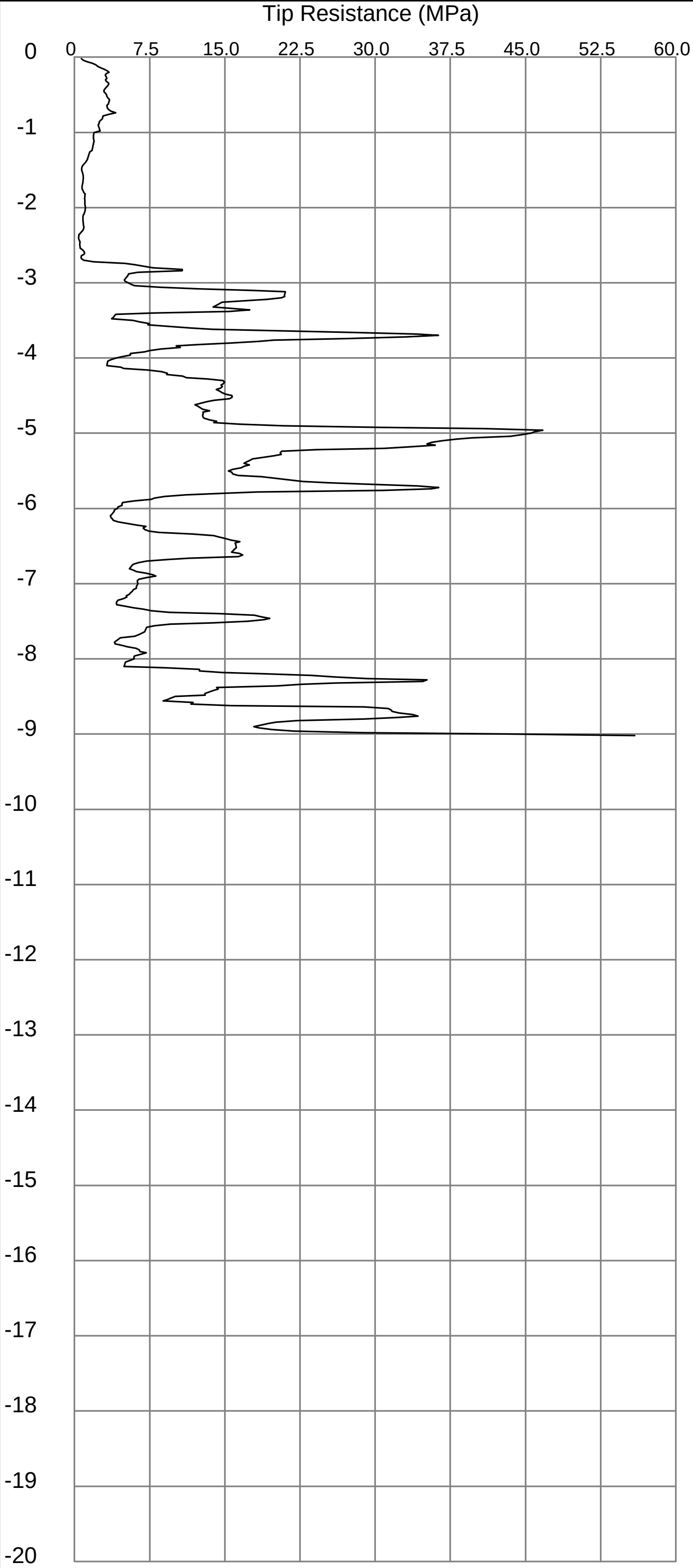
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

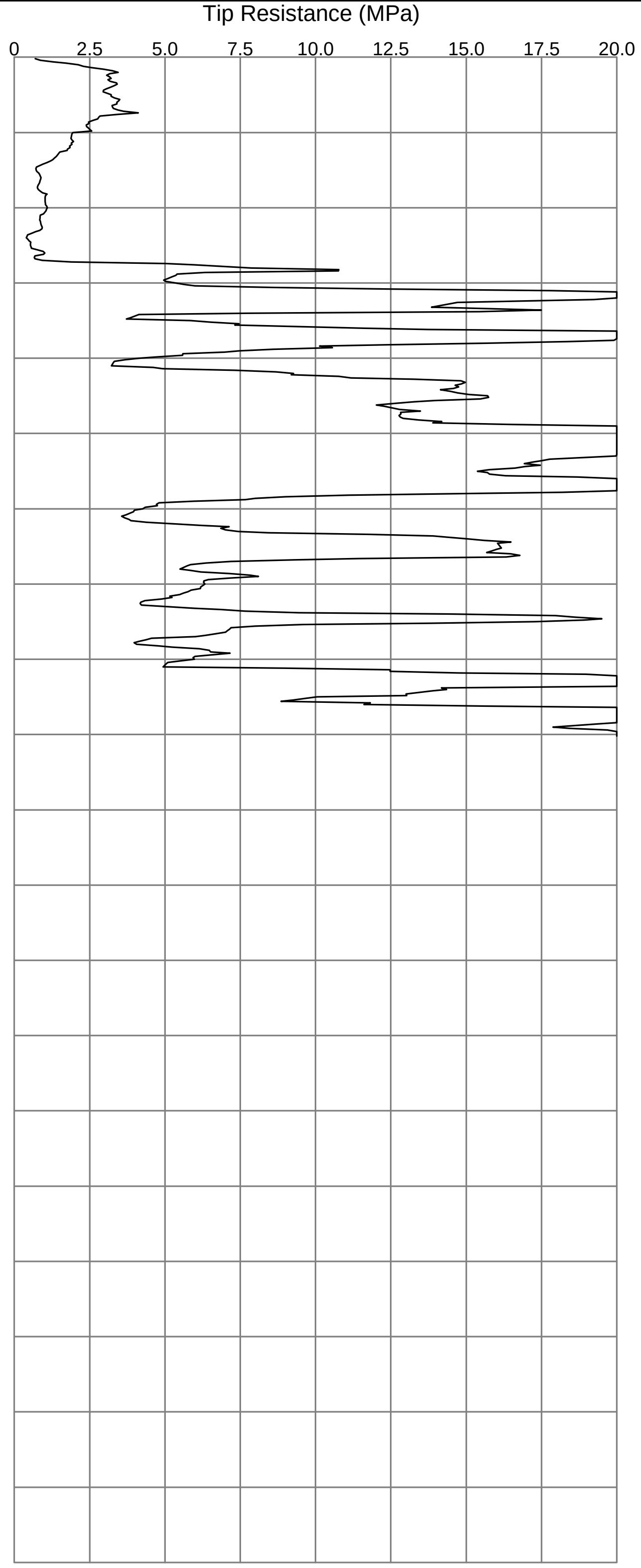
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 18**
R/L = 51.23m AHD	Hole open to depth (m) **8.60**	Total depth (m) **9.02**	Operator **Brad**	File **24**
Co ordinate: X= 391464.47 Y= 6480539.08	Groundwater Level (m) **4.10**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

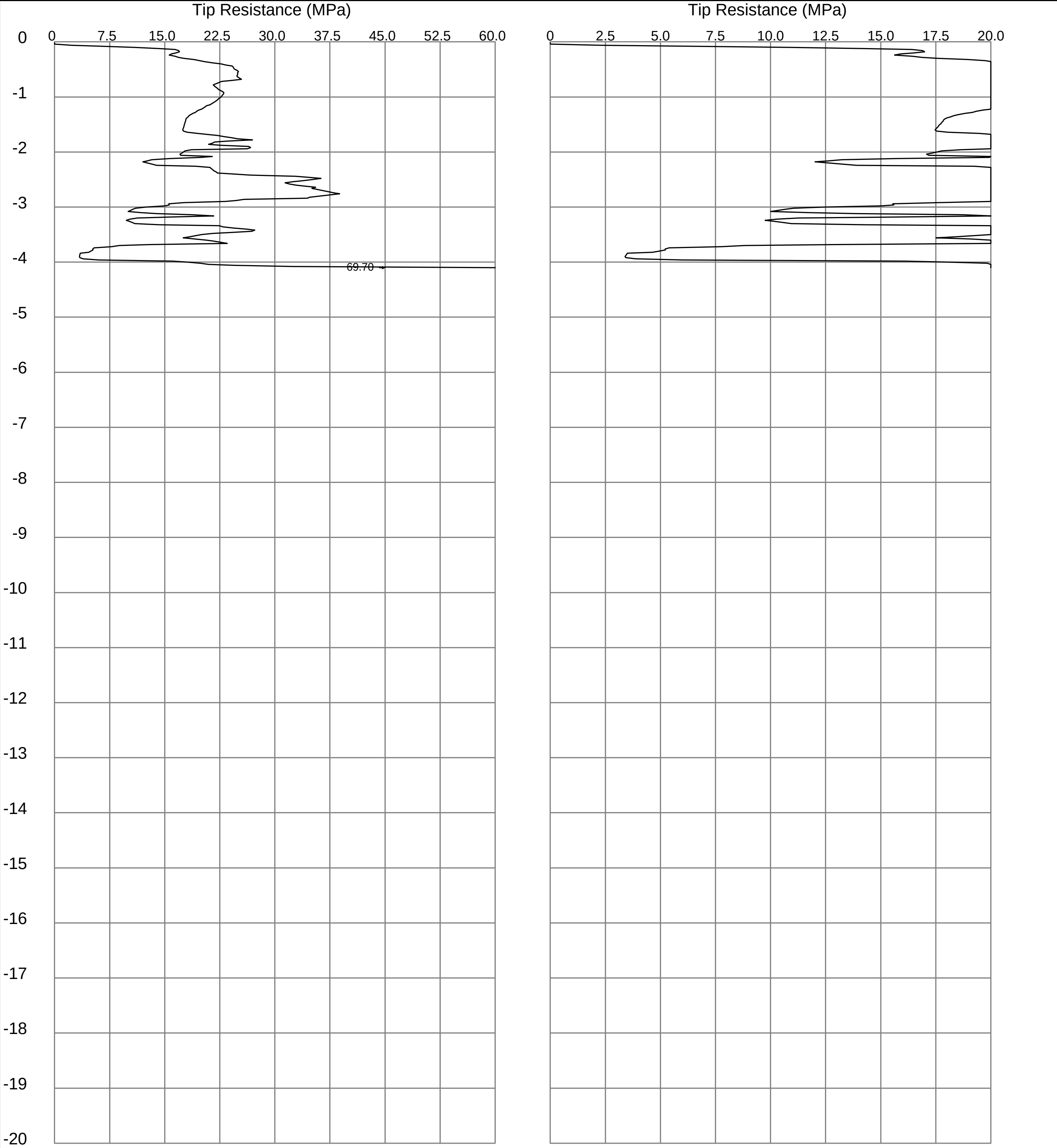
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 19**
R/L = 47.59m AHD	Hole open to depth (m) **-**	Total depth (m) **4.10**	Operator **Brad**	File **25**
Co ordinate: X= 391134.23 Y= 6480349.93	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

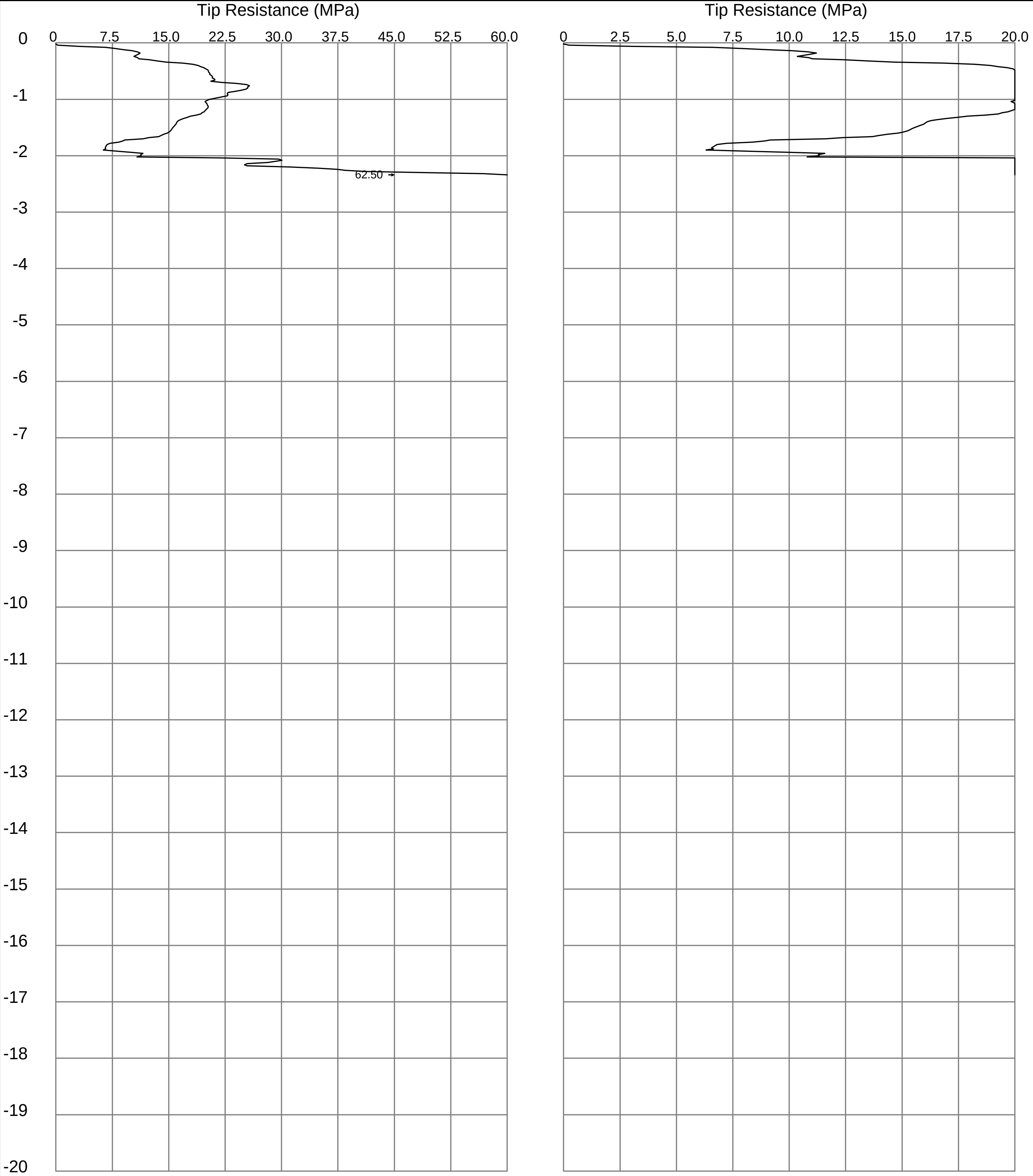
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 19A**
R/L = 47.73m AHD	Hole open to depth (m) **-**	Total depth (m) **2.34**	Operator **Brad**	File **26**
Co ordinate: X= 391134.63 Y= 6480354.21	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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FRICTION REDUCER USED -42 MM

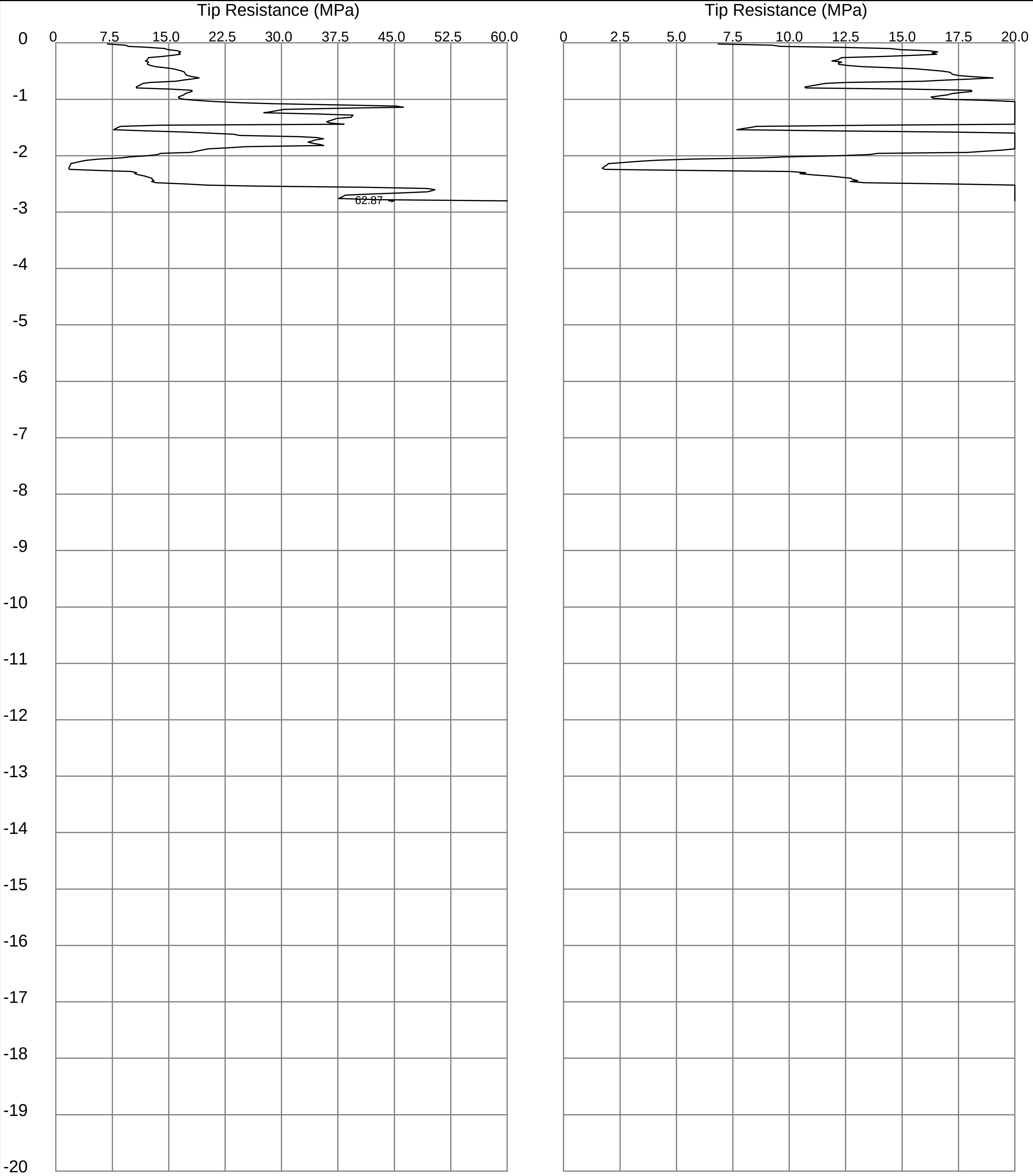
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 20**
R/L = 51.62m AHD	Hole open to depth (m) **-**	Total depth (m) **2.80**	Operator **Brad**	File **27**
Co ordinate: X= 391158.86 Y= 6480565.98	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		



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TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

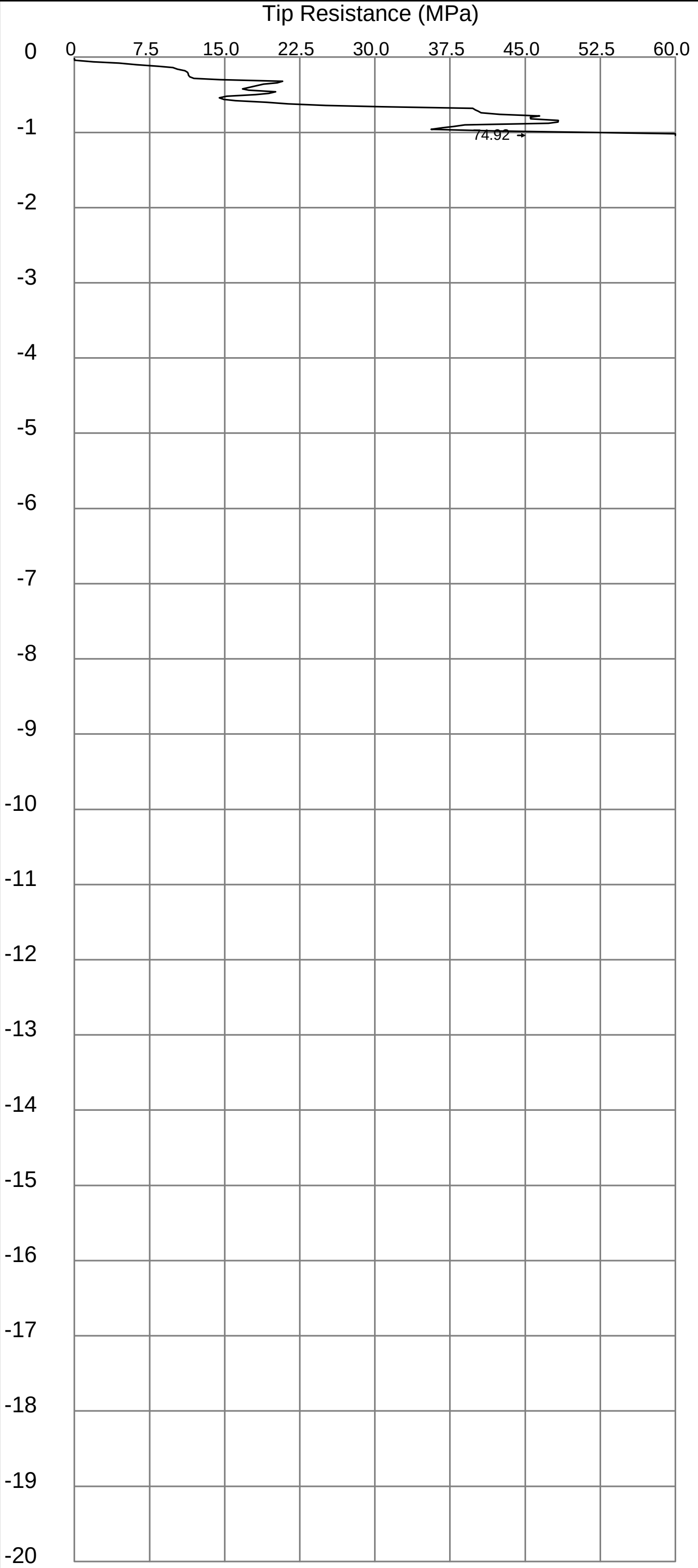
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

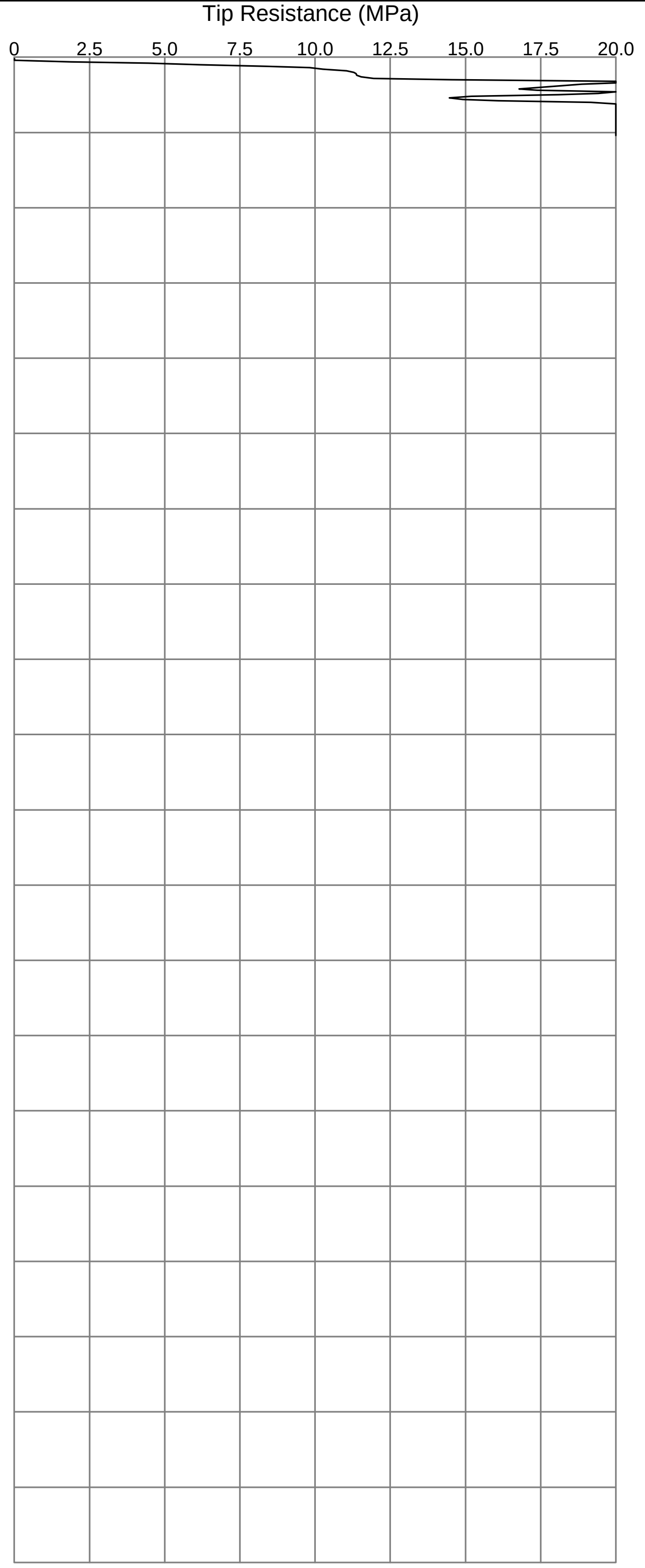
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 20A**
R/L = 51.49m AHD	Hole open to depth (m) **-**	Total depth (m) **1.04**	Operator **Brad**	File **28**
Co ordinate: X= 391161.61 Y= 6480584.48	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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FRICTION REDUCER USED -42 MM

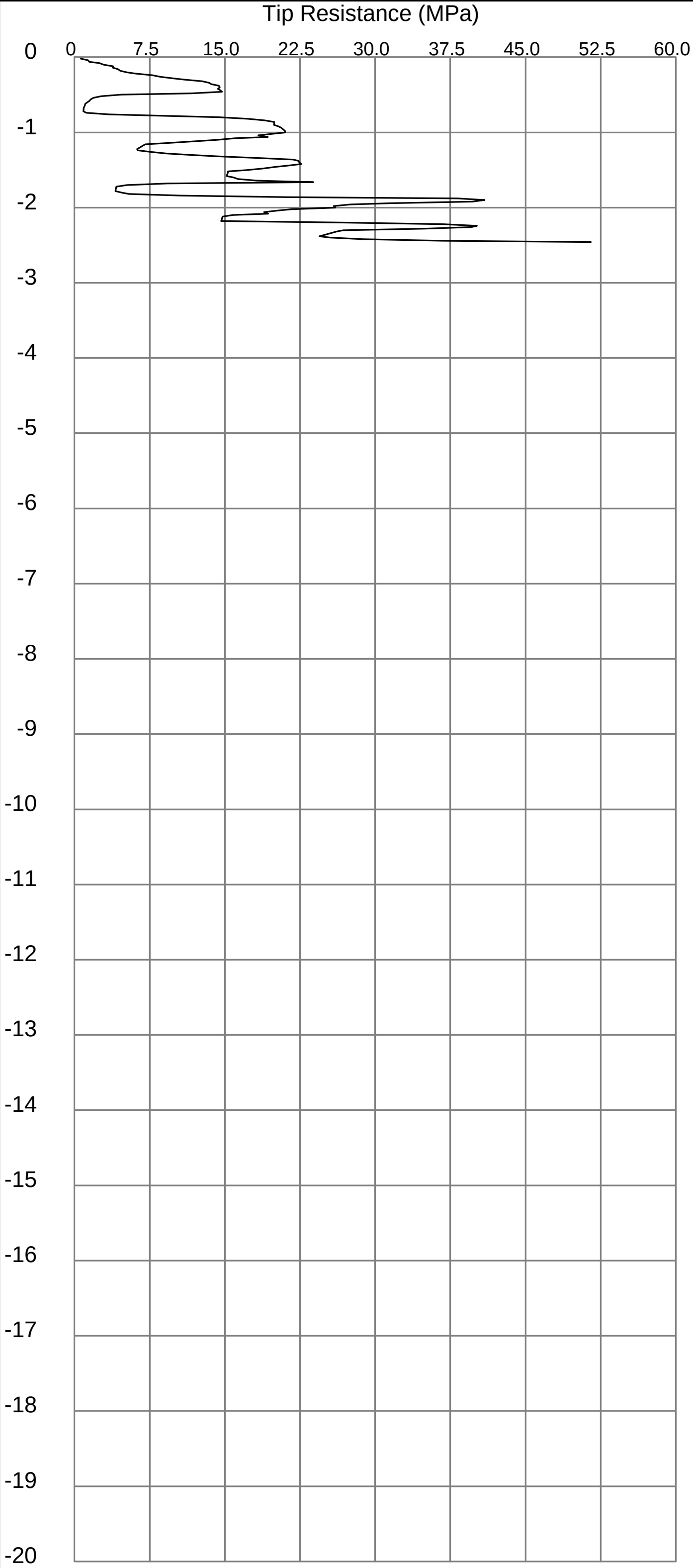
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

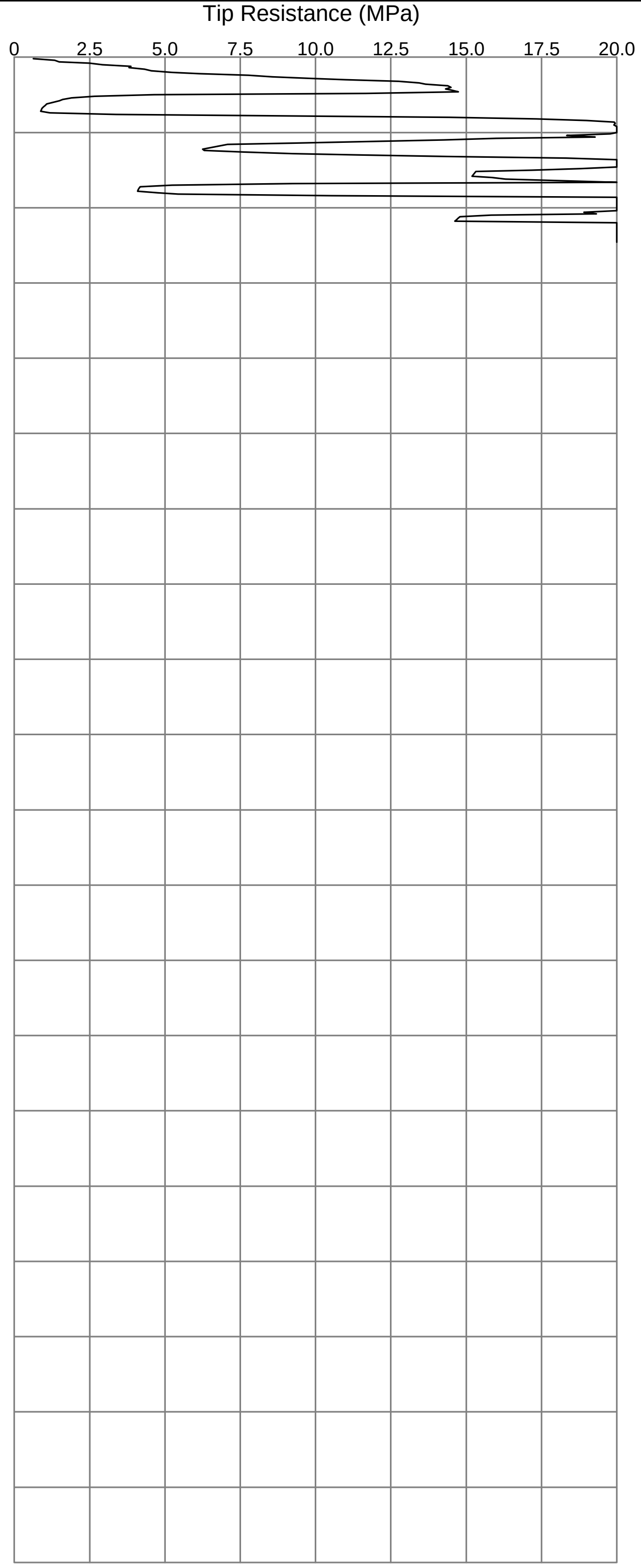
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no. **3925**	Remarks ***Refusal criteria; Maximum cone resistance***			Sounding No. **CPT 21**
R/L = 50.89m AHD	Hole open to depth (m) **-**	Total depth (m) **2.46**	Operator **Brad**	File **29**
Co ordinate: X= 391227.13 Y= 6480586.23	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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FRICTION REDUCER USED -42 MM

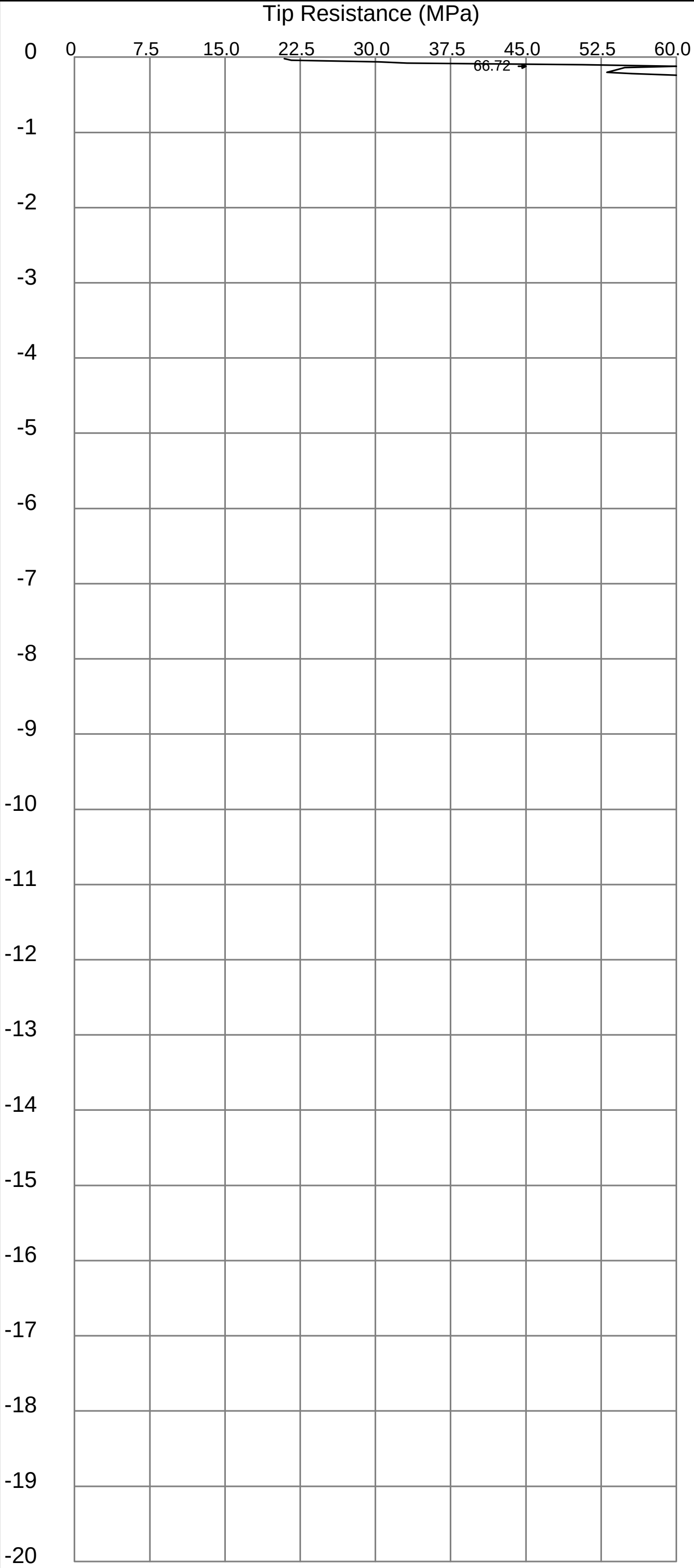
PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

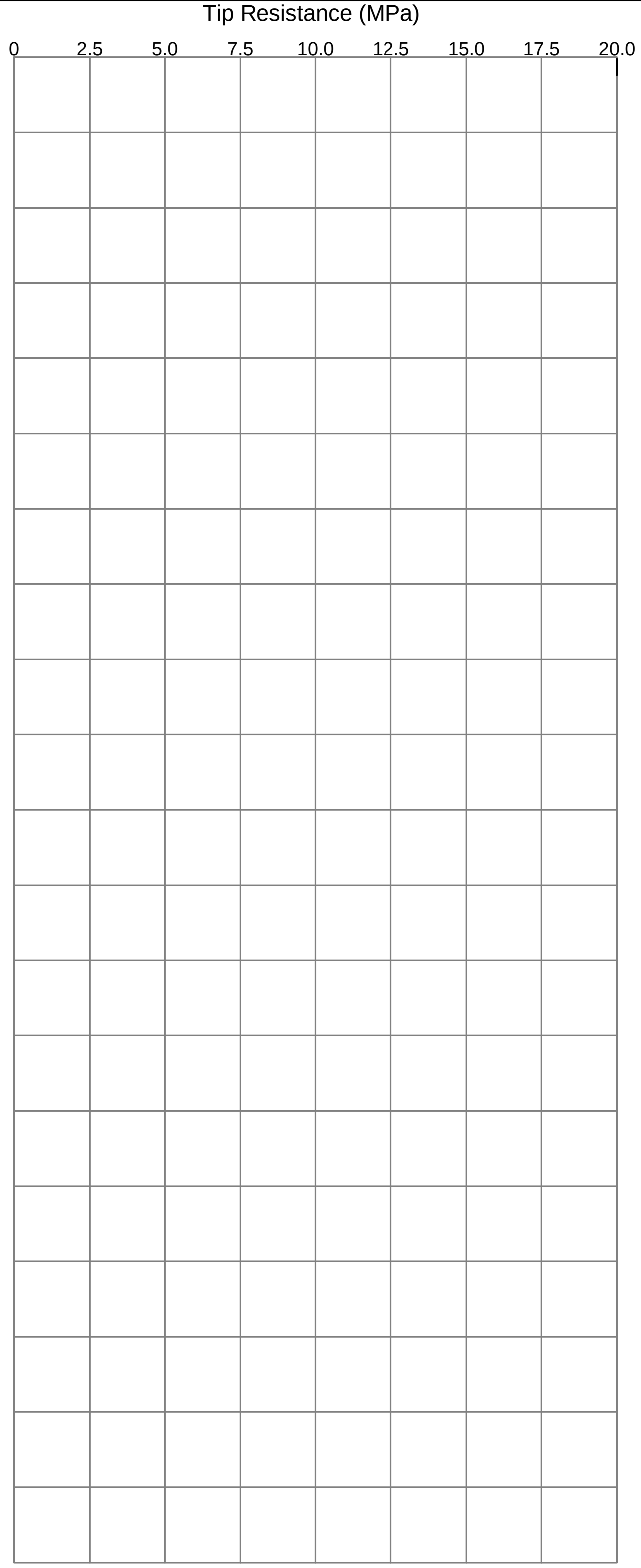
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 22**
R/L = 40.84m AHD	Hole open to depth (m) **-**	Total depth (m) **0.24**	Operator **Brad**	File **30**
Co ordinate: X= 391299.98 Y= 6480410.19	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		





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TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

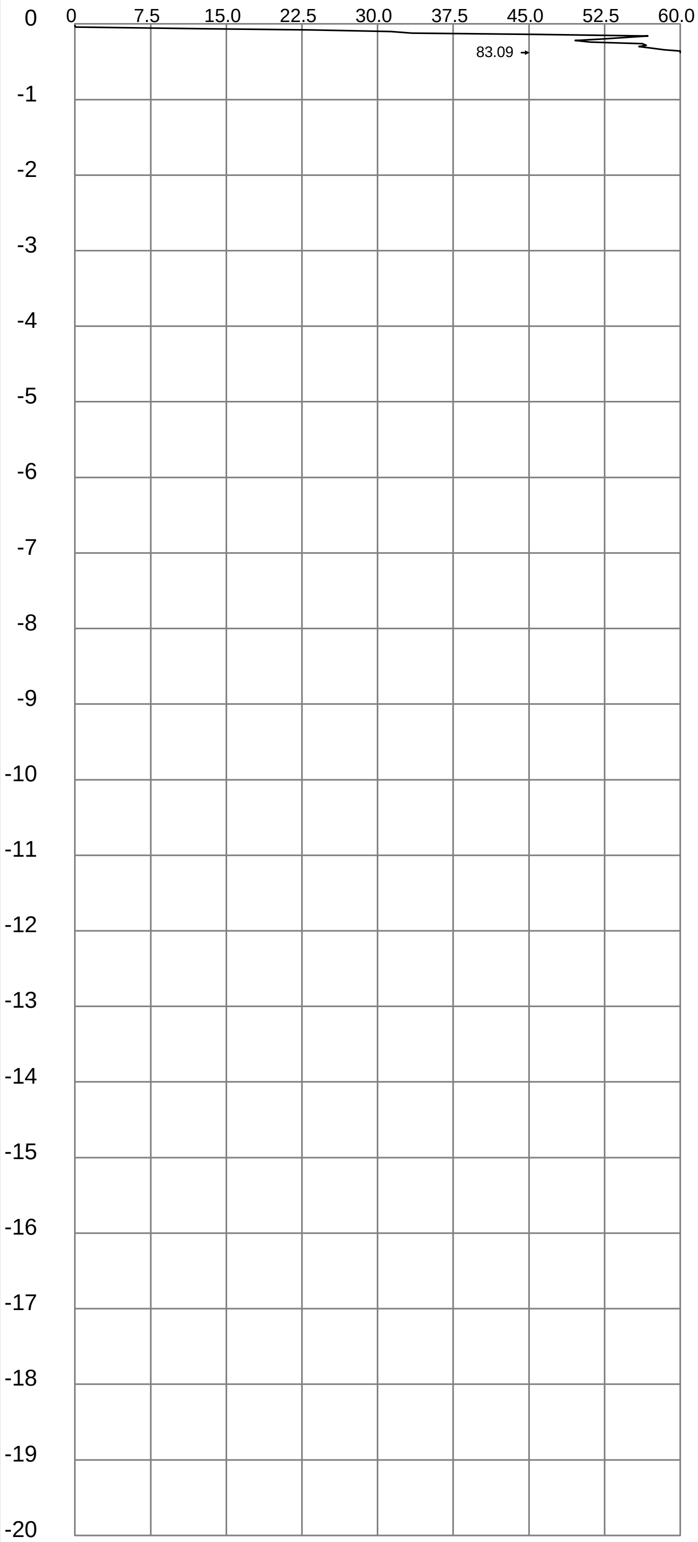
MECHANICAL CONE PENETRATION TEST

Contracted by **CMW Geosciences Pty Ltd**

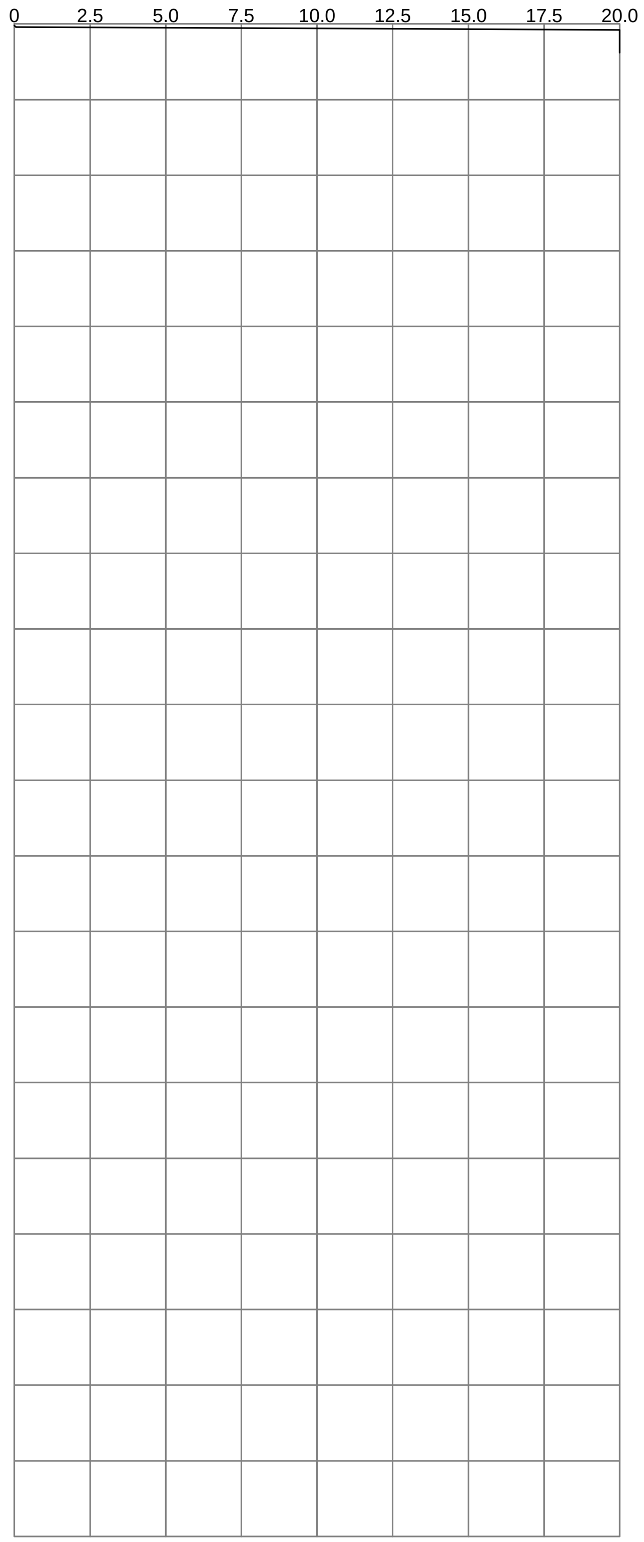
Description **DRIVER RD LANDFILL**

Project no.	Remarks			Sounding No.
3925	***Refusal criteria; Maximum cone resistance***			**CPT 22A**
R/L = 40.87m AHD	Hole open to depth (m) **-**	Total depth (m) **0.38**	Operator **Brad**	File **31**
Co ordinate: X= 391309.87 Y= 6480416.81	Groundwater Level (m) **-**	Cone No. **100709M**		Date Completed **13-9-2017**
Co-ordinates in MGA94 Z50	Pre Drilled depth (m)	Probe Rig **PR001**		

Tip Resistance (MPa)



Tip Resistance (MPa)



Telephone: (08) 9456 0595

TESTED IN ACCORDANCE WITH AS 1289.6.5.1999

FRICTION REDUCER USED -42 MM

PR001 - 20 TONNE REACTION FRAME PR002 - 16 TONNE REACTION FRAME

APPENDIX 5 – SITE PREPARATION SUMMARY REPORT

Doc: GE:2.3.001

GENERAL EARTHWORKS SUMMARY

For: Noble Hodge

Project Address: Corner Driver & Furniss Roads Darch WA

Typical Earthworks Methodology for Uncontrolled Fill Sites

It is considered that the developed site is to be remediated for a residential subdivision, subject to appropriate earthworks and foundation design being undertaken. All earthworks shall be undertaken in accordance with AS3798-2007 “Earthworks for Residential and Commercial developments”.

The proposed earthworks program is provided and subject to amendment after an initial site investigation has been conducted to determine the current conditions of deep fill over the proposed development area.

It is considered that all currently compacted placed materials extending below -2m from proposed finished levels will remain in place after initial proof rolling, excluding loosely stockpiled materials. All areas currently lower than -2m are to be filled and compacted in layers with structural fill obtained either onsite or imported to site. The associated works can be separated into the two separate areas, being area A - extending above -2m from finished design levels (FSL) and area B currently below -2m from finished design levels (FSL).

Area A -Area currently extending above -2m (FSL)

- All vegetation is to be cleared, grubbed and mulched. These materials can be stockpiled for reuse in landscaping or disposed off-site, as required.
- Areas above -2m FSL to be cut to provide a working base. Any suitable structural fill won from the excavation can be stockpiled and reused as fill in the lower portions of the site.
- Base of excavation to be compacted in situ using an appropriate impact compaction methodology (i.e. HEIDYC or similar).
- A stiffened raft is to be constructed on the compacted base (i.e. at approximately 2.0m below finished level), comprising a layer of non-woven geotextile underlying 0.15m compacted crushed stone layer, a layer of geo-grid and a second 0.15m layer of compacted crushed stone.
- Settlement monitoring plates be installed on top of the completed stiffened raft.

Area B - Area currently below -2m (FSL)

- All vegetation is to be cleared, grubbed and mulched. These materials can be stockpiled for reuse in landscaping or disposed off-site, as required.
- Base of stripped surfaces to be compacted in situ using an appropriate impact compaction methodology (i.e. HEIDYC or similar).
- The area is to be filled in layers (no more than 400mm) and compacted, in accordance with AS3798, to -2m below (FSL) with non-reactive granular fill including materials cut from site and blended to meet structural requirements.
- A stiffened raft is to be constructed on the compacted base (i.e. at approximately 2.0m below finished level), comprising a layer of non-woven geotextile underlying 0.15m compacted crushed stone layer, a layer of geo-grid and a second 0.15m layer of compacted crushed stone.
- Settlement monitoring plates be installed on top of the completed stiffened raft.

Combined Areas A & B

- The upper profile is to be filled in layers (not exceeding 400mm / layer) and compacted, in accordance with AS3798, to the required finished level with non-reactive granular fill or materials cut from site and blended to meet structural requirements.
- It is recommended the upper 1m profile to consist of clean free draining sand fill having a insitu permeability of 5m or greater when compacted to the requirements of AS3798.
- The settlements generated by the placement of fill should be monitored to enable geotechnical parameters to be back analysed and a surcharging strategy to be recommended, if necessary.

Once complete it is anticipated the completed Lots would achieve an Equivalent Class A or Class S as defined in AS2870 “Residential slabs and footings” depending on the determined settlements obtained during earthworks monitoring.

Please be advised the above recommendations are general in nature and will be subject to materials and ground conditions encountered onsite at the time of the works.

APPENDIX 6 – UNDO RESULTS

Government of Western Australia
Department of Water and Environmental Regulation

Project:	Lot 1 Driver Rd, Darch	Date:	28/04/2021
		Version:	Version 1.2.0.19289

Subregion name: Residential

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	100	7.62	371.36	97.56
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
7.62	64

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
53.99	12.96

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
5.45	0.20

Residential

Size (m²)	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
<400	40	3.05	71.57	20.97
400-500 m²	60	4.57	299.79	76.59
501-600 m²	0	0.00	0.00	0.00
601-730 m²	0	0.00	0.00	0.00
>730 m²	0	0.00	0.00	0.00
Multiple dwellings	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
7.616	100

Nitrogen input (kg)	Phosphorus input (kg)
371.36	97.56

Soil and drainage information

Type of drainage	**Infiltration**	**Does it contain imported fill?**	**No**
Soil type	**Spearwood Dune**	**Does subregion contain onsite sewage diposal system?**	**No**
Depth to groundwater (m)	**1.5**		
Groundwater slope (%)	**0.5**		
Soil PRI	**11.0**		

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: Road reserve

		Input load		
Landuse	**Percent (%)**	**Area (ha)**	**Nitrogen (kg)**	**Phosphorus (kg)**
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	100	2.38	13.33	0.43

Total area (ha)	Total percent (%)
2.38	20

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
10.83	0.33

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
0.70	0.02

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	60	1.43
Road reserve - impervious	20	0.48
Road reserve - native garden	20	0.48
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	0	0.00

Total area (ha)	Total percent (%)
2.38	100

Nitrogen input (kg)	Phosphorus input (kg)
13.33	13.33

Soil and drainage information

Type of drainage	**Piped drainage**	Does it contain imported fill?	**No**
Soil type	**Spearwood Dune**	Does subregion contain onsite sewage diposal system?	**No**
Depth to groundwater (m)	**1.5**		
Groundwater slope (%)	**0.5**		
Soil PRI	**11.0**		

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: Drainage

			Input load	
Landuse	**Percent (%)**	**Area (ha)**	**Nitrogen (kg)**	**Phosphorus (kg)**
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	100	0.24	6.66	0.21
Road reserve	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
0.24	**2**

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
33.23	**1.05**

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
3.45	**0.02**

Public Open Space (POS)

Landuse	Percent (%)	Area (ha)
Native gardens	100	0.24
Non-native gardens	0	0.00
Not fertilised	0	0.00
Nature	0	0.00
Sport	0	0.00
Recreation	0	0.00
Golf course	0	0.00
Bowling green	0	0.00
Impervious	0	0.00
Water body	0	0.00

Total area (ha)	Total percent (%)
0.24	**100**

Nitrogen input (kg)	Phosphorus input (kg)
6.66	**0.21**

Soil and drainage information

Type of drainage	**Infiltration**
Soil type	**Spearwood Dune**
Depth to groundwater (m)	**1.5**
Groundwater slope (%)	**0.5**
Soil PRI	**11.0**

Does it contain imported fill? **No**

Does subregion contain onsite sewage diposal system? **No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: Light industry

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	100	1.67	23.82	4.83
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
1.67	14

Nitrogen input (kg/ha/yr)	Phosphorus input (kg/ha/yr)
19.53	3.05

Nitrogen export (kg/ha/yr)	Phosphorus (kg/ha/yr)
2.01	0.02

Commercial, Industry and Schools

Landuse	Percent (%)	Area (ha)
Light industrial	100	1.67
Heavy industrial	0	0.00
Commercial / Offices	0	0.00
Schools	0	0.00
Public buildings	0	0.00

Total area (ha)	Total percent (%)
1.67	100

Nitrogen input (kg)	Phosphorus input (kg)
23.82	4.83

Soil and drainage information

Type of drainage	**Infiltration**
Soil type	**Spearwood Dune**
Depth to groundwater (m)	**4**
Groundwater slope (%)	**0.5**
Soil PRI	**11.0**

Does it contain imported fill? **No**

Does subregion contain onsite sewage diposal system? **No**

Note: Please attach the results of soil tests to this report when submitting.

Summary: Nutrient stripping devices

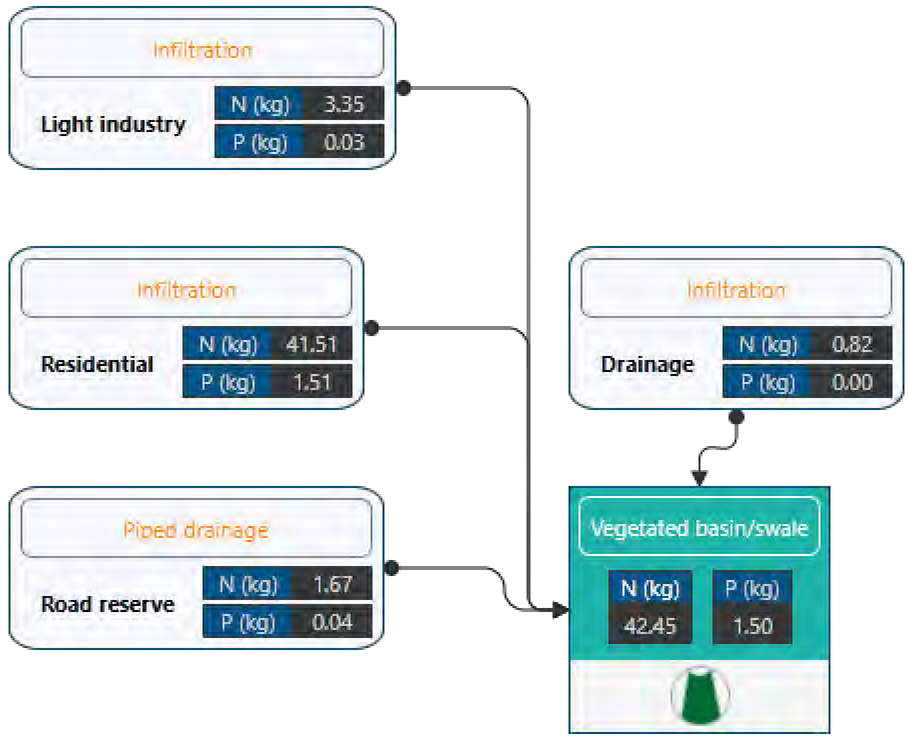
Treatment	Name	Size (m²)	Treated area (ha)	Treating	N removed (kg/ha/yr)	P removed (kg/ha/yr)
Swale	Vegetated basin/ swale	3000.00	11.91	Sandy soils – Runoff only (infiltration on lots)	1.20	0.01
Load removed					**0.41**	**0.01**
Net export					**3.57**	**0.13**

Summary: Nutrient load exports

Region	Area (ha)	P export (kg/ha/yr)	N export (kg/ha/yr)
Residential	7.62	0.20	5.45
Road reserve	2.38	0.02	0.70
Drainage	0.24	0.02	3.45
Light industry	1.67	0.02	2.01

PRE-TREATMENT LOAD (kg/ha/yr)		LOAD REMOVED (kg/ha/yr)		NET LOAD EXPORT (kg/ha/yr)	
NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS
3.98	**0.13**	**0.41**	**0.01**	**3.57**	**0.13**

Treatment diagram



land and water solutions

Client: Parcel Property

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
Draft for client review	V1	YY	HB	Electronic	April 2021
Report for lodgement	V2	YY	HB	Electronic	May 2021

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