

EXCAVATION – REHABILITATION MANAGEMENT PLAN

CONTINUATION OF LIMESTONE EXCAVATION
AND RECONSTITUTED LIMESTONE BLOCK
MANUFACTURE

LOTS 6 and 7, WESCO ROAD,
NOWERGUP

METEOR STONE

City of Wanneroo

20 OCTOBER 2020





METEOR STONE PTY LTD
14 FURNISS ROAD
LANDSDALE
WA 6065

Phone 9309 4577



Landform Research

Lindsay Stephens BSc Geology), MSc (Plant Ecology)
Mem Aus Geomechanics Soc – MEIANZ – F IQA - MAIG

25 Heather Road Roleystone WA 6111
Tel 9397 5145, landform@iinet.net.au

Summary

The extractive industry has operated on Lot 6 and Lot 7 since the 1980's. On 21 November 2014 Development Approval was provided for ten years, ending on 21 November 2021.

The operational activities have always been predominantly on Lot 6, but have always extended across Lot 7, through all approvals, including the access road from Wesco Road, which was moved around 2002, and across the eastern leg of Lot 7.

The eastern portion of Lot 7 held by Adelaide Brighton Cement Ltd through Cockburn Cement, was excavated in the 1980's, long before Meteor Stone operated the pit.

Activities on Lot 7, have always been subject to agreement with Cockburn Cement/Adelaide Brighton Cement and an agreement is in place for all activities.

However in the 2014, in spite of all activities always extending slightly onto Lot 7, no specific approval for the portion of Lot 7 was required to be applied for or approved.

This Management Plan is provided in support of development approval and an extractive industry licence for the portion of Lot 7 that was not previously approved.

The 2014 *Excavation - Rehabilitation Management Plan: Continuation of Limestone Excavation and Reconstituted Block Manufacture – Lot 6 Wesco Road* therefore remains valid.

In addition, as the various activities cross both Lots 6 and 7, this Management Plan is based on the 2014 Management Plan but provides updated information where required.

There are no proposed changes to the methods of operation or the volumes produced.

As the Development Approval for Lot 6 extends until 21 November 2021 it is logical that this development Application is brought into line with that approval period.

After that period this document will form the basis of an updated Excavation and Rehabilitation Management Plan covering both Lots 6 and 7.

The site is accessed from Wesco Road via the current access road across Lot 7 and cross over designed and constructed by the City.

Hours of operation applied for are to remain from 6.00 am to 5.00 pm six days per week (Monday to Saturday inclusive) in line with most quarries.

The operation of the excavation in recent years has demonstrated that it has little impact on other land users and activities in the area. No complaints are known from the past five years.

The site lies within the Priority Limestone Resource area as listed in State Planning Policy 2.4 and forms a vital community limestone resource.

Management

The excavation, processing and environmental management proposed has been designed to reflect best practice and utilises Commonwealth and State Guidelines.

Safety Management

All quarries operate under the provisions of the *Mines Safety and Inspection Act 1994 and Regulations 1995*. These are administered by the Department of Mines Industry Regulation and Safety.

The regulation is achieved through the DMIRS Safety Regulations and Reporting Systems (SRS).

Officers from the Safety Division of the DMIRS regularly inspect the operations in relation to health and safety.

Environmental Management

The environmental management is designed to reflect best practise, outlined in particular in;

Department of Resources, Energy and Tourism (Commonwealth), 2011, *A Guide to Leading Practice Sustainable Development in Mining*, and guidelines produced by Environmental Protection Authority, Department of Water, Environment Regulation, Department of Mines Industry Regulation and Safety, Western Australia Planning Commission and the Local Authority.

The Environmental Risk Matrix in this document is considered to the principles of AS/NZS ISO 14001:2004 (Environmental Management Systems) and AS/NZS ISO 19011:2014 (Guidelines for auditing Management Systems). The principles of AS/NZS 31000:2009 (Risk Management Guidelines) are also used when considering any risks.

PROJECT SUMMARY

ASPECT	PROPOSAL CHARACTERISTIC
EXCAVATION	
Area of Existing Disturbance on Lots 6 and 7	<p>Current Disturbance</p> <ul style="list-style-type: none"> • 7.3 hectares on Lot 6 • 0.6 hectares pit on Lot 7 • 0.57 hectares access road on Lot 7 <p>TOTAL OPEN 8.46 hectares</p>
Area of Proposed Excavation	<p>The total area of the potential operation is 10.87 hectares</p> <p>LOT 6 9.7 hectares on Lot 6</p> <p>LOT 7 0.57 hectares access road 0.60 hectares east of Lot 6</p>
Limestone extraction	Approximately 50 000 tonnes per year
Total estimated resource	300 000 tonnes
Life of project	20 plus years based on the use of limestone sourced from the adjoining Mining Lease M70/138 which has always formed the bulk of the material made into reconstituted blocks.
Area opened per year	0.2 ha on average
Dewatering requirements	None
Maximum depth of excavations	15 metres
PROCESSING	
Limestone	Up to 50 000 tonnes per year
Water requirements	5000 kL in summer
Water supply source	Licensed bore on property
INFRASTRUCTURE	
Total area of plant and stock	Located within excavation footprint adjoining
Area of settling ponds	Not required
Fuel storage	A bunded fuel storage is present. Mobile fuel tankers are used as necessary.
TRANSPORT	
Truck movements	No Changes Variable but approximately 10 laden trucks per day maximum.
Access	Existing limestone access road across Lot 7 from Wesco Road.
WORKFORCE	
Construction	Not applicable as it is an operating pit
Operation	No change; 4 – 6 depending on the contracts and nature of the operations which will change from time to time. Note that most activity is conducted on Lot 6.
Hours of operation	Monday - Saturday 6.00 am to 5.00 pm excluding public holidays.

Contents

1.0	INTRODUCTION	1
1.1	Proposal	1
1.2	Existing Approvals	2
1.3	Importance and Rationale	2
1.4	Requested Planning Approval	3
1.5	Proponent	4
1.6	Location and Ownership	4
1.7	Description of the Resource	4
1.8	Aims of the Proposal	5
2.0	EXISTING ENVIRONMENT	6
2.1	Climate	6
2.2	Geology and Geomorphology	7
2.3	Soils and Regolith	8
2.4	Acid Sulfate	9
2.5	Hydrogeology	9
2.6	Karst	10
2.7	Flora	10
2.8	Fauna	11
2.9	Wetlands	11
2.10	Aboriginal Sites	11
3.0	PLANNING ISSUES	11
3.1	Current Land Use	12
3.2	Land Zonings and Policies and Planning Schemes	12
3.2.1	State Government Policies	12
3.2.2	Local Government Policies and Planning Schemes	15
3.2.3	End Use – Sequential Planning	16
3.2.4	Legislative Framework – Stakeholders	16
4.0	PROJECT DESCRIPTION	18
4.1	Extraction and Processing	18
4.2	Staging and Timing	22
4.3	Final Contours	23
4.4	Hours of Operation	23
4.5	Access and Transport	23
4.6	Equipment	27
4.7	Workforce	29
4.8	Water Usage	29
4.9	Safety	29
4.10	Complaints Procedures	31
5.0	ENVIRONMENTAL IMPACTS AND MANAGEMENT	32
5.1	Surrounding Landuse and Buffers	32
5.2	Aesthetics	33
5.3	Noise Management Plan	35
5.4	Dust Management Plan	40
5.5	Water Management Plan	40
5.6	Biodiversity Management	40
5.7	Dieback Management Plan	41
5.8	Weed Management Plan	43

6.0	REHABILITATION AND CLOSURE	46
6.1	Background	46
6.2	Closure Implementation	48

	REFERENCES	55
--	-------------------	-----------

ATTACHED APPENDICES

1	Dust Management Plan
2	Water Management Plan

ATTACHED FIGURES

Figure 1	Development Application Lot 7
Figure 2	Lot Plan and requested footprint
Figure 3	Lot 7 - Aerial photograph
Figure 4	Operations on Lots 6 and 7
Figure 5	Aerial photograph of Meteor Operations
Figure 6	Existing services
Figure 7	Survey Plan Part Lot 6 and Part Lot 7
Figure 8	Concept Excavation Plan to end 2020
Figure 9	Concept Final Contours at November 2024

TABLES

Table 1	Lot details	4
Table 2	Legislative Framework – Stakeholders	16
Table 3	Equipment and Plant	28
Table 4	Visual Management	34
Table 5	Noise Management	38
Table 6	Materials Inventory	47
Table 7	Closure and Rehabilitation Techniques	49

ATTACHED

Dust Management Plan
Water Management Plan.

1.0 INTRODUCTION

1.1 Proposal

As noted in the summary, the operational activities have always been predominantly on Lot 6, but have always extended across Lot 7, through all approvals, including the access road from Wesco Road, which was moved around 2002, and across the eastern leg of Lot 7.

The operational activities have extended across Lot 7 from the 1980's, through all approvals, including the access road from Wesco Road, which was moved around 2002, and across the eastern leg of Lot 7.

There has no separation of Lot 7 in all the previous discussions with the City or in any of the considerations by the City or Conditions imposed. See Figure 3 of the 2014 Management Plan and Compare to Figure 9 attached to the annual report.

Activities on Lot 7 have always been subject to agreement with Cockburn Cement/Adelaide Brighton Cement and an agreement is in place for all activities, with the remainder being covered by the lease agreement with the landholder of Lot 6.

In 2020 there has been some excavation of the adjoining leg of Lot 7 to the east of the block making floor.

It is noted that the "lease area", identified by the pale blue line of the 2014 Management Plan actually covers all of that portion of Lot 7. The blue line is shown inside the yellow line, which marks the eastern boundary of Lot 7.

It is acknowledged that over past years everyone has missed the need for the Development Approval to cover Lot 7 and an amending form is currently being signed for submission to the City.

This Management Plan is provided in support of development approval and an extractive industry licence for the portion of Lot 7 that was not previously approved. In total there are 1.17 hectares on Lot 7 that are open and that will not change. The approved area on Lot 6 is 9.7 hectares.

The 2014 *Excavation - Rehabilitation Management Plan: Continuation of Limestone Excavation and Reconstituted Block Manufacture – Lot 6 Wesco Road* therefore remains valid.

This Management Plan is based on the 2014 Management Plan but provides updated information where required.

There are no proposed changes to the methods of operation or the volumes produced.

As the Development Approval for Lot 6 extends until 21 November 2024 it is logical that this development Application is brought into line with that approval period.

After that period this document will form the basis of an updated Excavation and Rehabilitation Management Plan covering both Lots 6 and 7.

1.2 Existing Approvals

Approvals currently exist from the Western Australian Planning Commission and the City of Wanneroo for Lot 6 to 21 November 2024.

The management plan is prepared to comply with the conditions listed in the existing approvals for Lot 6 dated 21 November 2014.

1.3 Importance and Rationale

Quarries are needed because the community demands limestone products for development. Limestone from these operations are used for reconstituted limestone blocks and cut dimension stone.

The importance of the site is recognised by the Western Australian Planning Commission in State Planning Policy 2.4, Basic Raw Materials (SPP 2.4), 2000 and draft 2018.

The whole of the subject land lies within the Priority Limestone Resource area (Neerabup – Nowergup).

Wanneroo continues to be one of the fastest growing population centres in the state, with a need for limestone for development projects. Limestone suitable for extraction with minimal community interruption is in short supply in the Northern Perth Metropolitan Region because of restrictions imposed by Conservation nomination of land, and difficulties with obtaining clearing permits in other areas and even within the Priority Limestone Area.

Limestone north of Perth is highly constrained by the conservation estate created by Neerabup National Park, Yanchep National Park and highlighted extensions, Bush Forever and various other reserves and State Forest, small rural subdivisions and urban development.

The limestone on this site is include within the Regionally Significant Basic Raw Materials area.

Key Points

Basic Raw Materials including limestone are of State significance.

Basic raw materials are essential for the construction and maintenance of all developments; such as roads, subdivisions, buildings, bridges, ports and rail lines.

- Every dwelling uses limestone directly through cement and limestone retaining walls and indirectly through road base and other products.
- Every road on the Swan Coastal Plain is constructed from limestone.
- All subdivisions use reconstituted limestone blocks to prepare the sites to AS 2870 Site Class A.
- All harbour developments use limestone or hard rock to construct the port.

The Chamber of Commerce and Industry estimated in 2008 that each dwelling required 155 tonnes of limestone.

For the proposed dwellings in the North West Precinct for the next 7 years that is 1.55 million tonnes limestone for that area alone. This does not take into account the requirements for retaining walls and reconstituted blocks. It is believed the figure would be well over 2 million tonnes.

The actual requirements for other Precincts is many times that amount. This is an essential part of the assessment of the need for clearing but is ignored.

Meteor Stone Pty Ltd is a major supplier of reconstituted limestone blocks that are used to form each housing lot.

Some consideration of the basic raw materials is shown in the following documents. The Chamber of Commerce and Industry are currently updating their assessments.

See;

- Abeyasinghe P B, 1998, *Limestone and Limesand Resources of Western Australia*, Geological Survey of Western Australia, Mineral Resources Bulletin 18.
- Gozzard J R, 1987, *Limesand and Limestone Resources between Lancelin and Bunbury*, Geol Surv WA, Record 1987/5
- Western Australia, Western Australian Planning Commission, *State Planning Policy 2.4, Basic Raw Materials 2000 and Draft 2018*.
- Chamber of Commerce and Industry, 1995 and 1996, *Managing the Basic Raw Materials of Perth and the Outer Metropolitan Region*, Parts 1 and 2.
- Chamber of Commerce and Industry, 2008, *Basic Raw Materials Access and Availability*.
- Fetherston J M, 2007, *Dimension Stone in Western Australia*, Volume 1, Department of Mines and Petroleum, Mineral Resources Bulletin 23.

1.4 Requested Planning Approval

The proposal is seen as a temporary land use during which valuable basic raw materials are extracted and at a later stage the land is developed. This is a wise use of resources, the principle of which is supported by the Western Australian Planning Commission in their State Planning Policy SPP 2.4, Basic Raw Materials Policy.

As the Development Approval for Lot 6 extends until 21 November 2024 it is logical that this development Application is brought into line with that approval period.

After that period this document will form the basis of an updated Excavation and Rehabilitation Management Plan covering both Lots 6 and 7.

1.5 Proponent

The proponent is Meteor Stone, a large dimension stone cutting operation that supplies much of the domestic market for limestone blocks, facing and paving stones.

Stone sold to the markets ranges from large structural and wall blocks down to small thin paving and wall tiles.

Contact can be made through

Manager
Meteor Stone
14 Furniss Road
Landsdale WA 6065

Phone 9309 4577

1.6 Location and Ownership

The land is described as;

Table 1 Lot Details

LOT	ROAD	LOCATION	VOLUME	FOLIO	DIAGRAM
6	Wesco Road, Nowergup	2739	1500	124	34734
7	Wesco Road, Nowergup		1500	122	49564

1.7 Description of the Resource

Deep limestone outcrops occur across the site. The limestone has been indurated on the outcrops raising the calcium carbonate content to between 70% and 80%. As the calcium carbonate content drops the stone becomes less suitable for dimension stone.

The degree of lithification (hardness) changes both vertically and horizontally over the site and determines the use to which each type of limestone can be put.

Although the resource extends to depth, extraction will be limited by the quality of stone encountered at depth.

1.8 Aims of the Proposal

The aims of the project are to;

- Continue to provide limestone products in the Northern Perth and wider region to meet future demand in this rapidly developing region.
- Reduce the potential for future limestone shortages within the City of Wanneroo and surrounding areas for construction, housing and development.
- Continue to provide competition in the region, which will have the effect of containing prices for products essential to the construction and development industries.
- Continue to extract limestone from a site with large buffers and lower potential impact on nearby residents.
- Utilise essential basic raw material resources before they are sterilised by development, either on the site or by encroachment from outside, in line with the planning policies.
- Provide approval for Lot 7 to bring it into line with the operations that have occurred over the last 30 years.

2.0 EXISTING ENVIRONMENT

2.1 Climate

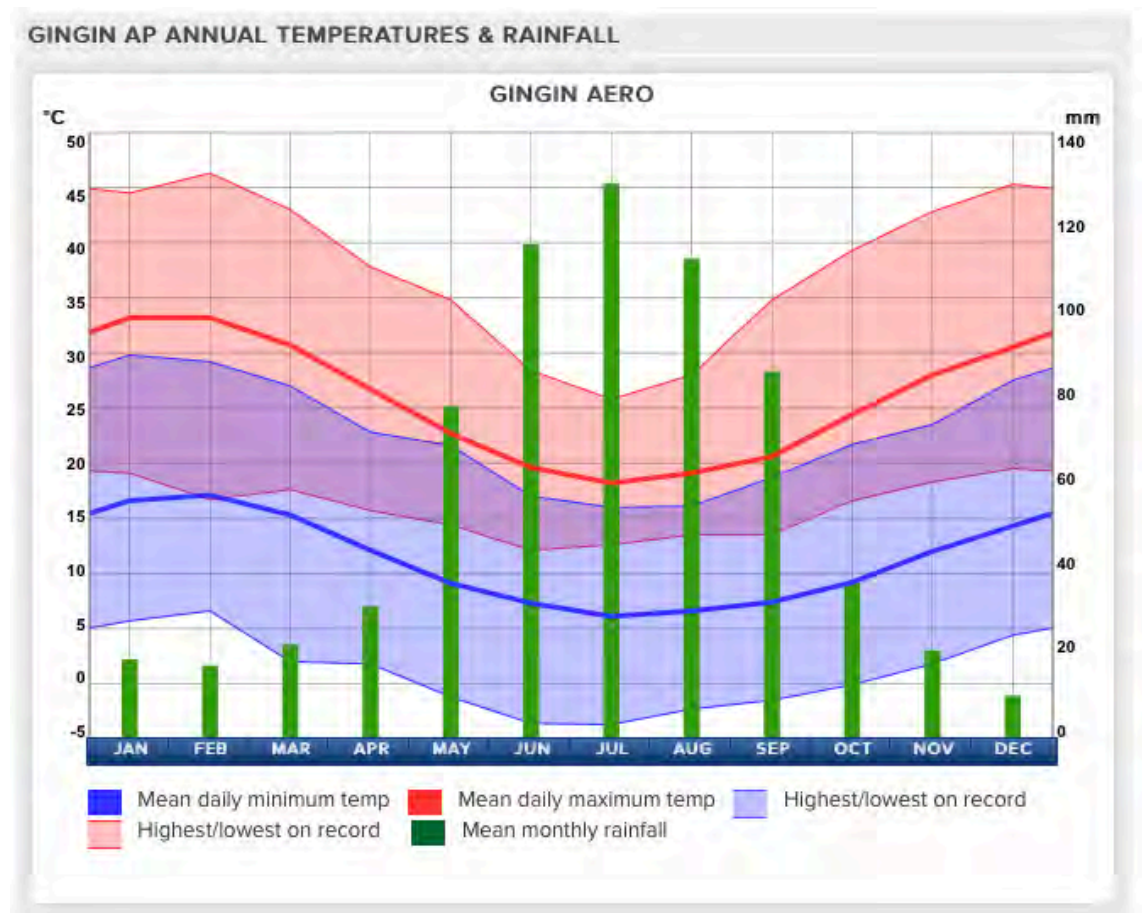
The climate of the area is Mediterranean with warm to hot summers and cool wet winters.

The closest recording station was Beenyup (Wanneroo), although averages of only six years' data have been recorded. Nowadays data is recorded at Swanbourne which is likely to be more influenced by the ocean than the actual site.

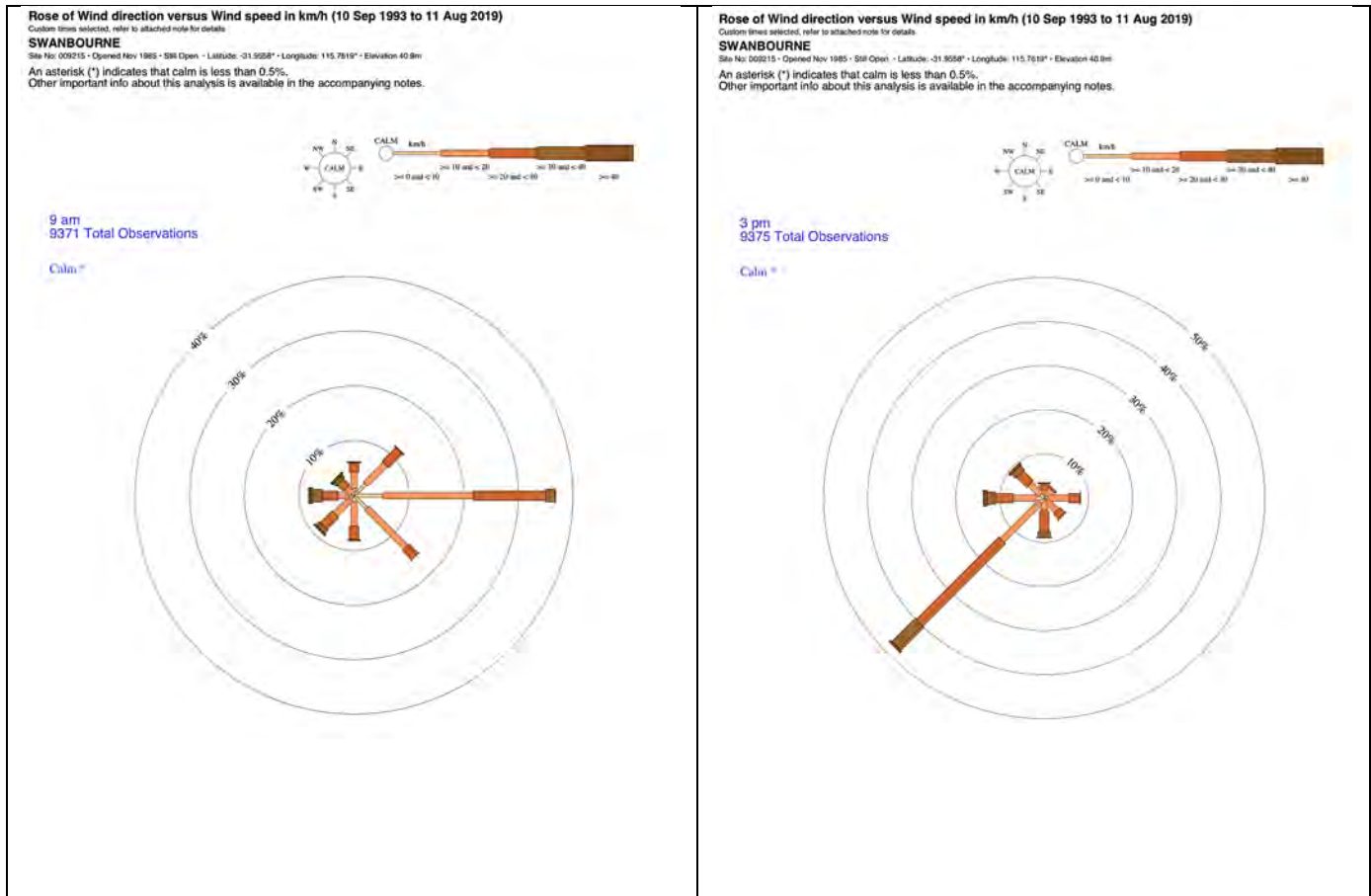
The highest average temperatures are in February with 30.0 maxima and the lowest averages are recorded in July with maxima of 18 degrees Celsius and 7.4 degrees C minima, average.

Rainfall for the area is slightly less than Perth at 722 mm compared to Perth's 869 mm, of which more than 90% falls in the months April to October inclusive. Rainfall has also been recorded at Yanchep with an annual average of 755 mm per year. Evaporation is high and exceeds rainfall in all but the four wettest months, May to September.

The prevailing winds are from the south west, particularly in the afternoon. In summer the easterly in the mornings and the sea breeze in the afternoon can be quite strong. At 3.00 pm wind speeds exceed 10 kph for 80 % of the time in summer but only 30 % to 40 % in winter. At other times the wind speed is calm for 30 % of the time in winter at 9.00 am and 10 % in summer with 40 % of the time exceeding 10 kph in summer and 20 % in excess of 10 kph in winter.



Climate Data



Wind Roses for Swanbourne

2.2 Geology and Geomorphology

The limestone of the low ridge was formed as an old strand line consisting of a beach and dune line. The limestone is a calc-arenite made from beach sand containing predominantly shell fragments with minor and variable quartz. The limestone has been lithified, although the degree of lithification (hardness) changes over the property, and determines the use to which each type of limestone can be put.

It is ascribed to the Tamala Limestone although it may well be a younger sequence than Tamala Limestone in some other locations.

In other localities dates of between 25 000 and 100 000 years have been obtained for the Tamala Limestone.

The Tamala Limestone is covered by shallow, yellow brown, calcareous loamy sands that have originated as a result of weathering of the limestone on the central ridge.

Karst Systems

The site has been reviewed by Lindsay Stephens of Landform Research on a number of occasions over the years. No evidence from past excavation shows any karst formation or caves. In fact the presence of cavities significantly reduces the quality of the stone for use as dimension stone. The site lies outside the Karst Risk Area in Csaky 2003.

The site lies outside the High Karst Risk Area and the central and western part is just covered by the Medium Karst Risk shown on the City of Wanneroo Local Planning Policy 4.13, Caves and Karstic Features. Pit 5 lies outside the Medium Risk.

There is no risk from karst, being at the eastern edge of the karst risk zone with the very deep water tables and shallow excavation. No excavation will extend past the existing floors.

There is no risk of karst being uncovered with such separation taking into account the water table depth, historic levels, potential for cavities at the water table or historic water table, source of the water through limestone flowing west which will result in any acidic conditions being neutralised prior to flowing to the site.

There is no evidence of “cave” karst on site or nearby, there are no dolines, cavities or any such features and no original Tuart trees. That is there are no indicators of karst apart from a very broadly drawn line on a plan which shows the site is near the edge of the Medium Risk karst zone.

With such separation the City is able to exercise their discretion to wave the requirement for any further consideration of karst. At the time of the last application and approval the risk of karst was discussed with the City officers who agreed that based on the field examinations and location to the east of the lakes, where there is no source of acidic groundwater, that no additional geotechnical risk assessments were required.

No karstic features have been uncovered and none is expected based on previous excavation as the depth to the water table is around 30 metres below the base of the pit.

The existing floor has not been lowered during the past 5 years, only the southern edge of the pit slightly extended.

The floor of the existing pit is occupied by the block manufacture plant and concrete surface.

2.3 Soils and Regolith

Soil coverage is naturally thin with shallow yellow brown sands over abundant limestone outcrop. They are classified as Cottesloe soils; Uc1.23 (Northcote).

The proposed extraction area is disturbed land with some overburden dumps located on it and does not therefore have soil remaining on it apart from soil and overburden stored in small dumps at the edges of the existing disturbance.

2.4 Acid Sulfate

There has been an increased interest in acid sulfate soils since the release of WAPC Planning Bulletin 64.

However the interest has been over-reactive, with assessments sought and risk applied in many areas where there is no geological risk or evidence of acid sulfate potential or actual conditions.

The most definitive survey procedure is produced by the Acid Sulfate Soil Management Advisory Committee NSW, 1998, in their *Acid Sulfate Manual*. This Manual forms the basis for much of the assessment procedures in Australia, including those adopted by the Western Australian Planning Commission and the Department of Water Environment Regulation. The *Acid Sulfate Manual* adopts the procedure of reviewing the published data followed up by field assessment, which has been completed for this site. If a geological risk is determined, then a Preliminary Acid Sulfate Assessment is conducted.

The site has been visited by Lindsay Stephens of Landform Research on many occasions, and the faces and limestone observed.

On this site the sandy soils and limestone are highly oxidised, hence the presence of the yellow brown goethite coatings. The base of the pit is at an elevation is >33 metres above the groundwater under the site, and demonstrates the oxidised conditions present.

The other factor is that limestone of this type is used to neutralise acidic soils conditions as it contains high CaCO_3 and has a high neutralising value.

No peat or organic matter has been intersected in the pit, is present in the faces or floor, and none is likely as the existing excavation at around 33 metres above the water table is located in the wrong geological environment.

2.5 Hydrogeology

Surface Water

There is no surface runoff of water due to the porosity and permeability of the limestone and sand, with precipitation draining to the water table.

Groundwater

Elevation of the land surface grades from 75 metres AHD in the west of the proposal area to 83 metres AHD in the east. The western boundary is at 36.4 metres AHD.

The site is underlain by a sequence of limestone and sand of the Tamala Limestone. It is a highly porous sequence with fast vertical movement of water to the ground water table and then slower lateral flow of groundwater to the west.

Elevation of the water table is 21 to 23 metres AHD.

The water table drops further to Lake Nowergup west of Gibbs Road. The lake has a permanent body of water that is significant for a large waterbird population. In recent years it has been artificially maintained at a level of near 17 metres AHD.

A licensed bore is located on site with water pumped to a small tank and then gravity fed to the operations. No changes are proposed to this arrangement or water use.

2.6 Karst

The site has been reviewed by Lindsay Stephens of Landform Research on a number of occasions over the years. No evidence from past excavation shows any karst formation or caves.

The northern and eastern faces are vertical with no evidence of caves or cavities as shown in the photographs provided of the site.

The northern face is an excavated face which does not show any evidence of cavities and, considering the depth to the water table, would be unlikely to do so.

In fact the presence of cavities significantly reduce the quality of the stone for use as dimension stone. The site lies outside the Karst Risk Area in Csaky 2003.

The site lies outside the Risk Area identified City of Wanneroo Local Planning Policy 4.13, Caves and Karstic Features. Pit 5 lies outside the Medium Risk.

The risks east of Lake Nowergup are actually very low based on field assessments and with the separation to the water table.

A summary of the karst issues is attached as Appendix 2. In summary the main points are;

- There is no risk from karst, being at the eastern edge of the karst risk zone with the very deep water tables and shallow excavation. No excavation will extend past the existing floors.
- There is no risk of karst being uncovered with such separation taking into account the water table depth, historic levels, potential for cavities at the water table or historic water table, source of the water through limestone flowing west which will result in any acidic conditions being neutralised prior to flowing to the site.
- There is no evidence of “cave” karst on site or nearby, there are no dolines, cavities or any such features and no original Tuart trees. That is there are no indicators of karst apart from a very broadly drawn line on a plan which shows the site is near the edge of the Medium Risk karst zone.

2.7 Flora

No native vegetation is proposed to be cleared. All the site is already cleared or pasture.

The vegetation was assessed by Lindsay Stephens of Landform Research at least annually for the last 30 years.

2.8 Fauna

The proposal is to continue to operate the existing pits on site.

As no clearing is proposed significant impacts on fauna are not anticipated.

2.9 Wetlands

There are no wetlands on site. The closest wetland is Lake Nowergup which lies west of Gibbs Road.

Lake Nowergup is classified as a Conservation Category Wetland that is recognised in System Six.

The lake has a permanent body of water that is significant for a large waterbird population. In recent years it has been artificially maintained at a level of near 17 metres AHD.

2.10 Aboriginal Sites

The site of the proposed quarry is cleared and has been cleared and disturbed for many years. No evidence of aboriginal occupation has been found on the property.

There is no record of a site on the Department Planning Land and Heritage.

3.0 PLANNING ISSUES

3.1 Current Land use

Lot 6 has been variously used for agricultural activities of grazing, cropping, market garden, and over 30 years of limestone and sand extraction.

Processing and reconstituted block manufacture occurred on site for many years.

There is a small support facility and office.

The limestone is used for cut dimension stone, reconstituted block manufacture and a number of other minor uses such as a source of calcium carbonate.

There do not appear to have been any changes to the nearby dwellings in the local area in recent years. See 5.1 Surrounding Landuse and Buffers. A recent aerial photograph is attached.

3.2 Land Zonings and Policies

3.4.1 State Government Policies and Planning Schemes

➤ ***State Planning Policy 1.0, State Planning Framework Policy***

The State Planning Policy Framework provides for the implementation of a planning framework through the recognition and implementation of Regional Planning Policies above Local Planning Schemes and Policies.

A number of State Policies have been released under the State Planning Framework Policy.

State Planning Policy 2.0, Environment and Natural Resources Policy
State Planning Policy 2.4, Basic Raw Materials
State Planning Policy No 2.5, Agricultural and Rural Land Use Planning
State Planning Policy No 4.1, State Industrial Buffer Policy

These are considered in turn.

A number of other key State Government Policies are also relevant to the local regional planning.

➤ ***State Planning Policy 2.0, Environment and Natural Resources Policy***

This policy provides for the protection of all natural resources under a number of sections;

- 5.1 General Measures
- 5.2 Water Quality including stormwater and wetlands
- 5.3 Air Quality
- 5.4 Soil and Land Quality
- 5.5 Biodiversity
- 5.6 Agricultural Land and Rangelands
- 5.7 Minerals Petroleum and Basic Raw Materials
- 5.8 Marine Resources and Aquaculture
- 5.9 Landscape
- 5.10 Greenhouse Gas Emissions and Energy Efficiency.

Section 5.7 of SPP 2.0, deals with Minerals, Petroleum and Basic Raw Materials.

Part of Section 5.7 states;

Basic raw materials include sand, clay, hard rock, limestone and gravel together with other construction and road building requirements. A ready supply of basic raw materials close to development areas is required in order to keep down the cost of land development and the price of housing.

Planning strategies, schemes and decision making should:

Identify and protect important basic raw materials and provide for their extraction and use in accordance with State Planning Policy No 10 (2.4); Basic Raw Materials.

Support sequencing of uses where appropriate to maximise options and resultant benefits to community and the environment.

➤ **State Planning Policy 2.4, Basic Raw Materials**

This policy makes many statements on the intent and actions which local authorities should use to protect and manage basic raw materials.

The policy was updated as a Draft in 2018 and will supercede basic raw material information within SPP 2.5. The update and 2000 policy is very specific in explaining that basic raw materials need identification and protection because of increased urban expansion and conservation measures.

The excavation of resources from this site is recognised by State Planning Policy No 2.4, Basic Raw Materials, (WA Planning Commission, 2000). The site is shown as a Priority Limestone Resource. State Planning Policies are to be incorporated into Local Authority Town Planning Schemes.

➤ **State Planning Policy No 2.5, Rural Planning, 2016**

SPP 2.5 Rural Planning 2016 predominantly deals with the continued rural use of suitable land and its protection for the future outside the Metropolitan area, but has general principles. The policy was updated in December 2016 and provides strong measures to identify, protect and use basic raw materials.

SPP 2.5 does reiterate the need to protect and use basic raw materials.

Basic Raw Materials are included in the definitions as

Sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone), agricultural lime, gravel, gypsum, and other construction materials. The materials may be of State, regional or local significance depending on the resource location, size, relative scarcity, value and demand for the product.

Amongst seeking to protect agricultural values, Policy Objective 4 (c) states;

Outside the Perth and Peel Planning regions, secure significant basic raw material resources and provide for their extraction.

Section 5.9 deals with Basic Raw Materials and seeks to achieve the following in an environmentally acceptable manner;

Protect the resources until the resource is extracted (5.9.a)

Identify significant basic raw materials on sub-regional and local planning strategies, region and local planning schemes (5.9.b, 5.9.c, 5.9.d)

The extraction of basic raw materials should not be generally prohibited (5.9.e)

Provide for sequential land use (5.9.f)

Limit sensitive land uses to locations demonstrated to not limit existing or potential extraction of basic raw materials (5.9.g)

Provide for the consideration of native vegetation or significant biodiversity values and may require retention and protection of vegetation and environmental assets (5.9.h)

Have regard for the potential impacts of fragmentation and connectivity of native vegetation (5.9.i)

Maintain adequate buffers to protect water quality in public drinking water source areas (5.9j).

SPP 2.5 also supports preventing conflicting land uses (5.12.1), supports the generic buffers recommended by other Government documents such as the EPA Guidelines for separation distances (5.12.3), and seeks to restrict subdivision from impinging on basic raw material resources.

The Policy is also supported by Guidelines that seek to protect the Landscape and secure Transport Routes.

➤ **State Planning Policy No 4.1, State Industrial Buffer Policy**

SPP 4.1 discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this. The development and processing of the resource has been designed to maintain maximum buffer distances. In situations where the buffers are less, actions such as the provision of perimeter bunding to provide visual and noise management, tree planting and operational procedures are used to mitigate and reduce impacts.

This is discussed further in Section 2.11 Surrounding Landuses and Buffers of this document.

➤ **State Planning Strategy, 2050**

The Western Australian Planning Commission (WAPC) released the State Planning Strategy in 2014. It comprises a range of strategies, actions, policies and plans to guide the planning and development of regional and local areas in Western Australia and assists in achieving a coordinated response to the planning challenges and issues of the future by State and Local Governments.

The main thrust is for a balanced economy that recognises and reconciles the various competing interest of development and conservation.

Basic Raw materials form part of that consideration on page 41 of the Strategy where a 2050 outcome of accessible and affordable basic raw materials is one of the strategic approaches.

The limestone resources on the subject land assist in providing those basic raw materials.

➤ **Directions 2031 and Beyond (WAPC 2010)**

Directions 2031 and Beyond provides data on the land uses and growth of the Perth Metropolitan and Peel areas over the 20 years to 2031.

➤ **Perth and Peel @ 3.5 million**

Perth and Peel @ 3.5 million EPA provides strong support for the need for basic raw materials for the growth of Perth.

Perth and Peel @ 3.5million, developed by the Western Australian Planning Commission has determined that the Metropolitan Area will grow significantly between to 2050 by around 650 000 dwellings.

The limestone is required for road construction in the Peel Region.

➤ **Regionally Significant Basic Raw Materials Mapping – Geological Survey of Western Australia**

The resource is part of the nominated limestone in the Western Australian Geological Survey as a Regionally Significant Basic Raw Material.

Whilst this limestone resource is not large it is highly significant as a local resource because it is some of the last limestone available for extraction in the Metropolitan Region, with all other resources having been sterilised by conservation and planning.

3.4.2 Local Government Policies and Planning Schemes

City of Wanneroo

➤ **City of Wanneroo District Planning Scheme 2**

The objectives of the Scheme are to support intensive agriculture and horticulture and basic raw materials from incompatible land uses such as subdivision.

Section 3.17.1b of the City of Wanneroo District Planning Scheme has the objective; “protect from incompatible uses or subdivision, basic raw materials priority areas and basic raw materials key extraction areas”.

Section 3.17.3f commences” There is a presumption in favour of applications for the extraction for basic raw materials in the basic raw materials resource areas

The subject land is zoned “Rural Resource”.

➤ **City of Wanneroo Extractive Industry Local Law**

The local law regulates the extraction of basic raw materials

3.4.3 End Use – Sequential Planning

The extraction of limestone and sand is seen as an interim use prior to a return of the area to pasture and some future land use, yet to be determined by planning.

No sequential land planning can be made because the future use is not known. Therefore the most appropriate end use is to restore the existing cleared and parkland pasture land with native vegetation around the perimeter and in strategic locations.

This would enable semi-rural land uses and rural uses on the landform. Any use other than rural will require rezoning of the land. Even so the proposed revegetation would be suitable for rural living if rezoning was to occur at some point in the future.

3.4.4 Legislative Framework - Stakeholders

There have been no significant changes to the scale and nature of the local land uses over the past few years.

Table 2 Legislative Framework

Legislation	Environmental Factor regulated/affected	Discussion	Action
<i>Aboriginal Heritage Act 1972</i>	Aboriginal heritage sites	Recorded Heritage Sites A database search of DPLH has been conducted and no site recorded	A commitment is made to halt activities that may impact on a site if any is found during excavation, pending assessment by consultants.
<i>Planning and Development Act 2005</i>	Development approvals for on site constructions and any ensuing environmental impacts.	Planning Consent is required from the City of Wanneroo through the Town Planning Scheme and through the Metropolitan Region Scheme by the WAPC for portion of Lot 7. There is an existing Development Approval for Lot 6 which is current until 21 November 2024.	A concurrent application for Development Approval and Extractive Industry Licence is lodged for portion of Lot 7.
<i>City of Wanneroo Extractive Industries Consolidated Local Law</i>	The operations of the quarry are regulated by both the Planning Approval and Extractive Industries Licence	An Extractive Industries Licence is required to be renewed for both Lots 6 and 7,	An application for an Extractive Industry Licence for Lots 6 and 7 is concurrently lodged with this proposal.
<i>Health Act 1911</i>	Environmental and health impacts from waste water treatment and community health.	No matters of significance that would trigger this legislation have been identified.	The proposal complies with the Health Department Guideline for Dust separation. (See Dust Management) No waste materials will be disposed of on site.

<i>Department of Planning, Land and Heritage Transport Impact Guidelines 2016</i>	New developments may need to consider transport options.	This is an existing operation with no changes to the access and scale of activities or transport.	No assessment is required because there are no significant changes to the transport operations. Access is direct to Wesco Road and the existing entrance will be used.
<i>Western Australian Planning Commission Planning Bulletin 111/2016</i>	New developments may need to consider fire risk and mitigation such as a bushfire policy and BAL attack document.	This is an existing operation with no changes to the access and scale of activities or transport or fire risk. The pit acts as a fire management zone as it is devoid of vegetation.	No assessment is required because there are no significant changes to the fire risk. The pit is bare open ground and no structures will be located on site.
<i>Environmental Protection Act 1986 Part IV - Assessment</i>	Referred to the EPA if the project is or may constitute a significant environmental impact.	This is a previously operated quarry.	No referral to the EPA will be required. The operations have not attracted EPA advice previously and this application is a renewal of existing operations.
<i>Environmental Protection Act 1986 Part V – DWER Licence</i>	Environmental factors that may be significantly impacted related to Prescribed Premises. Processing and Screening	If screening or even a crushing plant is to be in excess of 5 000 tonnes per year the operation will require a Department of Water Environment Regulation Licence.	DWER Licence L9183/2018/1 is in place.
<i>Environmental Protection (Noise) Regulations 1997</i>	Noise impacts.	There are no changes to the proposed operations or footprint.	There are no proposed changes to the equipment or operations and therefore noise levels and risk will not change.
<i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i>	Clearing and disturbance of native vegetation.	Clearing Permit under the <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> is required <i>under the Regulations</i> .	A Clearing Permit will be required for native vegetation outside the existing cleared areas.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>	Matters listed on the EPBC database.	The matters listed under the <i>EPBC Act 1999</i> , which might apply to this site such as Black Cockatoo habitat, <i>Banksia</i> Woodland or Tuart Woodland.	A Clearing Permit will be required for native vegetation outside the existing cleared areas. During the application for a Clearing Permit referral to the Commonwealth will be made if the clearing triggers EPBC Guidelines.
<i>Conservation and Land Management Act 1984</i>	Parks and Reserves and issues relating to flora and fauna.	There are no issues that trigger this legislation.	Noted. See above with respect to clearing.
<i>Biodiversity Conservation Act 2016</i>	The legislation seeks to protect and manage biodiversity in all its forms through regulation, conservation and restoration.	There are no issues that trigger this legislation.	Noted A Clearing Permit will be required for native vegetation outside the existing cleared areas. All matters listed under this Act will be assessed during the application for Clearing Permit.
<i>Heritage of Western Australia Act 1990</i>	Heritage	No heritage matters are identified locally or on quarry footprint. DPLH databases were searched.	Noted.
<i>Waterways Conservation Act 1976</i>	Water quality and management of surface water	There are no watercourses on site.	A Water Management Plan has been prepared and is included.
<i>Rights in Water and Irrigation Act 1914</i>	Water quality and management of surface water	There are no watercourses on site.	Noted
<i>Country Areas Water Supply (CAWS) Act 1947</i>	Water supplies	The site does not lie within a surface or groundwater control area.	Noted
<i>State Agreement Acts</i>	Specific acts that relate to certain large projects that may impact on some locations.	Not applicable	

<i>Contaminated Sites Act 2003</i>	Contaminated materials that may arise from excavation or be used in excavation and processing.	The only factor that is likely to fall under this category is the storage and use of maintenance items and on site maintenance.	No materials are present or to be used which would trigger this legislation apart from normal fuel and maintenance. A Water Management Plan has been prepared that includes commitments to remove any contaminated soils or other material regularly and at the end of excavation as part of the closure actions.
<i>Dangerous Goods Safety Act 2004</i>	Potential for dangerous good to impact on the environment.	Refers to fuel, which is required and blasting under the <i>Dangerous Goods Safety (Explosives) Regulations 2007</i> .	Fuel and Servicing Management Plans are included in the attached Water Management Plan.
<i>Mines Safety and Inspection Act 1994</i>	Safety and management of mining operations which in turn may impact on the environment.		Mine Safety The site is registered under the SRS and a Project Management Plan, Risk Assessment and Emergency plans approved. The Project Management Plan addresses all aspects of mining. The SRS System addresses ongoing Health and Safety.
Project Management Plan – SRS System	Safety and management of mining operations which in turn may impact on the environment.	Compliance with the Project Management Plan when it is submitted and approved.	Mine Safety The site is registered under the SRS and a Project Management Plan, Risk Assessment and Emergency plans approved. See Above

4.0 PROJECT DESCRIPTION

4.1 Extraction and Processing

Controls

Excavation is conducted to conform to the *Mines Safety and Inspection Act (1994) and Regulations (1995)*.

The operations are managed by a licensed Quarry Manager and are regularly inspected by the District Inspector of Resources Safety, DMIRS

A Project Management Plan is in place and the operations are approved under the DMIRSSRS System.

The excavation and rehabilitation of the limestone pit will continue to be conducted in accordance with this Excavation – Rehabilitation Management Plan.

Background

- The methods of extraction will remain the same as those currently used on site.
- Traffic will continue to exit directly to Wesco Road using the current crossover.
- Excavation will continue to proceed in a manner that will allow the final surface to be reformed and rehabilitated as the extraction progresses.
- There are no changes to the buffers to existing sensitive premises, with none known to have been constructed closer than the existing closest premises, based on aerial photograph interpretation.

Excavation Procedures

The steps in the excavation are unchanged.

The steps in excavation will continue to be;

Limestone Rubble

1. Excavation will be carried out as a sequence.
2. During excavation the limestone will be deep ripped with a bulldozer pushing down a sloping face below the elevation of the perimeter bunding.
3. In the process the limestone is track rolled as the bulldozer pushes, and this crushes the limestone.
4. Rubble produced will be pushed into a stockpile from which it is loaded directly into road trucks for taking offsite for use as roadbase or raw feed for crushing.
5. To produce various sized products for road bases the rubble may need to be crushed and screened. A loader will take material from the rubble stockpile created by the bulldozer and will then load it into a mobile crusher for reduction to the required size.

6. Water will be used for dust suppression, to reduce the potential for dust generation from the movement of machinery and the effect of wind.
7. Blasting is not part of the normal operations to produce road base but may be used to produce armour or core stone/rock.
8. Depending on the depth of the resource, the nature and grade of the resource and its thickness, benches may be required to differentiate product and assist safety.
9. As the excavation area is disturbed by previous excavation and land uses, no clearing of native vegetation will be required.
10. The existing infrastructure on the subject land will continue to be used with no expansion planned.

Dimension Stone

1. Where dimension stone is cut, the cutting area will be graded level and formed to accept portable rails for the small block cutting machines. The machines run across the floor at an edge, cutting a line of blocks in each run until the floor is lowered by one block. For each run the rails are moved across one block width.
2. The next set of blocks will be cut by the re-installation of the rails and cutting machines on the lowered floor and the process repeated. This method of excavation means that the cutting floor is gradually lowered below the land surface. The cutting saws are electric, using air cooling for the blades.
3. Cut blocks will be removed by bobcat or similar and stacked and palleted for transport from site.
4. Water is used for dust suppression, to reduce the potential for dust generation from the movement of machinery and the effect of wind.
5. All static and other equipment such as cutting machines, block making machinery, or screens, will continue to be located on the floor of the quarry or screened by earth bunds where possible to provide visual and acoustic screening. There is currently no proposal to change the location of the existing facilities on site.
6. At the end of excavation the floor of the quarry will be deep ripped, covered by a layer of overburden and top soil and rehabilitated with pasture and clumps of indigenous tree/shrub species.
7. The final slopes and land surface will be reviewed in the light of any future changes to the end use and where possible will be formed to that future end use.
8. Rehabilitation will progressively follow mining, with completed areas of the excavation being revegetated as soon as practicable.

Limestone Processing

1. A mobile plant will continue to be used to prepare limestone roadbase and other products. It will normally consist of a mobile crusher together with screens, and stackers to sort the products into various sizes. The units fit together linked by conveyors. A DWER Licence will be applied for with respect to any crushing or screening operations prior to commencement of crushing or prior to exceeding the trigger limit for a Licence.

2. The crusher will be fed by a loader, which will collect the raw materials from the face and will also load road trucks.
3. The mobile plant will be located near the floor of the pit, just below natural ground level.
4. All crushers, screens and stockpiles are to be equipped with water sprays, sprayed, enclosed or the stockpiles wetted down depending on the nature of the materials to be processed. This is the same management as for the approved extractive industry.
5. Water used in production is to be recycled if possible, although this is not normally possible because of the porous nature of the ground.

Stockpiles

Only small stockpiles of raw materials are required to be maintained on site. Materials are processed to reconstituted blocks which are stacked.

DWER Licence

DWER Licence L9183/2018/1 has a listed volume of 60 000 tonnes per year.

The operations produce under 60 000 tonnes per year to comply with the Development Approval and DWER Licence.

The EP Act 1986 Part (V) Prescribed Premises that applies to limestone batching is Category 77 (Concrete batching or cement products manufacture). There is no Category for limestone batching. The Prescribed Premises is a risk based approach and Category 77 is used for all premises where cement is used because the environmental risks are the same.

Limestone batching has been carried out on site for over 20 years and was approved in the development approvals in that time, including in 2014 where that use is shown in all aerial and ground photographs and is included in the Management Plan.

Limited amounts of limestone are extracted from Lot 6 and Lot 7 with some material being brought to site from the adjoining Mining Tenement M70/138 operated by Meteor Stone with the remainder coming from adjoining M70/138.

The actual volumes of reconstituted blocks produced on and materials taken from Lot 6 in the past 2 years is 42 000 tonnes per year for the last two years.

There are also natural dimensions stone blocks cut from M70/138, which is not part of this approval and does not add to the 50 000 tonnes (approx.) limit.

Limestone Batching under the landuse definition in the City of Wanneroo DPS 2 falls under the “manufacture and storage is carried out on the land from which any of those materials is extracted or on land adjacent there to”.

The taking of resource from and the manufacture of reconstituted blocks on Lot 6 as has been occurring and is therefore compliant with the City of Wanneroo DPS 2 and all City of Wanneroo Approvals.

The DWER Licence is for 60 000 tonnes annually. That is a maximum volume that is approved under the EPA Act 1086 Part (V) Licence. On the other hand the City of Wanneroo approval is for extraction of “approximately” 50 000 tonnes per year.

The production of reconstituted blocks is up to 50 000 tonnes processed on site.

It is conceivable that a minor amount of limestone from extraction could be screened and taken off site and therefore there is flexibility with the DWER Licence of 60 000 tonnes annually.

4.2 Staging and Timing

The rate of extraction has largely remained the same during the past ten years.

The volume and rate of excavation is, of course determined by the sales orders for the various contracts.

To enable access to the resource an additional area of about 2.7 hectares of limestone, currently disturbed and covered by limestone rubble and overburden, will be excavated.

The active floor on which reconstituted blocks are manufactured will remain.

Currently the amount of active open ground is approximately 8.46 hectares on Lots 6 and 7.

In ten years the area will be 10.87 hectares of total disturbance with the additional area taken from Lot 6.

During the life of the excavation, progressive rehabilitation will be used wherever possible, reducing the amount of ground open at any one time.

4.3 Final Contours

At this stage the final contours are in concept only and will be determined by the final requirements of the land. These are shown in the attached plans.

Batter slopes will be pushed down to 1 : 3 to enable a suitable end landform to be achieved for the remainder of the land which will be at 1 : 6 vertical to horizontal or less.

No decision on sequential land planning can be made because the intentions of the landowner are not known. Any land use other than rural uses and extractive industry will require rezoning of the land.

At this stage the most appropriate end use is to restore the surface to be visually compatible with the surrounding rural land surface and rehabilitate the site with pasture species with clumps of local indigenous trees.

The vertical face to the north was excavated many years ago with the intention that excavation would always extend onto Lot 7 owned by Adelaide Brighton Cement Ltd adjoining to the north. The vertical face will be modified when excavation of Lot 7 commences by Adelaide Brighton Cement Ltd at some point in the future.

Prior to that time the face will continue to be made safe by the retention of a fence on top of the face and appropriate signage. There is little risk of public incursion to the face because the vegetation and soils on Lot 7 are very rough and do not readily permit foot or vehicle travel.

4.4 Hours of Operation

Hours of operation will be 6.00 am to 5.00 pm Monday to Saturday inclusive, excluding public holidays. This is similar to the operations of nearby quarries in the local area.

Transporting material on Saturday should not present a problem because of the high traffic volumes using Wesco Road. Saturday is a day of normal commercial trading. There are not anticipated to be any changes to the number of truck movements or the routes taken.

4.5 Access and Transport

Fencing

There are no stock on adjoining land which is fenced by that landowner. There are no stock on Lot 6.

The vegetation is so prickly and dense and the limestone so rough that pedestrians do not access it.

The access road has lockable gates.

There is a fence along the northern and eastern sides, but to the west and south the ground is occupied by North Sands who carry out extraction activities.



Photograph of the fence at Wesco Road entrance

Access

Access will continue to be along the access road across Lot 7 from Wesco Road and then east.

The access has been in place for over fifteen years via a sealed crossover and has been found to be satisfactory.

As far as is known there have been no complaints relating to the entrance and access way and no known communications received or inspections from the City of Wanneroo relating to the access and crossover in the past five years.

Access to Lot 6 has always been through Lot 7 from the 1980's, originally cutting across portion of Lot 7 and then from around 2002 through the centre of Lot 7 with the approval of Cockburn Cement/Adelaide Brighton, and has been approved in every application and determination of the City of Wanneroo. See Figure 1 of the 2014 Management Plan.

The sealed crossover was designed and constructed by the City of Wanneroo as can be found in the City files. Meteor Stone requested documentation of the crossover from the City, but little was found by the City, although the City agreed that they designed and constructed the crossover.

The City did supply a copy of their design drawing dated 2001.

The crossover was constructed between 2002 and 2004 as evidenced by Google Satellite photography. That is the crossover was approved by the City in 2007 and again in 2014, when the development was renewed.

The sealing is wide enough as it is designed and constructed by the City who provided the design drawings for the crossover.

It is noted that traffic had been cutting the western edge and this has been resolved by the placement of a sand bund at that location, so a low wall of reconstituted limestone blocks has been placed on Lot 7 at the entrance to minimise truck traffic cutting the corner and dragging limestone dust and mud onto Wesco Road.

Gibbs Road will not be used unless for the delivery of products to a project in that location. All traffic west will use Nowergup Road to Wanneroo Road with traffic travelling east to Old Yanchep Road.

Locked gates and perimeter fences are maintained at all times when the site is not manned as required by the DMIRS and the City of Wanneroo.



Access road from Wesco Road, on Lot 7

Maintenance of Internal Roads

The access road is maintained and watered as necessary as described in the Dust Management.

Internal access roads and the access road through Lot 7 are constructed with a bull dozer, front end loader and trimmed with a bladed grader. Materials added to the road are wheel loader compacted.

The internal and Wesco Road access roads are inspected daily by the Registered Manager in his daily site inspection.

The access road to Wesco Road provides continuing compaction to the underlying layer and surface.

Use and being subject to shearing loads, can lead to pavement deformation/rutting and surface damage.

In the event that repair of access roads is required, crushed limestone product with a well graded particle distribution is transported to locations requiring repair and resurfacing. Front end loaders or bobcats are used to push new materials into ruts or areas of deformation.

The water cart provides sufficient water to compliment the compaction process and for dust suppression as required.



Signage, fence and gate at the entrance from Wesco Road onto Lot 7.



Crossover at Wesco Road

- Access and haul roads on site are unsealed and are constructed from insitu materials (limestone & rock)
- Internal access roads are constructed with a bull dozer, front end loader and trimmed with a bladed grader.
- The access road to Wesco Road provides continuing compaction to the underlying layer and surface.
- The internal and Wesco Road access roads are inspected daily by the Registered Manager in his daily site inspection.
- In the event that repair of access roads are required, crushed limestone product with a well graded particle distribution is transported to locations requiring repair and resurfacing.
- Front end loaders or bobcats are used to push new materials into ruts or areas of deformation.
- The water cart provides sufficient water to compliment the compaction process.
- Materials added to the road are wheel loader compacted.

Meteor Stone uses semi-trailer truck transport for its blocks, with an average of 9 laden vehicle movements per day.

4.6 Equipment

The existing facilities on site, will be maintained. The site has a site office, toilet, bore, and servicing area. A telephone is located on site for emergencies.

A Licensed bore is located on site.

The facilities, power lines, water and telephone lines on site are shown in the attached Figures.

The following equipment will continue on site;

Table 3 Equipment and Plant

Site office/lunchroom	Site offices and lunchroom located to the west of the pit. Electricity and telephone.
Toilet system	A septic system is installed on site.
Processing Shed	To be located in the base of the pit
Bore	A bore is located on site and will continue to be used as a source of water.
Fenced compound	Currently there is no fenced compound on site but this may be required for future security reasons. If required it will be located on site for the storage of mobile plant.
Blade sharpening shed	A small limestone shed is located on site where the blades of the cutting saws are sharpened and for minor maintenance.
Workshop	A workshop installed with concrete floors and bunded lined water trapping facilities, located at the operations north of Wesco Road, is currently used.
Bulldozer	Opening new ground and movement of limestone as required and for use in land restoration. This comes to the site occasionally as required to push up limestone.
Mobile crushing and screening plant	Located in the south eastern corner to prepare material for reconstituted block manufacture.
Block manufacturing	This will continue to be located on the old cutting floor. A limestone batching plant is used to prepare the raw feed to the reconstituted block manufacture.
Block cutting equipment	Currently there are no block cutting machines on site, but their use remains a possibility. If used they will be electric or diesel block cutting machines which will operate on the cutting floor of the pit.
Water tanker	Used for dust suppression on the access roads and working floors as required. Alternatively a tank with sprinklers can be used for dust suppression. There are two sets of water tanks for dust suppression and cooling of mobile plant.
Power lines - phone	These have been located on the attached updated plans. There are no changes to these services. On site there is one power line and one telephone line. Some of these are mobile and can be moved.
Loader and bobcat	Loading and handling blocks and other products. The loader will be used for the movement of limestone. Bobcats and loaders are used for the stacking and loading of dimension stone.
Fuel Storage	Fuel tank is present on site. It is bunded and any contaminated limestone is periodically removed from site. Fuel is also supplied from mobile tankers.

In line with current practice, static and operational equipment will operate on the quarry floor or behind bunds of overburden where possible, to provide maximum sound and visual screening where possible.

Loading and Transport

Meteor Stone uses semi-trailer truck transport for its blocks, with an average of 9 laden vehicle movements per day.

The number of truck movements is not expected to change.

Much of the vehicle movement is between this site and the operations north of Wesco Road.

4.7 Workforce

The workforce will vary, depending on the level of operation and market demands, but usually 4 - 6 persons can be expected to be working on site at any one time; the same as is currently used.

4.8 Water Use

Water is mainly used for dust suppression and cooling of the saw blades.

Water will continue to be drawn from the licensed bore located on site next to the site office.

Water management was considered by the DWER in the issue of Licence L9183/2018/1.

Any cutting floor will be installed with an enclosed tank on the upper edge of the perimeter bunding and the water gravity fed to the cutting machines.

There is no requirement for water monitoring and so there is no data. The site is Licensed by the DWER and they also do not require water monitoring. The Water Management Plan has been slightly upgraded to cover the situation.

The water requirements are not a definitive volume but an indication of the likely volume used is outside the City jurisdiction. The City does not approve Water Licensing, rather that is under different legislation managed by the DWER. It is up to the DWER to manage the volumes of water. The bore does not have to be metred. If there is an issue with the water volumes then the DWER will manage that. There is no limit on the bore water and the 5 000 kL suggested in the management plan is an estimate for dust suppression and that volume is not conditioned and remains a valid estimate.

Having said that the volumes of use are provided in an attached spreadsheet which shows that in the calendar 12 months around 6800 kL of water was used for production with around 4 000 kL used for dust suppression.

Potable water is collected from the roof of the site office or brought to the site as needed.

4.9 Safety

Excavation safety

Excavation will be conducted to *Mines Safety and Inspection Act 1994 and Regulations 1995*. Excavation practices, and operations procedures are in compliance with the Act. Health and safety issues are overseen by the DMIRS.

The site is registered under the DMIRS SRS reporting system for minesites and quarries.

Meteor Stone has in place Safety Management Plans and a site specific Emergency Response Plan to cover operational procedures, which include workforce induction and training to ensure that all employees involved are made aware of the environmental and safety implications associated with all stages of the mining activities.

Where applicable Safe Operating Procedure Sheets are prepared and made available for hazards. Workers and staff on all sites are trained in the use of the procedures and all employees provided with site induction and training as necessary prior to commencing work on the site.

All vehicles have two way radio capability. No light vehicles are permitted on site without registering with mobile plant on site. Full personal protection is required for all persons on site at all times.

Emergency

The site is within mobile phone contact.

Fire

There is less potential fire risk from quarries than other land uses because quarries clear land and vehicles are restricted to cleared access roads, the pit floor, processing and stockpile areas.

These cleared areas form a natural firebreak. The main risk comes from an external fire in the surrounding vegetation, impacting on the quarry. As such the fire risk is no greater than a rural property.

Fire risk is normally controlled through the *Bush Fires Act 1954* and local authority bylaws.

The safety of workers is managed through a Safety Management Plan developed through the *Mines Safety and Inspection Act 1994 and Regulations 1995*.

There are a number of management actions that can be taken in quarries to minimise fire risk and these are used wherever possible. The actions are used where applicable and as the opportunity presents to minimise fire risk.

- Restrict vehicles to operational area, particularly on high fire risk days
- Use diesel rather than petrol powered vehicles
- Maintain perimeter fire breaks as required
- Ensure fire risk is addressed and maintained through the Safety Management Plan.
- Provide an emergency muster area, communications and worker induction and training
- Maintain the site radio contact procedures
- Provide fire extinguishers to vehicles
- Establish on site water supplies for potential use in extinguishing fire
- Secure the site from unauthorised access
- Maintain fire breaks
- Water is available from the existing tanks and bore
- The safety of workers is managed through a Safety Management Plan.

4.10 Complaints Procedures

No complaints are known from the past five years.

The following complaints mechanism is used.

- A complaints book is provided and maintained by Meteor Stone.
- Upon receipt of a complaint Meteor Stone will investigate and action the complaint.
- When a complaint is found to be legitimate, Meteor Stone will, where possible, undertake any reasonable actions to mitigate the cause of the complaint and, where possible, take reasonable steps to prevent a recurrence of the situation in the future.
- Details of any complaints, the date and time, means by which the complaint was made, the nature of the complaint, the complainant, investigations and any resulting actions and the reasons, will be recorded in the Complaints Spreadsheet.
- The City of Wanneroo will be informed of any complaint or any other report provided to a Government Department within 3 working days.

The complaints book will be made available for viewing or details made available to the City of Wanneroo upon request.

5.0 ENVIRONMENTAL IMPACTS AND MANAGEMENT

The aims of the Environmental Management Program are to minimise the effects of limestone excavation on the local environment and return the area to a landform compatible with the surrounding area.

5.1 Surrounding Land uses and Buffers

There has been no construction of nearby dwellings and no changes to the buffers since 2014.

The Adjoining North Sands Operations which lie to the west and south have increased in activity during the past five years and lie within the buffer areas to the nearest sensitive premises.

The closest premises remain the landholder's dwelling at 740 metres to the south and a dwelling 930 metres to the west.

The access road lies 650 metres from the sensitive premises, much further away from the access to the adjoining extractive industry to the west and south.

There are no proposed changes to the operations which will bring them closer to the nearest dwellings.

Limestone has been extracted through the years from the Wesco Road area and there are old and current quarries on the ridge to the south, west and north.

A sand and limestone quarry and composting facility (North Sands) is located to the west on Lot 6 closer to the nearest dwellings and also to the south.

A poultry facility in sheds is located to the south also on Lot 6

State Planning Policy No 2.5, Agricultural and Rural Land Use Planning, makes provision for the extraction of basic raw materials. SPP 2.5 in Point 9 states that "The location of rural residential and rural small holdings should avoid unacceptable impacts on, or sterilisation of natural primary resources including prospective areas for mineralisation and basic raw materials".

The issue of appropriate buffers is a matter of the distance and protection measures to prevent impact on adjoining land users. This applies mainly to noise, dust and visual impact, all of which are treated separately.

A number of Government Policies relate to buffer distances and the protection of basic raw materials. *State Planning Policy No 4.1, State Industrial Buffer Policy*, (1997) discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this. A draft updated policy (draft July 2004) reinforces these principles.

Generic buffer requirements were developed by the Victorian Government and used by the Environmental Protection Authority as the basis for a Draft guideline on recommended buffer distances. These formed the basis of EPA Guidance Statement Number 3, Separation Distance between Industrial and Sensitive Land Uses, June 2005.

EPA guidance "Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for limestone pits as 300 - 500 metres depending on the extent of processing. A generic buffer relates to the distance at which there are unlikely to be any problems without some further investigations and does not mean that smaller buffers are not acceptable. See pages 8 and 9 of that document.

No new dwellings appear to have been constructed near the operations within the past ten years.

The excavation will be worked from the floor of the pit with the landform and remnant vegetation assisting visual management.

5.2 Aesthetics

There are a number of management actions that can be taken in quarries to minimise visual impact and these will be used wherever possible. The general management actions are summarised below together with the visual impact issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise visual impact.

Guidance on visual impact is contained in Department of Planning, 2007, Visual Landscape Planning in Western Australia (DoP 2007). Guidance can also be found in Forest Commission of Victoria, undated, Landscape Types of Victoria.

There are no changes to the aesthetics and visual management on site.

The site does not lie within a Landscape Enhancement Area in the City of Wanneroo Policy.

From site observations and examination of contour plans and sight lines the current and proposed operations cannot be seen from Wesco Road.

There may be glimpse from Wanneroo Road, at a distance of over 2.5 km from which some of the upper excavations and other local excavations have been visible for some years.

It does not appear that the Meteor Stone excavations and facilities can be seen from Gibbs Road. It is possible that other operations can be seen from Gibbs Road.

The proposed additional excavations will not be visible and there will no additional contribution to a reduction in visual amenity by the proposed continuation of operations.

There are no new dwellings locally that will be impacted by continued excavation.

Meteor Stone has a policy of recycling. They will keep a tidy site and remove rubbish from the site to an approved waste disposal facility as required.

The final land surface will be consistent with the pre excavation land use and surrounding land uses.

Light Overspill

It is not proposed that the facility will operate at night. The only lighting that might be required at night could be security lighting. Security lighting is located to minimise light visibility from roads and neighbours.

There are no proposed changes to the lighting and operational times.

Table 4 Visual Management

BEST PRACTISE OPERATIONAL PROCEDURES	COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE
Locate exposed features behind natural barriers and landform.	The current operations are visually well protected and the proposed continuation will not add, reduce, or alter the visual amenity as it will not be visible. The only visible feature is the access road across Lot 7.
Operate from the floor of the pit below natural ground level.	The main operational floor is at 69 metres AHD, below natural ground level behind the northern ridge on Lot 7.
Avoid breaks in the skyline due to workings and haul roads.	There are no proposed changes to the operational methods. The proposed continuation of extraction will not alter the skyline from normal viewpoints or roads.
Push overburden and interburden dumps into positions where they will not be seen or can form screening barriers.	Perimeter bunding is in place in strategic areas and will be pushed further out as more subgrade material becomes available and the extension is opened.
Stage workings and progressive rehabilitation to provide visual protection of later activities.	The excavations are to progress south away from Wesco Road with a small extension to the west on Lot 6. There will be no changes on Lot 7.
Cover barriers and landscaping with forms, colours and textures compatible with the natural environment.	Natural regrowth visually assists on the bunding. There is no potential to vegetate the buffers to the south and west because the operations will gradually move in that direction. The natural vegetated hill to the north effectively screens the operations from that direction.
Adopt good house cleaning practices such as orderly storage and removal of disused equipment or waste.	Meteor Stone maintains a tidy work environment. Any wastes generated will continue to be regularly removed off site to an approved waste facility. Where possible useable materials will be recycled.
Provide progressive rehabilitation of all completed or disturbed areas.	This is proposed. The amount of open ground is not proposed to change significantly within the next ten years. Currently there is no ground available for rehabilitation.
Minimise the amount of ground used at any one time.	See above. See also the summary on the Project Summary at the front of the report.
Install fences and gates which are compatible with the style of the area.	Gates and fences, with remnant perimeter vegetation, are already in place.
Minimise offsite impacts of night lighting.	Night operations are not used.
Paint and maintain buildings exposed, plant and equipment with low impact colours.	Only temporary – mobile facilities are used well screened by the ridge to the north on Lot 7. Some natural limestone facilities are present facing west.
Locate roads and access to prevent direct views into the site	There will be no change to the access road, which exits to Wesco Road across Lot 7 and is the only feature that is visible.
Locate buildings, plant and stockpiles in areas of low visual impact and maintain appropriate size.	All plant will continue to be located on the floor of the pit and in areas of less visual impact. No changes are proposed.
Provide temporary revegetation of road embankments and disturbed areas as soon as practicable.	The vegetation to the north will be retained. Natural regrowth visually assists on the bunding. There is no potential to vegetate the buffers to the south and west because the operations will gradually move in that direction. The natural vegetated hill to the north effectively

	screens the operations from that direction.
Control weeds and maintain amenity planting.	A weed control program is in place associated with normal farm maintenance.
Ensure transport vehicles do not spill material on public roads and ensure prompt cleanup if it occurs.	Drivers are instructed to be responsible for their loads.

5.3 Noise Management Plan

General Noise Regulation

Noise can originate from a number of operations and may impact on onsite workers, or travel offsite and impact on external sensitive premises. Both potential noise impacts are addressed by reducing the noise generated from the quarrying and processing operations.

Offsite noise is governed by the *Environmental Protection (Noise) Regulations 1997*.

The Environmental Protection (Noise) Regulations 1997, require that sensitive premises including dwellings in non industrial and rural areas, are not subjected to general noise levels (excluding blasting), during the hours 7.00 am to 7.00 pm Monday to Saturday that exceed 45 dBA. Allowable noise to 55 dBA is permitted for up to 10% of the time and to 65 dBA for 1% of the time. Noise levels are not to exceed 65 dBA during normal working hours.

Between 9.00 am and 7.00 pm on Sundays and Public Holidays, and between 7.00 pm and 10.00 pm on all days, the base level is 40 dBA.

At night, between 10.00 pm and 7.00 am Mondays to Saturday, and before 9.00 am on Sundays and Public Holidays the permitted level drops to 35 dBA.

The 10% and 1% “time above” allowances apply at night and on Sundays and Public Holidays as well.

There are penalties for tonality of 5 dB, modulation 5 dB and 10 dB for impulsiveness, that are added to the permitted levels. That is, if the noise is tonal or modulated the permitted levels drop by 5 dB. Impulsiveness is not likely to be relevant for the quarry under normal circumstances.

The Noise Regulations provide for Construction Noise exemptions to enable construction of the site such as the building of the screening bund and opening the pits.

Influencing factors that raise the allowable noise levels are activities such as external industrial noise, some nearby land uses and busy roads. These are not relevant to this site.

Under Schedule 1 of the Noise Regulations the premises on which the extraction of basic raw materials are extracted, is classified as Industrial Land for the purposes of calculating influencing factors. This was defined as the whole cadastral boundaries in State Administrative Tribunal decision {2013} WASAT 139, Bushbeach v City of Mandurah. In this case the premises is quite small and approximates the area of disturbance and will have little impact on the influencing factors.

At a distance greater than 15 metres from the sensitive premises (eg dwelling), and commercial premises, a base level of 60 dBA applies at all times, with the 10% time permitted to be up to 75 dBA and the 1% permitted to be up to 80 dBA. For industrial premises the base level is 65 dBA at all times with the 10% time permitted to be up to 80 dBA and the 1% permitted to be up to 90 dBA.

Environmental Noise Management

Based on the experience of Landform Research, and the operation of many other limestone quarries and the past extraction, the excavation complies with the Noise Regulations at the closest dwellings.

Herring Storer Acoustics completed a Noise Assessment in 1996 and found the operations in compliance. There have been no significant changes to the project since that time and the data remains valid. That study is attached.

The site is remote from dwellings which are separated by other activities such as the quarry to the south west and the poultry facility to the south.

As far as is known there have been no non compliances, no complaints and no comments from the City of Wanneroo relating to this condition.

Meteor Stone holds a DWER Licence L9183/2018/1 for crushing and screening and for limestone batching.

Like all parts of the operations the processing has to operate under the *Environmental Protection (Noise) Regulations 1997*.

The Noise Management from the 2014 management plan has been updated with recent comments.

All the management completed in the Noise management plan is complied with and implemented.

Noise is further regulated in Conditions 15, 16, 17 and 18 of the existing approval for Lot 6, where it states as per the Noise Regulations that it is the City who will regulate excessive noise through a site inspection. Local authorities are charged under the Regulations with measuring the noise levels and there are mechanisms for noise monitoring after a City site inspection or complaint.

There have been no complaints and no City inspections. Hence there is no noise monitoring required by the conditions and none has been completed.

Even though there is no requirement for environmental noise monitoring, an Occupational noise monitoring program is in place through the Health and Safety regime. This does not form part of the Development Approval or Conditions as it is enacted under other legislation (Mines Safety and Inspection Act) and does not fall under the City's responsibility.

The site is remote from dwellings which are separated by other activities such as the quarry to the south west and the poultry facility to the south. There has been no construction of nearby dwellings and no changes to the buffers.

Noise levels are measured informally as required with hand held devices. There is no evidence of noise non compliance.

Site measuring cannot determine the noise levels at the dwelling, but rather the only way of determining possible noise levels is measuring on site levels and modelling for the nearest dwelling. That assumes that the modelling accurately reflects the site conditions.

The closest premises remain the landholder's dwelling at 740 metres to the south and a dwelling 930 metres to the west.

The access road lies 650 metres from the sensitive premises, much further away from the access to the adjoining extractive industry to the west and south.

In addition, the Adjoining North Sands Operations lies to the west and south have increased in activity during the past five years and lie within the buffer areas to the nearest sensitive premises. That operation would produce more potential impact on the dwellings to the west as the operation is much closer to the dwellings.

Therefore the best way of checking noise is to liaise with the owners of the dwelling, and respond to complaints.

As far as is known there have been no non compliances, no complaints and no comments from the City of Wanneroo relating to this condition.

On that basis Meteor Stone operations will be a small contributor to the noise levels received at the closest sensitive premises.

Noise and the sensitive premises were considered by the DWER in the issue of Licence L9183/2018/1.

Excavation

No drilling and blasting has been used or is proposed.

Excavation is conducted using a bulldozer and loader or block cutting equipment.

Processing

Processing consists of a mobile crusher and screening plant located on the floor of the pit in a location to maximise landform screening when road base is being produced. The solid walls of the pit perimeter will provide significant noise attenuation to the closest dwellings. There is also a limestone batching plant on site.

All equipment is fitted with noise shields and efficient silencers. Workers will be inducted and trained for operation on the site and provided with the correct noise protection equipment.

The noise suppression measures on the crushing and screening plants will be closely monitored, and appropriate signage posted.

Truck Movements

Truck movements along internal roads are restricted to the existing internal roads.

Trucks enter and leave the site directly from Wesco Road. There are no proposed changes to the transport routes or level of truck movements.

Transport on Public Roads is exempt from the Noise Regulations.

Occupational Noise

Occupational noise associated with the quarrying processes falls under the Mines Safety and Inspection Act 1994 and Regulations 1995.

The management of occupational noise is normally handled by providing all necessary hearing protection, as well as conducting worker inductions and educational programs for all staff. Regular site audits of quarry and mining operations are normally conducted by the DMIRS.

As part of its commitments, Meteor Stone is pro-active with its worker safety awareness;

- by providing all necessary safety equipment such as ear protection,
- identifying sections of the plant where hearing protection is required, as well as,
- conducting induction and educational programs for its staff.

All staff are to be provided with comprehensive ongoing training on noise protection as part of Meteor Stone commitment to occupational health and safety.

DMIRS conducts inspections of the site, which have been found to be in compliance.

Warning signs are used to identify areas of potential noise.

Table 5 Noise Management

General Noise Management		
OPERATIONAL PROCEDURES	COMMITMENTS	MANAGED RISK
<ul style="list-style-type: none"> • Comply with the <i>Environmental Protection (Noise) Regulations 1997</i>. 	<ul style="list-style-type: none"> • Meteor Stone will continue to use the same operational methods and are committed to continued compliance with the Regulations. • Herring Storer Acoustics completed a Noise Assessment in 1996 and found the operations in compliance. There have been no significant changes to the project since that time and the data remains valid. • There have been no known complaints received by Meteor Stone in relation to the operations over the past 5 years. 	Noted
<ul style="list-style-type: none"> • Maintain adequate buffers to sensitive premises. 	<ul style="list-style-type: none"> • The operations are constrained by the approved pit. A perimeter screening bund is constructed around the approved perimeter of the pit and ensures that all activities are contained to the approved footprint and compliant with the Noise Assessments. • There are no changes to the closest dwellings. • As far as is known, there have been no complaints relating to operational noise within the last five years. • No changes are proposed to the previously applied footprint in terms of distances to the closest dwellings. 	Low
<ul style="list-style-type: none"> • Locate exposed features behind natural barriers and landform. 	<ul style="list-style-type: none"> • Where possible a perimeter screening bund is constructed around the approved perimeter of the pit or the face provides screening, and ensures that all activities are contained to the approved footprint and compliant with the Noise Regulations. • Excavation is conducted on the floor of the pit behind the faces and natural landform to provide maximum noise screening. • The crusher and screening plant are located low down on Lot 6 to provide noise screening. 	Low
<ul style="list-style-type: none"> • Maintain all plant in good condition with efficient mufflers and noise shielding. 	<ul style="list-style-type: none"> • This is used and is committed to. All plant is maintained in sound condition. • The pit is operated in campaigns and organised so that not all plant is operated at the same time. 	Low
<ul style="list-style-type: none"> • Maintain haul road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades. 	<ul style="list-style-type: none"> • No changes to the access roads are proposed. • See dust management 	Low
<ul style="list-style-type: none"> • Implement a site 	<ul style="list-style-type: none"> • A site code is implemented and Meteor Stone is 	Low

code outlining requirements for operators and drivers for noise management.	<p>committed to site induction and training for all personnel for all parts of the operations.</p> <ul style="list-style-type: none"> The type and amount of mobile plant operating at any one time is restricted to minimise the noise outputs. As required the crusher and screens are located on the floor of the pit in locations which provide for the maximum noise screening. 	
<ul style="list-style-type: none"> Avoid the use of engine braking on product delivery trucks in built up areas. 	<ul style="list-style-type: none"> Airbrakes are unlikely to be required. Drivers are instructed not to use air brakes under normal situations when exiting along the access road. 	
<ul style="list-style-type: none"> Shut down equipment when not in use. 	<ul style="list-style-type: none"> Shutdown is to be used to save fuel and maintenance costs in addition to noise minimisation. 	Low
<ul style="list-style-type: none"> Fit warning lights, rather than audible sirens or beepers, on mobile equipment wherever possible. 	<ul style="list-style-type: none"> Lights or low frequency frog beepers are to be used rather than high pitched beepers to restrict noise intrusion. All reversing alarms are low frequency broad band “croaker” alarms that do not have a long carry distance. As far as is known there have been no complaints in relation to reversing alarms. 	Low
<ul style="list-style-type: none"> Provide a complaints recording, investigation, action and reporting procedure. 	<ul style="list-style-type: none"> A complaints recording and investigation procedure is proposed and will be implemented and maintained. As far as is known, no complaints relating to noise have been recorded within the past five years. 	Low
<ul style="list-style-type: none"> Provide all workers with efficient noise protection equipment. 	<ul style="list-style-type: none"> All personal noise protection equipment will be provided to staff as required. 	Low
<ul style="list-style-type: none"> Minimise and conduct at the least disruptive times. 	<ul style="list-style-type: none"> Quarrying is to be conducted during the approved working hours. 	Low

5.4 Dust Management

Environmental and Occupational Dust

Dust has the potential to be generated during most phases of the quarrying and crushing operation, particularly during summer. In winter the frequent rains greatly reduce the potential dust emissions. The main risk is from the crushing and tipping processes and from vehicle movements.

A separate Dust Management Plan is attached which summarises the actions that Meteor Stone uses to manage dust on site and has been updated in 2019.

5.5 Water Management Plan

All details of water management are provided in the separate plan attached. The water management plan has been updated in 2019.

5.6 Biodiversity Management

Flora

The vegetation of the area has been assessed during site visits over the past 30 years by Lindsay Stephens of Landform Research.

The existing pits are cleared. No further clearing is proposed.

There are no Tuarts on the proposed excavation area on the basis of site examination.

There are two plants of *Eucalyptus argutifolia* (Threatened listed) located on Lot 7 to the north that are fenced and excluded from impacts. These plants were first found and identified by Landform Research during site assessments.

There is also a population of *Melaleuca sp Wanneroo* (Listed Threatened) to the north on Lot 7, again outside the excavation footprint on Lots 6 and 7.

Fauna

The amount of fauna is dependent on the amount and quality of the habitat. The site of the quarry is cleared. Therefore fauna can be expected to be restricted.

The vegetation on the proposed excavation areas is classified as “Completely Degraded” under Bush Forever Condition Score. EPA Guidance 54 does not apply in that case (EPA Guidance 54 Table 3). Therefore no fauna survey is required and is not appropriate.

The proposal is no different to ploughing land by the landholder

Wetlands

There are no wetlands on site. The closest wetland is Lake Nowergup which lies well to the north west of the current and proposed excavation.

Groundwater flow is east to west.

Lake Nowergup is classified as a Conservation Category Wetland that is recognised in System Six. The lake has a permanent body of water that is significant for a large waterbird population. In recent years it has been artificially maintained at a level of near 17 metres AHD.

As there will be no clearing, and the amount of ground to be opened will match the amount of ground to be closed within the next ten years, there will be no impacts on Lake Nowergup from recharge changes.

A groundwater and fuel management plan is proposed to minimise and mitigate risk of liquids entering the system. See the attached Water Management Plan.

5.7 Dieback Management Plan

Dieback is not an issue for pasture re-establishment but the principles of biosecurity, crop management and normal farm best practice include practices that minimise pathogen risk.

Dieback of vegetation is often attributed to *Phytophthora cinamomi* even though there are other *Phytophthora* species and other diseases such as *Armillaria* that can cause dieback like symptoms. Microscopic soil-borne fungi of the genus *Phytophthora* kill a wide range of native plants and can cause severe damage to many vegetation types, particularly those from the families Proteaceae, Epacridaceae, Xanthorrhoeaceae and Myrtaceae.

No obvious evidence of dieback diseases have been observed by Landform Research, but with such disturbance there will be no real means of determining whether *Phytophthora* is present. On the other hand the main species *Phytophthora cinnamomi* does not occur on limestone.

DBCA recognises that Dieback is less likely to impact on vegetation on Quindalup, Spearwood or Cottesloe Land Systems, Podger F D and K R Vear, 1998, Management of Phytophthora and disease caused by it, IN *Phytophthora cinnamomi* and the disease caused by it - protocol for identifying protectable areas and their priority for management, EPA 2000 and therefore its introduction is less likely. This is also confirmed from DBCA and Dieback Working Group publications.

There are other pathogens of *Phytophthora*, *Armillaria* and *Pythium*. As it is unclear whether dieback or other pathogens already occur on site, with the level of disturbance, previous activities and the degree of disturbance to vegetation it may be that pathogens already exist. However as part of normal best practice, plant disease management actions will be used.

The management is based on the perceived risk as outlined in

- Dieback Working Group, (undated) *Management of Phytophthora Dieback in Extractive Industries*.
- Dieback Working Group, 2000, *Managing Phytophthora Dieback, Guidelines for Local Government*.
- Department of Parks and Wildlife and Parks and Wildlife 2017, *Phytophthora Dieback Management Manual, FEM079*

There is very little risk of the operations spreading dieback onto vegetation on adjoining properties as there is no access to those properties and they are cleared.

- All vehicles and equipment used during land clearing or land reinstatement, will be clean and free from soil or plant material when arriving at site.
- When removing topsoil and clearing, vehicles will run around the perimeter and then push inwards where possible.

- No soil and vegetation will be brought to the site apart from that to be used in rehabilitation and that which is dieback free.
- Plants to be used in rehabilitation are to be certified as from dieback free sources.
- Excavation vehicles will be restricted to the excavation area apart from clearing land.
- Rehabilitated surfaces will be free draining and not contain wet or waterlogged conditions.
- Illegally dumped rubbish is to be removed promptly.
- When clearing land or firebreaks vehicles are to work from disturbed areas towards the pit; or, in situations where dieback interpretation is not possible, from areas of higher quality vegetation to areas of lower quality vegetation.

DBCA has determined that material such as limestone and sand, taken from deeper in the regolith profile where there is no organic and other plant matter, carries low risk of spreading dieback. (DEC 2004).

5.8 Weed Management Plan

Weed management is to be used to minimise impact on adjoining remnant vegetation and on adjoining properties as well as maintaining the agricultural capability of the farm for the end use of the land.

The management of weeds is essentially similar to that for plant diseases.

The impact of weeds is really the impact within the local area and the more they are controlled the better. It is desirable that the site does not become a haven for environmental weeds and therefore a management and control program is warranted at all sites.

Weeds can be Declared under the nomination, and control of weeds falls under the lists of Declared Pests under the *Biosecurity Agriculture Management Act 2007, Agriculture and Related Resources Protection Act 1976* or *Weeds of National Significance, (Commonwealth Biosecurity Act 2015)*.

Other weeds are not Declared but may be classified as Environmental Weeds because they are well known for impacting on vegetation.

Weeds are most likely to impact on;

- Disturbed areas such as overburden dumps, topsoil stockpiles.
- Edges of access roads.
- Edges of firebreaks adjacent to surrounding vegetation.
- Locations accessible to the public on which rubbish is dumped.

The main sources of weeds are;

- Weeds from edge effects from access and local roads.
- Gradual creep of weeds along access roads.
- Rubbish dumped by the public. This is not likely as the resource is set well back from Wesco Road, protected by fences and gates and vegetation that is difficult to access.
- Materials or waste brought to site by employees.
- Soil and seeds from vehicles arriving at site. This often applies to trucks that have carried something else such as grain, or vehicles to be used in earthworks.
- Wind blown seed from surrounding land.
- Birds and other vectors from adjoining land uses such as stock, composting. This is more common than is often given credit for. eg *Solanum* species.
- The Dieback Management Actions will be used to assist weed management.

Weed Management will consist of, but not be limited to, the following actions.

- Weed Management is integrated with normal farm and quarry weed management practise.
- Inspections are to be conducted to monitor the presence and introduction of Environmental and Declared Weeds on an annual or more frequent basis.
- On identification, Declared and significant environmental weeds will either be removed, or sprayed with a herbicide.
- All vehicles and equipment to be used during land clearing or land reinstatement, are to be clean and free from soil or plant material when arriving at site.
- No soil and vegetation will be brought to the site apart from that to be used in rehabilitation.
- Plants to be used in rehabilitation are to be free from weeds.
- Large plants such as Castor Oil plants and Declared Weeds will be periodically grubbed out or spot sprayed with a herbicide.
- Weed affected top soils may need to be taken offsite, or used in weed affected areas.
- Illegally dumped rubbish is the major source of weeds and will be removed promptly.
- No weed contaminated or suspect soil or plant material will be brought onto the site.
- There is approval for the importation of limited amounts of inert crushed building materials from the adjoining operation to the west (North Sands). That material is to be weed free.
- When clearing land or firebreaks vehicles will work in conjunction with dieback principles and push from areas of better vegetation towards areas of lower quality vegetation.
- Weeds are to be sprayed with broad spectrum spray prior to planting or seeding in weed affected soils as required during the rehabilitation process.
- General and significant weeds will be treated by the most successful method for each species. This could be broad acre spraying, spot spraying, mechanical removal, steam treatment, pulling and bagging.
- Topsoil spreading and soil reconstruction of the final land surface will be to interim revegetation if required for soil stabilisation. This will not involve the elimination of exotic species, but rather provide an interim cover that stabilises the soil. Weeds that impact on that interim cover will be treated as required.

Weed inspections and treatment will be conducted at least annually, normally in Autumn and, as required, an additional inspection and treatment will be conducted in spring. Treating in winter and summer is sometimes less successful because of slower plant activity.

6.0 REHABILITATION AND CLOSURE PLAN

6.1 Background

The area is currently significantly disturbed and cleared with no native vegetation.

The Objectives of that rehabilitation plan are to "restore the conservation and ecological values to those of the pre-excavated vegetation (parkland pasture) pending decisions on future land uses".

Rehabilitation will contain Dieback and Weed Management in addition to monitoring and replanting failed areas.

Closure Objectives

The aim of the rehabilitation program is revegetation to parkland pasture and local native species suitable for a range of land uses once limestone has been extracted; such as continued market gardening, other horticulture or rural living if the land can be rezoned or industrial land use.

- The land surface is to be non eroding and stable in compliance with the *Mines Safety and Inspection Act 1994*
- Slopes of the floor of the pit will be left at 1 : 6 vertical to horizontal. Slopes of bunds and batter slopes will be up to 1 : 2 – 1 : 4 vertical to horizontal. It is anticipated that at some stage Lot 7 will be excavated and in that case there will be a consistent land surface through from Lot 6 to the north to Wesco Road.
- If the pit is closed prior to that time the base of the face between Lot 6 and Lot 7 to the north, which has been a vertical slope since the 1980's, will be backfilled at the base and continue to be fenced along the intervening boundary. It is noted that the portion of Lot 7 in the north adjacent to the operations, have never been, and are not part of, the current rehabilitation plan, so that actions on that portion of Lot 7 are therefore limited.
- Cover of pasture species that is capable of holding the soil and preventing wind erosion problems or excessive fire hazard on gently sloping pasture areas
- An average of 1000 native trees and shrubs per hectare at 3 years after establishment on areas to be returned to native vegetation such as steeper batter slopes.
- Clumps and corridors of local native trees and shrubs on pasture areas. Clumps are to contain a minimum of 20 plants.

Closure Summary

The extraction of limestone is an interim use prior to reconstruction to a restoration of parkland pasture.

Currently there are 8.46 hectares of land open.

Dieback and Weed Management in addition to monitoring and replanting failed areas is proposed.

Rehabilitation will progressively follow mining, with completed areas of the excavation being revegetated as soon as practicable, although currently there is no ground available for closure.

Materials Inventory

The materials remaining at closure from limestone and sand mining are natural soil materials that do not produce any remaining or lingering environmental risk.

An audit of the potential materials that may be present from mining at closure is presented below.

Table 16 Materials Inventory

Type	Comment	Treatment	Reference
Soil	Topsoil is natural and contains no detrimental materials.	None required. To be used in rehabilitation. Most of the topsoil was removed and lost in the 1980's	Field geological examination by Landform Research
Subsoils - Overburden	Subsoil sand and limestone is natural and contains no detrimental materials.	Non required. Generally taken as resource.	Field geological examination by Landform Research
Waste rock and non surface material and tailings	Any waste rock will be natural limestone that does not make grade. The pit bottoms in earthy yellow limestone which is a natural material normally occurring on the surface.	None required.	Field geological examination by Landform Research
Surface water	The water quality is fresh.	No treatment necessary	
Ground water	The water quality is fresh.	No treatment necessary	
Acidic materials and drainage	Not present. The limestone does not contain sulfides and there is no risk of acidic materials developing. The sand does not carry acidic materials or any at risk materials. Concurs with <i>Nattaporn-Prakongkep, R J Gilkes, B Singh and S Wong, 2011, Mineralogy and chemistry of sandy soils in the Perth metropolitan area of the Swan Coastal Plain, Department of Environment and Conservation.</i>	No treatment necessary.	Field geological examination by Landform Research
Sodic or dispersive materials	The water quality is fresh and there are no clays that could be dispersive.		Field geological examination by Landform Research
Asbestos – asbestiform minerals	None present.	This would only occur as waste products remaining on site. The management of the site is to remove waste products and no such products occur on site.	Field geological examination
Radioactive materials	Not present	The sand and limestone does not	Published WA

		contain radioactive minerals. The activity level is much lower radioactivity than other locations such as coastal locations where heavy minerals are more prevalent.	Geological Survey radiometric mapping. Field geological examination by Landform Research
Metallic or chemical materials	None present. Materials are regularly removed when noted or when they are generated.	These materials will be sorted over time and those that cannot be reused, broken up and removed from site. All will be removed by the end of excavation on the land unless required for future land uses.	Field geological examination and experience and published information.
Tailings storage	Not required	There may be some limestone batched materials left at closure. These are non reactive and are used on all subdivisions and developments. If any remain they will be placed at the base of a slope that is being backfilled.	
Ablutions waste		Septic toilet system is provided and will be removed at the end of excavation.	Water Management
Dangerous Goods and Hazardous Materials	None will remain on closure.	There are normally no hazardous materials used for sand and limestone mining apart from fuel, and servicing. The only other materials are for tasks such as weed management and are dealt with under those sections.	
	FUEL The various plant will be refueled from mobile tanker. None will remain on closure.	Any soil or other materials with drips and spills will be removed offsite to an approved waste site or location.	Water Management
	SERVICE MATERIALS Only minor lubrication will be conducted on site All major servicing will be conducted offsite. None will remain on closure	Any wastes will be collected and removed from site promptly to an approved recycling or waste disposal area. Only minor servicing will be conducted on site. All major servicing will be conducted offsite.	Water Management
General waste		Regularly removed from site to an approved disposal area	Water Management

6.2 Closure Implementation

The closure planning will be updated from time to time as the excavation progresses forwards. This will include both anticipated costs and procedures.

The following procedures will be used for final closure and rehabilitation of any stage of excavation and on completion of the sand and limestone pit.

- The closure of completed areas of the operations will be progressive with closure of all remaining ground at the end of operations.

- Maintenance and monitoring will be conducted until completion criteria is met. A three year cut off is provided for rehabilitated soils.
- Unexpected or early closure will be completed in the same way as permanent closure below but the full rehabilitation will be completed as one operation.

Table 7 Closure and Rehabilitation Techniques

CLOSURE OBJECTIVE	Completion Criteria
FOREIGN MATERIALS	
All legally binding conditions and commitments relevant to mine closure and rehabilitation will be met.	<ul style="list-style-type: none"> • The latest documentation will be reviewed. • All legal requirements and commitments and conditions of approval will be complied with. • Compliance with all conditions and commitments and end use will be assessed. This includes Planning Approval, Extractive Industries Licence, Clearing Permit and DWER Licence and any other relevant legally binding conditions. • An audit table of all conditions and commitments that relate to closure and conduct an audit of those items upon the completion of each stage of rehabilitation and annually until sign off will be compiled and used to verify the closure process. • All conditions and commitments will be visually accessed for compliance.
All non natural structures, with mining will be removed at the end of extraction.	<ul style="list-style-type: none"> • All non natural inert materials associated with quarrying will be collected and removed from site unless required for internal roads. This includes plant, buildings, fences and other structures or materials not required for future farming and other uses. • All ground once occupied such as hardstand is to be deep ripped and soils reconstructed as required. • If not required, roadbase, hardstand and any other inert materials left over from the site operations will be scraped and picked up and will be used to backfill the pit faces or reused. • The land surface will be formed a landform similar to the natural form but at a lower elevation. • A visual audit of completed ground, will be completed to verify compliance.
All wastes will be removed from site.	<ul style="list-style-type: none"> • A visual audit of completed ground, to verify compliance with “no contamination to be left” will be used. • Soil testing will be undertaken if there is evidence of adverse materials remaining such as fuel spills. • As a result of any testing remediation will be undertaken to ensure that the site is not contaminated. • As necessary samples will be collected to verify a lack of contamination. Faces and the landform are to comply with DMIRS Guidelines and be stable for the long term. • Perimeter bunds will be pushed down to produce the batter slopes for the rehabilitated faces. The surface will be undulating with similar slopes to the pre – mined condition. • Where possible the landform will be matched to the adjoining excavated and non excavated surfaces. • Visual observations and survey of the landforms will be used to confirm compliance.
LAND SURFACE	
The site will be geotechnical stability	<ul style="list-style-type: none"> • Faces and the landform are to comply with DMIRS Guidelines and be stable for the long term. • The batters are to be formed to comply with DMIRS and geotechnical requirements. • The land surface is to be non eroding and stable in compliance with the Mines Safety and Inspection Act 1994 • Slopes of the floor of the pit will be left at 1 : 6 vertical to horizontal. Slopes of bunds and batter slopes will be up to 1 : 2 – 1 : 4 vertical to horizontal. It is anticipated that at some stage Lot 7 will be excavated and in that case there will be a consistent land surface through from Lot 6 to the north to Wesco Road.

	<ul style="list-style-type: none"> • If the pit is closed prior to that time the base of the face between Lot 6 and Lot 7 to the north which has been a vertical slope since the 1990's will be backfilled at the base and continue to be fenced along the intervening boundary. It is noted that the portion of Lot 7 in the north adjacent to the operations have never been, and are not part of the current rehabilitation plan, so that actions on that portion of Lot 7 are therefore limited. • Perimeter bunds will be pushed down to produce the batter slopes for the rehabilitated faces. The surface will be undulating with similar slopes to the pre – mined condition. • Where possible the landform will be matched to the adjoining excavated and non excavated surfaces. • Visual observations and survey of the landforms will be used to confirm compliance.
<p>The site will be left safe for parkland pasture end use.</p>	<ul style="list-style-type: none"> • Warning signs as required will be provided to the final landform. • Fences, bunding and warning signs above slopes or other features as required for the excavation site until safe. • Locked gates or access restraints will be provided as required. • All areas will be inspected to ensure the land surfaces and access points, are stable to erosion from wind and water. • Holes, sumps drains, ditches and the like will be filled and removed. • audit of completed ground, to verify compliance. • Visual observations of the landforms. And an audit of the completed land will be made to verify compliance.
<p>The surfaces are to be free from erosion.</p>	<ul style="list-style-type: none"> • Faces slopes and other features will show no significant signs of wind or water erosion. • Erosion normally involves soil particles being detached from areas not adequately protected by vegetation, and moved down-slope. This is not normally a significant problem in limestone which crusts after the first winter. • The soils are permeable and runoff is normally minimal unless surface materials become non-wetting. Even so experience shows that there is minimal non wetting and surface particle movement under such conditions. • Water erosion on steeper slopes can be avoided by the permeability of the materials and by leaving the surface soft, rough and undulating, with the undulations running along contour. The final machinery run should be along contour and not down slope. • If wind erosion and soil stability become an issue measures will be taken to stabilise the soils. These could include but not be limited to fence wind breaks, spray mulching, cover crops, interim native vegetation or spreading mulch and vegetation. • For rehabilitation areas, revegetation will take place as soon as possible following landform and soil reconstruction. • Cleared vegetation will be transferred from an area being cleared, to protect against erosion, assist with habitat creation and provide a seed source. • Control of wind erosion potential will be assisted by spreading brush and vegetation across the topsoil on the batter slopes and reconstructed soils where local native vegetation is to be established
<p>The land surface and soils are to be capable of supporting pasture with clumps of native vegetation – trees.</p>	<ul style="list-style-type: none"> • The soils will be constructed from overburden overlain by topsoil, leaf litter, vegetation fragments as available in areas of native vegetation . • The floors will be deep ripped. If required the batter slopes will be ripped along contour. Any compacted hardstand or internal roads will be deep ripped. • At the end of the current excavation the perimeter overburden bunds followed by the topsoil and by the vegetation will be pushed down and spread across the excavated area as the key part of the final rehabilitation. • The topsoil cover of 50 – 100 mm will be pushed to the edge of the current excavation in separate windrows where available. This is usually the top 50 mm to 100 mm. Topsoil will be respread as the final surface covering. • Visual observations and discussions with operators.

REVEGETATION	
<p>The reformed surface be >3 metres above the highest groundwater table.</p>	<ul style="list-style-type: none"> • As required faces and slopes will be backfilled. • Meteor Stone will leave a separation of around >10 metres to the winter water table and this will be established through monitoring during excavation. • Visual observations and survey of the landforms to confirm compliance.
<p>The gently sloping floor rehabilitated areas will, in time, form sustainable pasture with clumps of trees and local native vegetation.</p> <p>Steeper slopes are to be vegetated with native shrubs and trees with a pasture understory to provide visual screening.</p>	<p>Hygiene</p> <ul style="list-style-type: none"> • Implement Dieback Management. • Implement Weed Management. <p>Topsoil Recovery</p> <ul style="list-style-type: none"> • Overburden has been removed by pushing to the perimeter of the pit to form perimeter bunding to the pit. • When stored topsoil is used it may be diluted and mixed with fresh topsoil, however in most cases the topsoil was lost during excavation in the 1990's and is not available. • Sand can be spread on deep ripped limestone and forms a suitable substrate. <p>Revegetation</p> <ul style="list-style-type: none"> • Where possible any disturbed areas that are no longer required will be rehabilitated using the methods described above within 12 months of becoming available. • Topsoil and vegetation fragments where available will be transferred directly from an area being cleared and spread across the surface to provide seed sources and habitats wherever possible. If direct transfer is not possible, any material stored in dumps will be respread. • Larger vegetation will be formed into occasional piles for habitat creation on the lower elevations. • Pre-seeding weed control is only likely to be required where topsoils are used that contain weed species. This is unlikely to be the case on this site where the existing vegetation is in excellent condition even though some exotic species are currently present within the "natural" vegetation. • Any weeds likely to significantly impact on the rehabilitation will be sprayed with Roundup or other herbicide or grubbed out, depending on the species involved. Fusilade will be used where grasses present an impediment to rehabilitation. Weed affected topsoil and overburden will be buried.

<p>The gently sloping floor rehabilitated areas will, in time, form sustainable pasture with clumps of trees and local native vegetation.</p> <p>Steeper slopes are to be vegetated with native shrubs and trees with a pasture understory to provide visual screening.</p>	<p><i>Native vegetation on steeper slopes and clumps of vegetation on the floor</i></p> <ul style="list-style-type: none"> • Methods of sourcing seed will be; <ul style="list-style-type: none"> • Direct transfer of topsoil. • Brushing by cutting branches of adjoining and suitable local vegetation. • Sourcing and planting additional tube plants as required as a result of site trials. • Meteor Stone will spread any vegetation, plus leaf, root and organic matter collected from the land clearing procedures where available. This will increase the total organic carbon fraction, improving soil properties such as resistance to water and wind erosion and moisture retention. The difference in properties between existing topsoil and subsoils is not considered a major impediment to rehabilitation of native species in the area. • Topsoil provides a useful source of seed for rehabilitation when the correct handling of the topsoil is used, stripped and replaced dry (autumn direct return). Maximum depth of 50 mm can be used to optimise revegetation of species-rich plant communities. • Rehabilitation will take place during the first winter months following the restoration earth works of each particular section of quarry. Leaving the completed earth works for one season will reduce the success of rehabilitation by at least 50%, due to compaction effects. • A species list is attached. • A combination of the three methods is always preferred by Landform Research and has proven to be the most versatile and successful for re-establishing native vegetation. The amount and species of additional seed and tube stock depends on the quality and seed store within the topsoil, and may vary from stage to stage. • Seeding conducted in summer will use scarified leguminous seeds that have been “dry smoked”. Seeding conducted in July to August will have the leguminous seeds heat treated and all seeds will be smoke treated by soaking in “smoke water” for 24 hours prior to seeding. • Clumps of shrubs and trees will be established mainly through the planting of tube plants - in the areas of parkland pasture. • Tube plants of local native species will be planted at rates of 1000 per hectare in Winter in clumps to allow for deaths, in the areas of native vegetation, depending on the quality of the topsoil and its potential weed load. • Rehabilitation will progressively follow mining with completed areas of the excavation being revegetated as soon as practicable. • Local species are to be used in revegetation, and all materials brought to the site will be dieback and weed free. • The clumps of trees will be fenced to exclude stock if required, If no stock are retained on site, fencing will not be necessary. • Tube plants are to be established in low undulations and not on the high points of furrowed soil. The planting rate is to achieve the completion criteria allowing for deaths. <p><i>Steeper sloping land and clumps to return to native vegetation</i></p> <ul style="list-style-type: none"> • Strategic areas will be tube planted in addition to seeding if required. • The tube stock will be used in areas where there were fewer trees and shrubs. <p><i>Pasture</i></p> <ul style="list-style-type: none"> • The preferred method of revegetation is to use the pasture seed from existing topsoil on pasture areas. However this may be deficient and additional seed is likely to be required. • Seeds of pasture species will be spread by normal farm practice at rates and species determined by the land holders/farm manager with advice from either a consultant or the Department of Primary Industries and Regional Development. • The pasture species will be matched to the soil types and rainfall. The location falls into the “High Rainfall Coastal” planting regime with sandy soils. Suitable perennial legumes include Birdsfoot trefoil, Lucerne, Strawberry Clover, and Sulla. Perennial pasture includes Perennial Ryegrass, Phalaris, Cocksfoot, and Summer Active Tall Fescue, Kikuyu and Rhodes Grass. Annual pasture
---	---

	<p>species include Italian Ryegrass, Serradella, subterranean clover.</p> <ul style="list-style-type: none">• The actual species used will be determined by the individual season, nature of the rainfall in the preceding months and stocking/hay production proposed by the landholder which may change from time to time.• Seeding rates are 2 – 5 kg/ha depending on the species used; for example Ryegrass is seeded at 3 kg/ha whereas Rhodes Grass is seeded at 4 kg/ha.• If sufficient vegetation does not germinate the area will be over-seeded in early Autumn with a mixture of pasture species. <p>Monitoring</p> <ul style="list-style-type: none">• During late summer an assessment of the success of the rehabilitation will be made to determine the rehabilitation requirements for the following winter.• Monitoring includes visual assessments and, where necessary, counts to determine the success of the rehabilitation and restoration, as follows;<ul style="list-style-type: none">• plant density• plant growth• plant deaths• regeneration• weed infestation• As necessary steps will be taken to correct any deficiencies in the vegetation.• Rehabilitation of each stage will be monitored for a period of three years to ensure that the revegetation meets the completion criteria of providing self sustaining indigenous shrub vegetation.• Plants that have not survived are to be assessed to determine the number of replacement plants required. To this is to be added the number of additional plants required to be installed in the following winter to bring any deficiencies up to the completion criteria. <p>Fertiliser</p> <ul style="list-style-type: none">• Fertiliser is not normally required and will add nutrients to the ground water. If used a fertiliser containing low nitrogen, phosphorous and potassium, and trace elements, is recommended to be only used at each tube plant. <p>Irrigation</p> <ul style="list-style-type: none">• Experience by Landform Research in rehabilitation of quarries in Spearwood Sand and limestone has shown that, when completed well, there is no need for irrigation of the rehabilitation. <p>Species List</p> <ul style="list-style-type: none"><i>Acacia rostellifera</i><i>Acacia cyclops</i><i>Acacia saligna</i><i>Agonis flexuosa</i><i>Banksia attenuata</i><i>Banksia grandis</i><i>Banksia ilicifolia</i><i>Banksia menziesii</i><i>Calothamnus quadrifidus</i><i>Eucalyptus calophylla</i><i>Eucalyptus gomphocephala</i><i>Eucalyptus decipiens</i><i>Eucalyptus marginata</i><i>Eucalyptus todtiana</i><i>Dodonea aptera</i><i>Grevillea thelmanniana</i><i>Hakea prostrata</i><i>Kunzea glabrescens</i><i>Melaleuca systema</i><i>Melaleuca huegelii</i><i>Melaleuca lanceolata</i>
--	--

	<p><i>Olearia axillaris</i> <i>Templetonia retusa</i> <i>Viminaria juncea</i> <i>Xylomelum occidentale</i></p>
<p>The re-established surface will be free from Declared or Significant Environmental weeds that could compromise the success of the rehabilitation or impact on adjoining vegetation.</p>	<ul style="list-style-type: none"> • Inspect the excavation site for Significant Environmental and Declared Weeds. • If found, inspect adjoining native vegetation for edge effects. • Inspect rehabilitation, pasture and the edges of access roads and other locations. • Provide weed control using the methods outlined in the Weed Management. • Implement Dieback protection measures outlined in the Dieback Management Plan. • Observations, discussions with operators and vegetation assessment.
STAKEHOLDERS	
<p>The interests of all relevant stakeholders will be considered during operations, closure planning and closure.</p>	<ul style="list-style-type: none"> • Prior to closure, stakeholders will be consulted to check whether the closure planning, where possible, considers their interests and carry them out as necessary. • The latest documentation will be reviewed to determine whether there are any outstanding stakeholder issues.
<p>The site will be left safe for parkland pasture end use.</p>	<ul style="list-style-type: none"> • The disturbed land will be made safe and in compliance with the <i>Mines Safety and Inspection Act 1994 and DMIRS Mine Closure Guidelines</i>. • Warning signs as required will be provided to the final landform. • Fences, bunding and warning signs above slopes or other features as required for the excavation site until safe. • Locked gates or access restraints will be provided as required. • All areas will be inspected to ensure the land surfaces and access points, are stable to erosion from wind and water. • Holes, sumps drains, ditches and the like will be filled and removed. • audit of completed ground, to verify compliance. • Visual observations of the landforms. And an audit of the completed land will be made to verify compliance.

REFERENCES

Australian Geomechanics Society, 2003, *Engineering Geology of Perth, Parts 1 and 2, Volume 38 No 3 and No 4.*

Basic Raw Materials Resource Protection Working Plan, prepared for the Department of Planning and Urban Development (DPUD, 1996).

Bastian L V, 1996, *Residual soil mineralogy and dune subdivision, Swan Coastal Plain, Western Australia, Australian Journal of Earth Sciences* 43, 31-44.

Chamber of Commerce and Industry, 1995 and 1996, *Managing the Basic Raw Materials of Perth and the Outer Metropolitan Region*, Parts 1 and 2.

Department of Water Environment Regulation, *Perth Groundwater Atlas*.

Department of Conservation and Land Management, 1980, *Atlas of Natural Resources of the Darling System*.

Department of Environmental Protection, 1996, *Land development sites and impacts on air quality: A guideline for the prevention of dust and smoke pollution from land development sites in Western Australia*. Department of Environmental Protection, Perth.

Department of Environment and Conservation, 2011 *Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities*.

Department of Environmental Protection (1997b). *Environment Protection (Noise) Regulations 1997: Summary of the Regulations*. Department of Environmental Protection, Perth.

Department of Health WA, 2012, Guidelines for Separation of Agricultural and Residential Land Uses (Pages 112 – 118).

EPA guidance 2005, "Separation Distances between Industrial and Sensitive Land Uses", Draft.

Firman J B, 2006, *Ancient weathering zones, pedocretes and palaeosols on the Australian Precambrian shield and in adjoining sedimentary basins: a review, IN Journal of the Royal Society of Western Australia, Volume 89 part 2.*

Geoscience Australia, 2005, *Natural hazard risk in Perth*, Western Australia.

Gibson, N, Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994), *A Floristic Survey of the Swan Coastal Plain. Unpublished Report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management and the Conservation Council of Western Australia.*

Gozzard J R, 1987, *Information on Industrial Minerals - Coastal Plain between Lancelin and Fremantle, Geological Survey of Western Australia record 1978/11.*

Grimes K G, 2006 *Syngenetic karst in Australia: a review, Helictite* 39 (2) 200.

Hedde et al, 1980, *Vegetation Complexes of the Darling System, Western Australia in Atlas of Natural Resources, Darling System, Western Australia*, Department of Conservation and Environment.

Kaesehagen, 1995, *Bushland Condition Mapping*, IN Invasive Weeds and Regenerating Ecosystems in Western Australia, Proceedings of Conference held at Murdoch University, July 1994, Institute for Science and Technology Policy, Murdoch University.

Mines Safety and Inspection Act (1994) and Regulations (1995).

Nattaporn-Prakongkep, R J Gilkes, B Singh and S Wong, 2011, *Mineralogy and chemistry of sandy soils in the Perth metropolitan area of the Swan Coastal Plain*, Department of Environment and Conservation.

Playford, P E, A E Cockbain and G H Low, 1976, *Geology of the Perth Basin Western Australia, Geological Survey of Western Australia Bulletin 124.*

Planning Guidelines Separating Agricultural and Residential Land Uses, Department of Natural Resources Queensland 1997(Pages 65 – 111).

Western Australian Planning Commission Planning Bulletin 111/2016.

Western Australian Planning Commission, 2010, Directions 2031 and Beyond.

Western Australian Planning Commission, 2014 State Planning Strategy, 2050.

Western Australian Planning Commission, 2016, State Planning Policy No 2.5, Agricultural and Rural Land Use Planning.

Western Australian Planning Commission, 2018, State Planning Policy 2.4, Basic Raw Materials, 2000 – (Draft).

Western Australian Planning Commission, Perth and Peel @ 3.5 million

Western Australian Planning Commission, Planning Bulletin 64, Acid Sulfate Soils. Western

Western Australian Planning Commission, State Planning Policy 1.0 State Planning Framework.

Western Australian Planning Commission, State Planning Policy 2.0, Environment and Natural Resources Policy.

Western Australian Planning Commission, State Planning Policy No 4.1, State Industrial Buffer Policy.

Willett, I R, 1993, Oxidation-reduction reactions IN Soils and Australian Viewpoint,

DEVELOPMENT APPLICATION LOT 7
WESCO ROAD, NOWERGUP

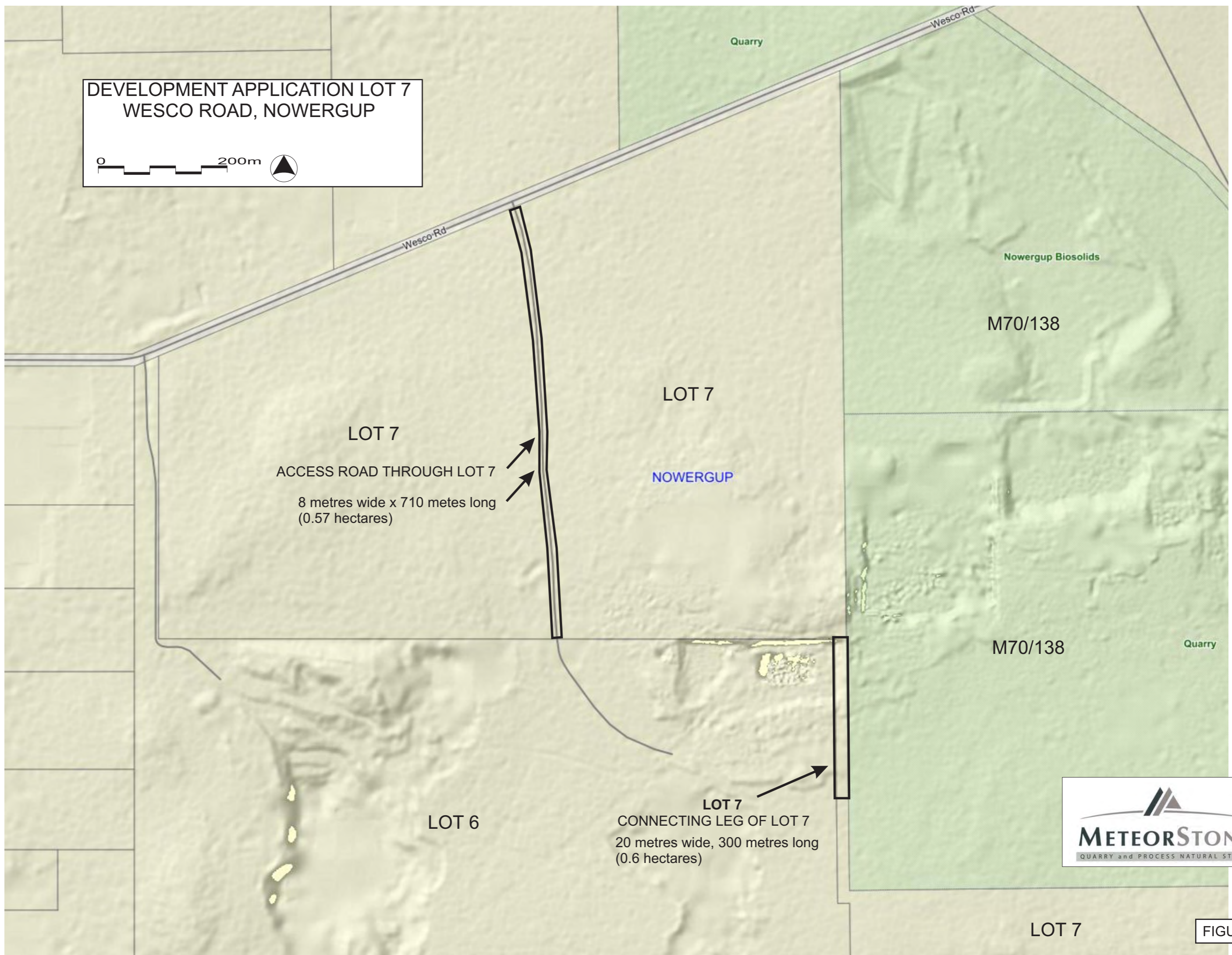


FIGURE 1

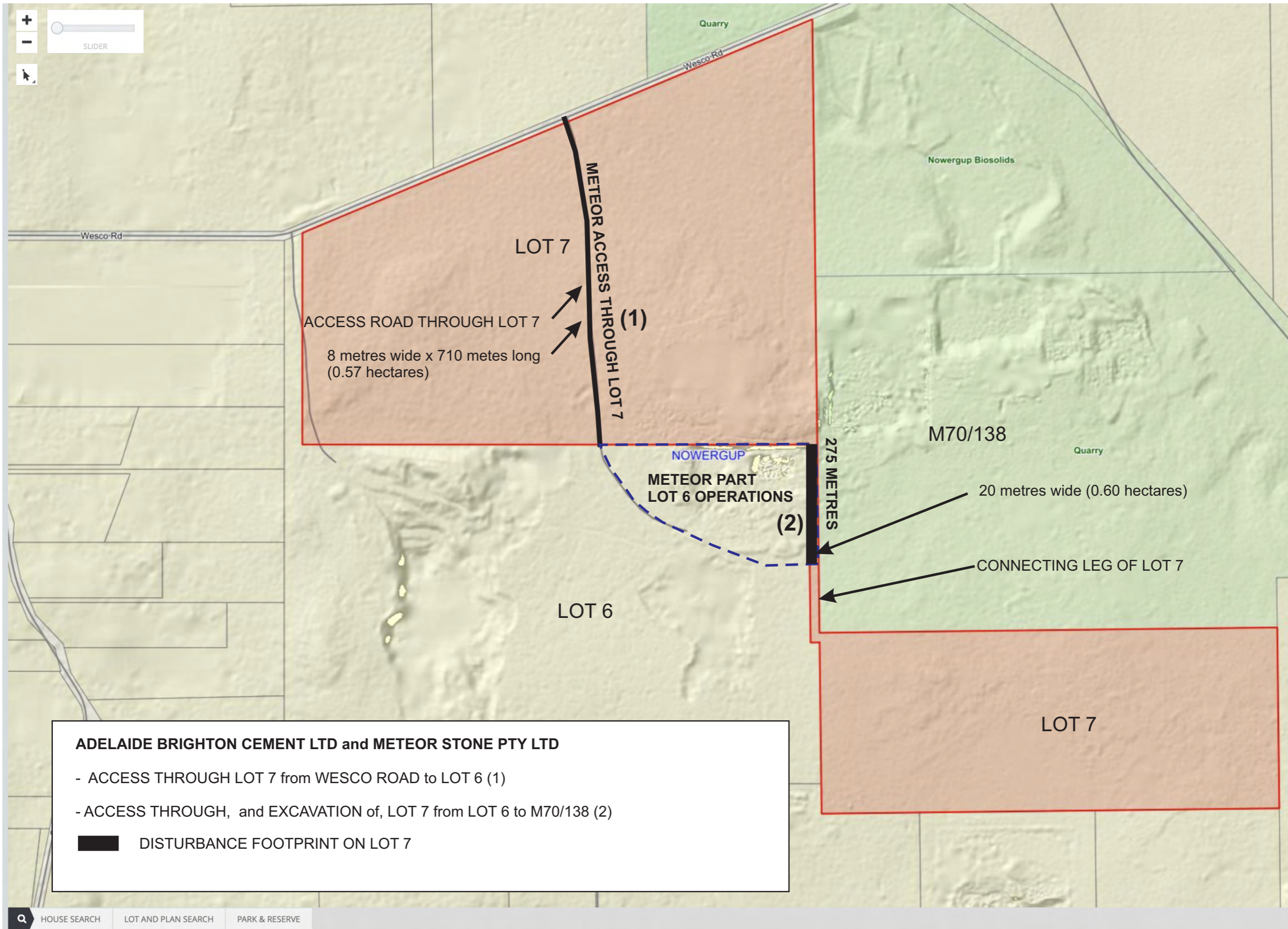
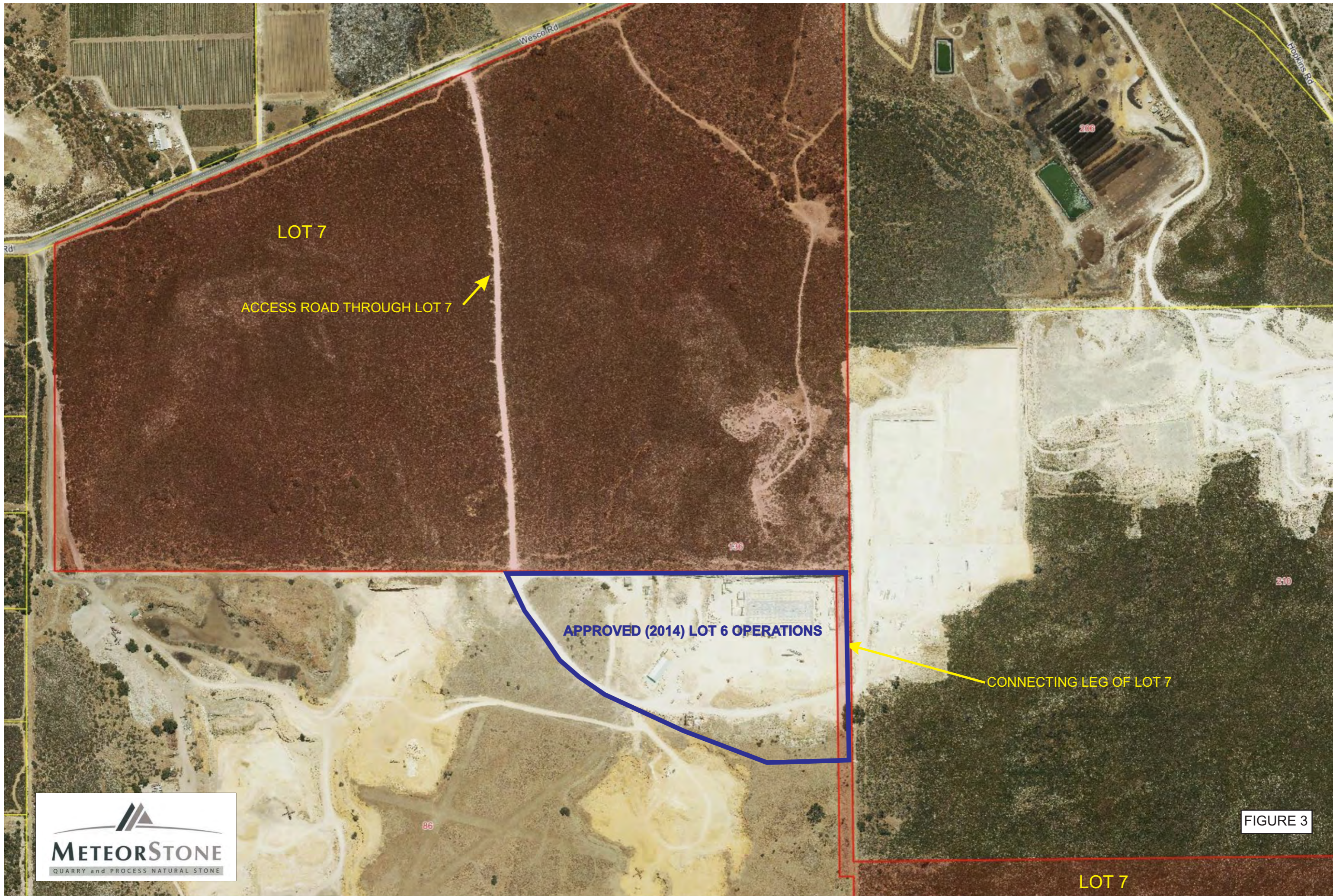
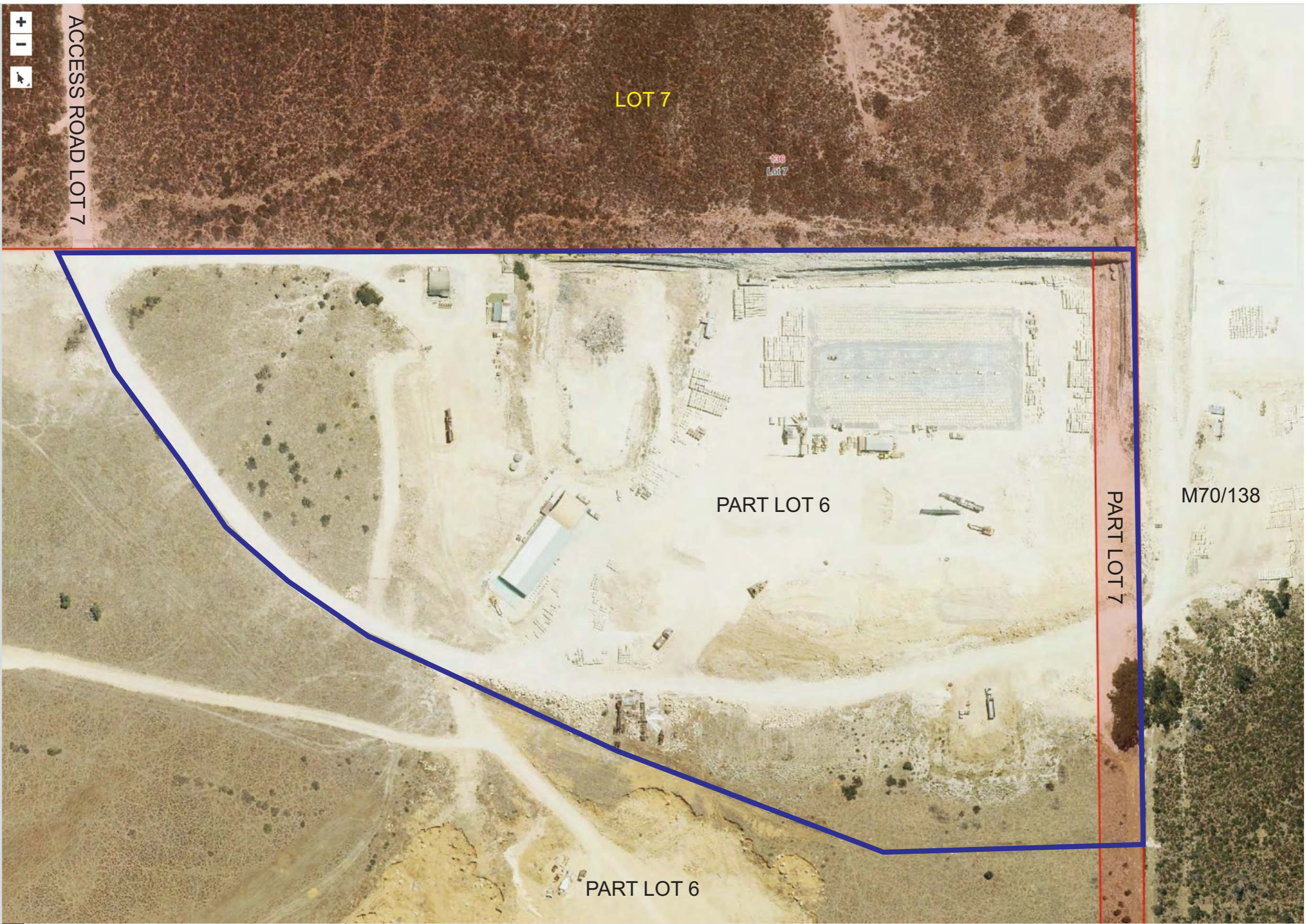


FIGURE 2



LOT 7, WESCO ROAD, NOWERGUP



ACCESS ROAD LOT 7

LOT 7

436
Lot 7

PART LOT 6

PART LOT 7

M70/138

PART LOT 6

HOUSE SEARCH LOT AND PLAN SEARCH PARK & RESERVE



IntraMaps GIS Viewer
Disclaimer: Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate.

How to use IntraMaps Public

FIGURE 4



PART LOT 6 AND LOT 7 WESCO ROAD NOWERGUP

Land opened in the 1980's when Lot 7 was held by Swan Cement Ltd
Portion of Lot 7 to be added to Development Approval and Extractive Industry Licence by way of Amendment, in addition to noting the access through Lot 7.





FIGURE 6



PART LOT 6 AND LOT 7 WESCO ROAD

LOCATION OF SERVICES AND FACILITIES

August 2019



Existing boundaries have been extracted from Landgate's Spatial Cadastral Database, which is only a model of the cadastre. The depicted boundary locations are a graphical representation only and as they have not been re-established by survey, MNG does not guarantee the position unless stated otherwise. Re-establishment of lot boundaries by a Licensed Surveyor is recommended for any works on or about a boundary. This note is an integral part of this plan.

Surface features and levels have been surveyed to meet the requested scope of works accuracy. The surface may be contoured to depict topography or defined only by spot heights. For clarity on hard copy some level information is not shown, refer to 3D digital file. Above ground indicators (markers) of underground services are located where visible. Third parties utilising this information should confirm the capture accuracies meet requirements prior to use. This note is an integral part of this plan.

This survey has been completed to CLASS 3 Accuracy
Horizontal Accuracy ± 30mm
Vertical Accuracy ± 50mm
This note is an integral part of this plan

M70/138

Mining Lease M70/138
Meteor Stone has a Sublease Agreement to extract material from M70/138

12737

M70/138

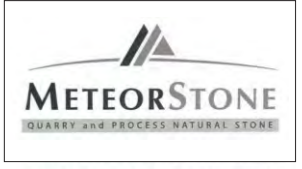


FIGURE 7

JULY 2019

Rev.	Description	Drawn	Date	Checked
A	Initial Issue	JCR	10/07/2019	RJR

SCALE 1:750 @ A1
0 15 30 45 60 75
ALL DISTANCES ARE IN METRES
For a true to scale reproduction of this plan, plot it to A1 with the Paging Scaling set to None.

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons wishing to utilise this data should satisfy themselves of this plan's currency by contacting the MCMullen Nolan Group.

Surveyor: GEC
Survey Date: 04/07/2019
SCDB: 06/07/2019

ISO 9001 Quality Management
AS/NZS 4801:2001 Occupational Health and Safety Management
FS 565311 OSH 591267



The boundaries shown on this plan were not re-established as part of this survey, therefore this plan does not guarantee their accuracy. Existing easements, encumbrance or interest are not depicted and a title search is recommended to obtain this information. Re-establishment of the cadastral boundaries is recommended for any proposed works on or near existing boundaries.

MNG
MCMULLEN NOLAN GROUP
Level 1, 2 Sabre Crescent
Jandakot, W.A. 6164
PO Box 3526, Success
W.A. 6964, Australia
Offices in: Broome, Bunbury, Kununurra, Newman, Port Hedland

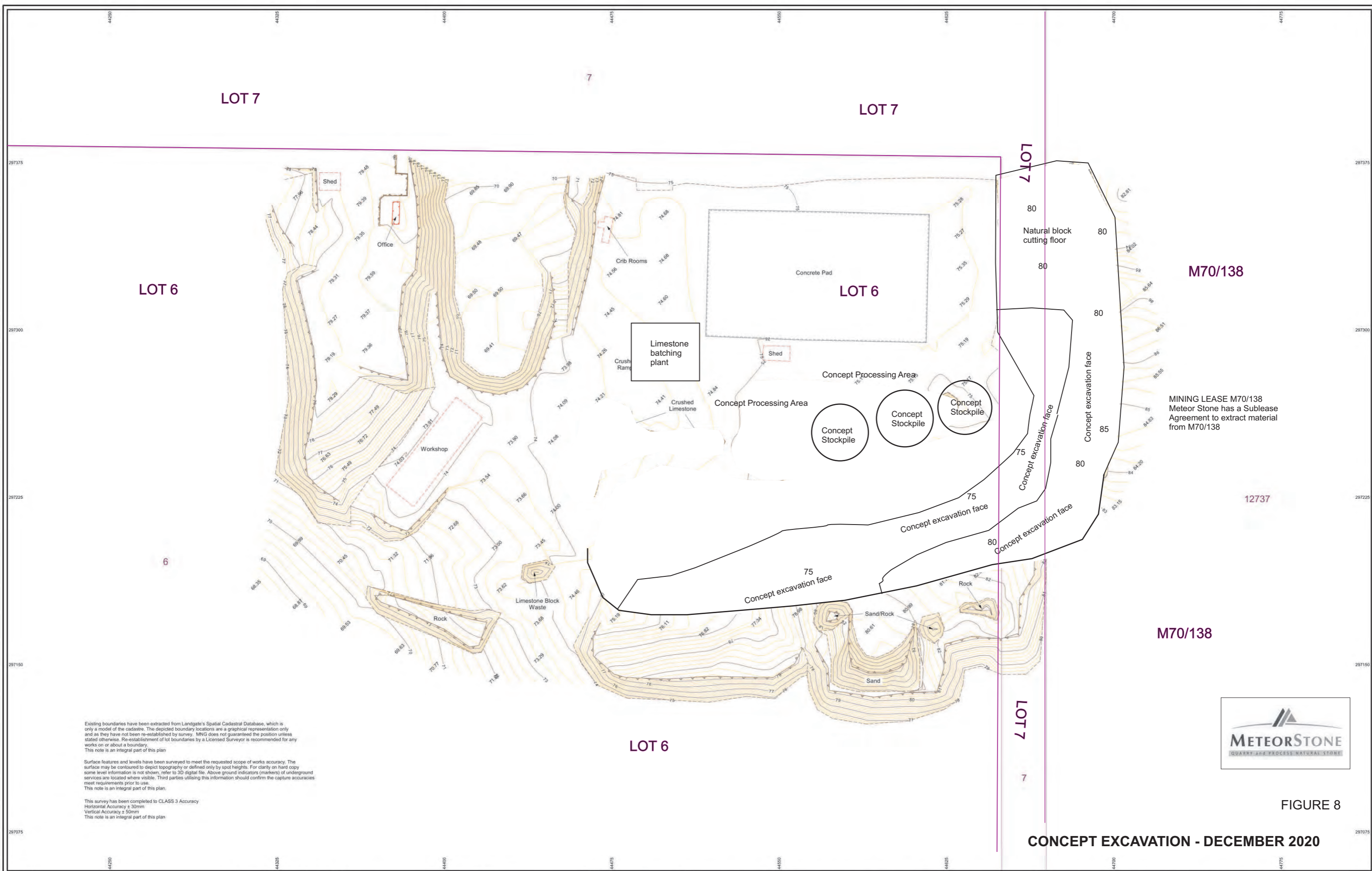
Tel: (08) 6436 1599
Fax: (08) 6436 1500
Info@mngsurvey.com.au
www.mngsurvey.com.au
ABN 90 009 363 311

**(LOT 6) 86 - WESCO ROAD
NOWERGUP
DETAIL SURVEY**

CLIENT: **METEOR STONE PTY LTD**

Project Mngr: Rob Rhodes Datum: PCG94 / AHD

102370 - DE - 001 - A
Job Number Type Plan Number Revision



M70/138

MINING LEASE M70/138
Meteor Stone has a Sublease Agreement to extract material from M70/138



FIGURE 8

CONCEPT EXCAVATION - DECEMBER 2020

Existing boundaries have been extracted from Landgate's Spatial Cadastral Database, which is only a model of the cadastre. The depicted boundary locations are a graphical representation only and as they have not been re-established by survey. MNG does not guarantee the position unless stated otherwise. Re-establishment of lot boundaries by a Licensed Surveyor is recommended for any works on or about a boundary. This note is an integral part of this plan.

Surface features and levels have been surveyed to meet the requested scope of works accuracy. The surface may be contoured to depict topography or defined only by spot heights. For clarity on hard copy some level information is not shown; refer to 3D digital file. Above ground indicators (markers) of underground services are located where visible. Third parties utilising this information should confirm the capture accuracies meet requirements prior to use. This note is an integral part of this plan.

This survey has been completed to CLASS 3 Accuracy
Horizontal Accuracy ± 30mm
Vertical Accuracy ± 50mm
This note is an integral part of this plan

Rev.	Description	Drawn	Date	Checked
A	Initial Issue	JCR	10/07/2019	RJR

SCALE 1:750 @ A1
0 15 30 45 60 75
ALL DISTANCES ARE IN METRES
For a true to scale reproduction of this plan, plot it to A1 with the Paging Scaling set to None.

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons willing to utilise this data should satisfy themselves of this plans currency by contacting the MCMullen Nolan Group.

Surveyor: GEC
Survey Date: 04/07/2019
SCDB: 06/07/2019

ISO 9001 Quality Management
AS/NZS 4801:2001 Occupational Health and Safety Management
FS 565311 OSH 591267



The boundaries shown on this plan were not re-established as part of this survey, therefore this plan does not guarantee their accuracy. Existing easements, encumbrance or interest are not depicted and a title search is recommended to obtain this information. Re-establishment of the cadastral boundaries is recommended for any proposed works on or near existing boundaries.

MNG

MCMULLEN NOLAN GROUP
Level 1, 2 Sabre Crescent
Jandakot, W.A. 6164
PO Box 3526, Success
W.A. 6964, Australia
Offices in: Broome, Bunbury, Kununurra, Newman, Port Hedland

Tel: (08) 6436 1599
Fax: (08) 6436 1500
info@mngsurvey.com.au
www.mngsurvey.com.au
ABN 50 009 363 311

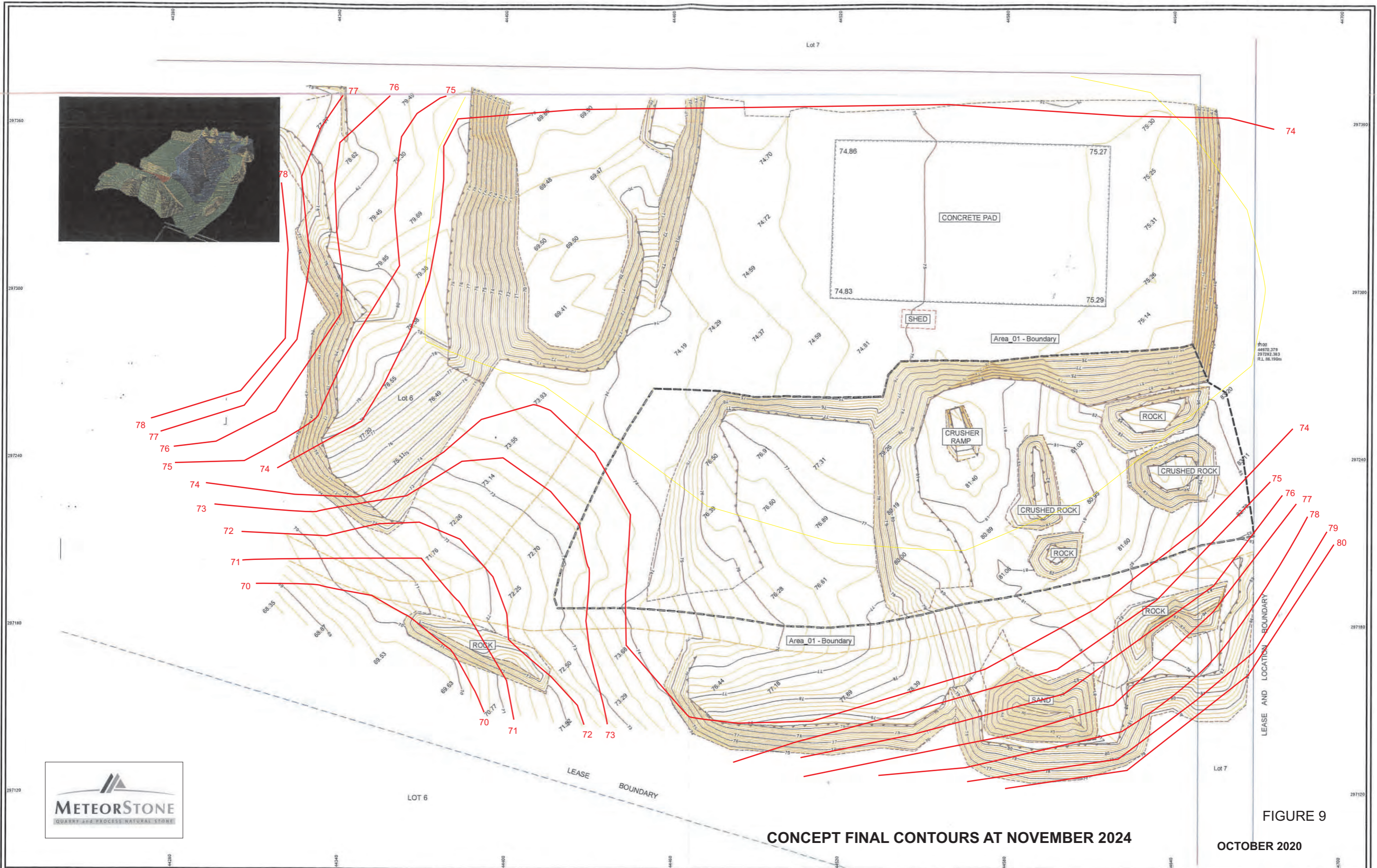
**PART LOT 6 AND LOT 7 WESCO ROAD
NOWERGUP
DETAIL SURVEY**

CLIENT: **METEOR STONE PTY LTD**

Project Mgr: Rob Rhodes Datum: PCG94 / AHD

102370 - DE - 001 - A

Job Number Type Plan Number Revision



CONCEPT FINAL CONTOURS AT NOVEMBER 2024

FIGURE 9
OCTOBER 2020

Rev.	Description	Drawn	Date	Checked
A	Initial Issue	SAH	29/11/2017	DH

SCALE 1:600 @ A1
ALL DISTANCES ARE IN METRES

For a true to scale reproduction of this plan, plot it to A1 with the Paging Scaling set to None.

The contents of this plan are correct and correct as of the date stated within the revision panel. All consultants and persons relying on this data should satisfy themselves of this plan's currency by contacting the MCGM Group.

Surveyor: GEC
Survey Date: 23/11/2017
Precal/Cad: 30/09/2017

ISO 9001
Quality Management

AS/NZS 4801:2001
Occupational Health and Safety Management

FS 565311 OSH 591267



The boundaries shown on this plan were not re-established as part of this survey, therefore this plan does not guarantee their accuracy. Existing easements, encumbrance or interest are not depicted and a title search is recommended to obtain this information. Re-establishment of the cadastral boundaries is recommended for any proposed works on or near existing boundaries.

MNG.

MCMULLEN NOLAN GROUP.
Level 1, 2 Sabre Crescent
Jandakot, W.A. 6164
PO Box 3526, Success
W.A. 6954, Australia
Offices in: Broome, Bunbury, Kununurra, Newman, Port Hedland

Tel: (08) 6436 1599
Fax: (08) 6436 1500
info@mngsurvey.com.au
www.mngsurvey.com.au
ABN 90 009 363 311

NOWERGUP
PART LOT 6 AND LOT 7 WESCO ROAD
EARTHWORKS SURVEY - NOVEMBER 2017

CLIENT: **METEORSTONE**

Project Mgr: Daniel Hitchen Datum: PCGN / AHD

91385 - DE - 040 - A

Job Number Type Plan Number Revision

DUST MANAGEMENT PLAN CONTINUED LIMESTONE EXCAVATION LOTS 6 and 7 WESCO ROAD, NOWERGUP

March 2020

1.0 Environmental Dust

The Dust Management Plan attached to the Excavation Management Plan is updated from July 2014.

The same methods of dust management remain in use.

There have been no recorded complaints relating to dust in the past 5 years.

1.1 Dust Risk

Excessive dust has the potential to impact on both the workers and the adjoining land.

Dust can originate from a number of operations and may impact on onsite workers, or travel offsite. Potential dust impacts are addressed by reducing the dust generated from the quarrying, processing and transport operations.

Limestone excavation has a low risk of producing dust during excavation as the limestone taken from the face is moist.

Once wet, the limestone readily crusts and does not blow unless disturbed. The current surface is hard and crusted and sealed against dust lift off. Therefore the perimeter batter slopes do not normally generate dust once constructed and stabilised after experiencing a winter. It is really only the traffic and active areas that are susceptible to dust generation.

However as vehicle movements are carried out on the floor of the pit and on the access road the limestone is crushed and a high dust risk is generated in the drier months. Dust associated with limestone extraction is the fine calcium carbonate and any kaolin clay that occurs in the limestone. This fine material can be generated by vehicular traffic, which can crush and powder the fine particles.

Occupational Dust

Calcium carbonate and kaolin clay are innocuous and carry no health risk. Both are used in medicines. Limestone roads are widely used for local roads and driveways and have no known health risks.

However from an aesthetic perspective the dust requires management. The methods outlined in this section are refined and modified from those provided in the 2014 Dust Management Plan. The main risk occurs from the stronger winds on summer mornings and summer afternoons.

Dust from some materials such as ground limestone can form smaller particles that are capable of blowing further or even becoming so fine that they become invisible.

Little published data is available from general mining in Western Australia even though monitoring is undertaken at some sites. There is data specifically from mining, (predominantly coal) from New South Wales (NSW Health) where particulate levels have been measured to be;

PM <2.5 microns as 2 – 5% of emissions (One micron is 1 / 1000 of 1 mm).

PM < 2.5 are invisible and called “fine particles”. They are the main health issue and are caused by vehicle emissions whether they are along roads or on private land. Vehicle emissions will not occur at night or at other times when the site is not active.

PM 2.5 – PM10 microns as 15 – 45%

PM 10 (particles between 2.5 and 10 microns) are invisible and called “coarse particles”. They can be breathed in, but are removed by alveoli and mucous. (NSW Health). This dust may be generated when land is cleared and topsoil disturbed or the site is subject to traffic in summer.

PM >10 microns as 50 – 70%

PM >10 is visible dust and will, based on the resource, be the vast majority of the particles.

Normally all sizes of dust are generated together, and there will be visible dust being generated when invisible dust is being formed. Therefore any visible dust present is a good sign and early indicator of a dust risk. A summary of the sources and proportions of dust is shown in; NSW EPA and NSW Ministry of Health Environmental Health Branch 2015, Review of the health impacts of emission sources, types and levels of particulate matter air pollution in the ambient air in NSW.

This is backed up by occupational monitoring through the Department of Mines Industry Regulation and Safety. Unpublished data from those quarries shows quarries are compliant or can readily be made compliant with the health and safety and community standards through normal dust management practices.

Limestone is formed from sand grains bound together by grains of calcium carbonate held together by calcium carbonate cement.

Being softer than the sand grains the calcium carbonate is readily ground very fine from disturbance, particularly in dry conditions, from actions such as vehicle movements. The sand grains within the limestone are hard and are not normally reduced in size even by traffic movements.

When dry there is some minor dust from the wheel of vehicles, and associated ground calcium carbonate of the limestone and tiny amounts of clay with the dark yellow sands.

Water is used to manage dust and Meteor Stone have a dedicated water truck on site, with water storage tanks located at the western and eastern corners of the operations to provide water for dust suppression. The access road is watered as required.

Calcium carbonate is an innocuous material that is a major component of bones and is required by all living organisms for their health and growth.

What makes calcium carbonate unique is that it is readily dissolved to calcium hydrogen carbonate by weak acids in rainfall and water applied to the site. Once dissolved, the calcium hydrogen carbonate readily precipitates to calcium carbonate as the water is evaporated. The calcium carbonate deposits on the surface of the land and any exposed limestone, readily forming a crust that stabilizes the surface and is not liable to any dust lift off unless disturbed by vehicle movements. Limestone which has been left even for a week or so becomes crusted and stabilised, with the crust thickening over time. This process can even occur from dew.

Limestone also stays moist as noted below, and the main dust risk is also traffic on roads and hardstand. When excavating using a bulldozer there is very little dust even in summer.

1.2 Climate and Soil Conditions

Through the winter months of May to September inclusive, there is little dust risk because rainfall exceeds evaporation. The rainfall is sufficient to wet the whole limestone profile to depth, with excess water reaching the water table.

In summer, when evaporation exceeds rainfall, the limestone roads dry when exposed to the sunlight and atmosphere and are susceptible to crushing and grinding by vehicles.

Limestone prior to excavation retains its moisture if there are no tree roots to extract moisture from depth. Without tree roots the moisture in the limestone can only be lost by capillary action and so stays moist to below 0.5 and 1 metre depth right through summer. The same applies to sand.

On active areas such as roads and hardstand that dry out, the dust can readily be generated. Normal practice is to treat this with water, which maintains the moisture content of the soil and limestone and mitigates dust generation.

1.3 Wind directions

Wind data is not recorded at many sites. The most comparable wind data is taken from Swanbourne. These show that the prevailing wind is from the north east and east at 9.00 am and the south west at 3.00 pm.

For the summer months, where February is a typical month, the wind directions are more variable at 9.00 am ranging from east through south. At 3.00 pm in February the winds are almost solely from the south west. The morning data shows that on some days the south westerly sea breeze is blowing at 9.00 am in February.

In July the predominant winter wind direction at 9.00 am is from the north east with 3.00 pm winds more variable and spread from north through south west.

The wind roses for Swanbourne are attached in Section 2.1 of the Management Plan are included in this attachment.

Winds crossing the site are slowed by any nearby vegetation and faces which helps reduce the speed of the winds across the floor of the pit.

When winds exit the pit or cross out of the pit they have to travel across a vegetated buffer that slows the speed of the wind and allows the coarser particles to drop from suspension.

Occupational Dust

Occupational dust associated with the quarrying processes falls under the *Mines Safety and Inspection Act 1994 and Regulations 1995* overseen by DMIRS.

Limestone is predominantly calcium carbonate with some sand grains. There are no known health impacts from calcium carbonate and the material is the major component of bones and is essential for human health. It is also an integral part of the local environment. The sand grains are too large to cause a health issue if ingested.

Dust levels are considered under the occupational health and safety inspections conducted by the Department of Mines Industry Regulation and Safety. If occupational dust is satisfactory then there is little potential for dust to travel to sensitive premises. The operations are inspected by officers from DMIRS from time to time and have always been found to be satisfactory.

Even though there is no requirement for environmental dust monitoring within the planning approvals, an Occupational dust monitoring program is in place through the Health and Safety regime.

This does not form part of the Development Approval or Conditions as it is enacted under other legislation (Mines Safety and Inspection Act) and does not fall under the City's responsibility.

If occupational dust is compliant, then environmental dust is compliant. Naturally the dust levels at the sensitive premises hundreds of metres away will be much less than occupational dust levels on site.

1.4 Assessment of Dust Risk

Environmental Dust

Dust emissions fall under the *Guidance for the Assessment of Environmental Factors, EPA, March 2000*. Assessments of the potential dust risk are normally made using the Land development sites and impacts on air quality, *Department of Environmental Protection and Conservation Guidelines, November 1996*. These are still in place but are incorporated into the *DEC 2011 Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities*.

The *DEC (DWER) in 2008* released a *draft Guideline for the Development and Implementation of a Dust Management Plan*.

The key Environmental Objectives for the operations are;

- Manage the potential for the generation of dust.
- Visually monitor dust levels and take steps to reduce the potential impact of dust on occupational and environmental aspects of the operation and local area.

The category of dust risk is included in *DER 2011 Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities*. This document is not really applicable to mining because it is to be used to assess the mitigation required based on no mitigation.

When making the assessments using the DEC (DWER) Guideline there are four key points;

The prevailing winds blow from the south west to south on summer afternoons and from the east on summer mornings.

- Dust risk is generally only in the dry summer months
- The limestone readily crusts and is stabilised. It is only trafficked areas of limestone that develop fine dust from the grinding of wheels.
- The perimeter bunds and vegetation provide effective wind breaks and wind screening.
- Effective water treatment of the limestone is used to wet down and manage dust risk.

However the guideline document can also be used to determine the risk of potential dust impacts of earthworks such as opening new ground and the removal of overburden and rehabilitation, which only occurs about once per year when the pit is being expanded or moving forward. These risks are summarised under the Table titled Dust Management Actions below.

Activity	Calculated Score	Allocated Risk of Dust
Operation of and processing Without dust suppression	147	Classification 1 Negligible Risk
Operation of and processing With effective dust suppression	119	Classification 1 Negligible Risk

Years 2014 - 2019

Even though dust has the potential to be generated during most phases of the quarrying and crushing operation, particularly during summer. In winter the frequent rains greatly reduce the potential dust emissions.

There have been no complaints relating to dust within the past 5 year, which indicates that good dust management is being use on site from Lots 6 or 7.

Dust mitigation measures are maintained on a regular basis and updated as necessary.

The management of environmental and occupational dust requires the same techniques and actions. If occupational dust is managed, then there will be minimal risk of dust impacting on the external or onsite environment.

3.0 Dust Management

3.1 Buffers and Setbacks

Dust is readily stopped by tree belts and distance, with which the site complies; *Planning Guidelines Separating Agricultural and Residential Land Uses, Department of Natural Resources Queensland 1997(Pages 65 – 111) and Department of Health WA, 2012, Guidelines for Separation of Agricultural and Residential Land Uses which uses the same criteria (Pages 112 – 118).*

The Queensland Guidelines predominantly relate to agricultural spray drift, but, based on particle size, also relate to dust.

The Guidelines provide for a buffer of 300 metres for open agricultural land, dropping down to 40 metres where an effective tree belt is in place. The Western Australian Department of Health also uses the same guidelines.

The Guidelines are based on field studies and demonstrate the effectiveness of tree belts in providing screening against particulate travel.

The excavation has adequate buffers and design that will minimise any potential dust impacts and complies with the guidelines of *Department of Health 2012* by way of separation distances.

The closest distance to a sensitive premises is well in excess of the Guidelines with distances of over 800 metres to either of the two closest dwellings. Moreover within those buffers and setbacks is the operating North Sands Quarries and operations which are significantly closer to the sensitive premises.

Dust was considered by the DWER in the issue of Licence L9183/2018/1.

The site is remote from sensitive premises and complies with the Department of Health Guidelines for separation distances of 300 metres across open ground.

The table provides extensive detail on the dust management procedures that are used. The information relating to buffers and adjoining land uses is normal dust management information, backed up by aerial photographs to demonstrate that there have been no changes to the sensitive premises.

In addition within the columns there is extensive documentation of the actions that are used to manage dust under the various situations.

Dust management is based on risk assessment and visual observations. As well as the actions completed in the Dust Management Plan the following notes are made.

- Crushing and screening is carried out on the existing floor of lot 6 adjacent to a 5 metre buffer of insitu limestone and sand materials to the west and 10m buffer to the north and east

- A water cart with a 20k litre tank is utilised to minimise fugitive dust lift on site.
- Information from weather websites (BOM) are checked daily to prepare for next day's production and dust management resourcing.
- Depending on weather conditions e.g. wind/rains, the water cart will circumnavigate the site up to 3 times per day, each event taking approximately 1 hr.
- The focus is on the access road from gazetted sealed road/haul roads leading to stockpile area, production stations, amenities and office.
- A water cannon fitted to the water cart will wet down stockpiles as required.

A Licensed bore is located on site and water is used to suppress dust wherever possible.

There have been no complaints relating to dust within the past 5 years.

There is no condition requiring dust monitoring either in the Planning Approval or Extractive Industry Licence and therefore no results are available as is the case with almost every extractive industry in Western Australia.

The best means of monitoring environmental and occupational dust is to use visual monitoring and that is what was committed to and is actioned; the same as that used at any quarry. If dust is regarded as excessive then action is taken, as explained in the management plans.

Dust levels are considered under the occupational health and safety inspections conducted by the Department of Mines Industry Regulation and Safety. If occupational dust is satisfactory then there is little potential for dust to travel to sensitive premises.

Again it is noted that there is an extensive extractive industry and recycling facility between Meteor Stone and the sensitive premises.

Even though there is no requirement for environmental dust monitoring, an Occupational dust monitoring program is in place through the Health and Safety regime. This does not form part of the Development Approval or Conditions as it is enacted under other legislation (Mines Safety and Inspection Act) and does not fall under the City's responsibility.

If occupational dust is compliant, then environmental dust is compliant. Naturally the dust levels at the sensitive premises hundreds of metres away will be much less than on site occupational dust levels, which if compliant means that the environmental dust is also compliant.

Even though they are not a requirement, the Department of Mines Industry Regulation and Safety conditions on health and safety are provided.

3.3 Dust Management Actions

ACTIVITY	POSSIBLE RISK SEVERITY and FREQUENCY	OPERATIONAL PROCEDURES	COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE	RISK AFTER MANAGE MENT
GENERAL				
Legislation	----	Comply with the provisions of the <i>Mines Safety and Inspection Act 1994 and Regulations 1995</i> .	<ul style="list-style-type: none"> Meteor Stone will comply with the Act and Regulations and the other Conditions imposed on the Operations. All workers are supplied with and use dust protective equipment as required. DMIRS inspects the site as required and has not reported any abnormal conditions. There have been no known complaints from 2014 – 2019. 	----
Buffers	----	Maintain adequate buffers to sensitive premises.	<ul style="list-style-type: none"> The buffers to the nearest residences have not changed within the past 10 years and will not change within the next 5 years. The site is remote from dwellings which are separated by other activities such as the quarry to the south west and the poultry facility to the south. As far as is known there have been no non compliances, no complaints and no comments from the City of Wanneroo relating to this condition. There has been no construction of nearby dwellings and no changes to the buffers. The Adjoining North Sands Operations that lie to the west and south have increased in activity during the past five years and lie within the buffer areas to the nearest sensitive premises. The closest premises remain the landholder's dwelling at 740 metres to the south and a dwelling 930 metres to the west. The access road lies 650 metres from the sensitive premises, much further away from the access to the adjoining extractive industry to the west and south. Dust Risk was considered by the DWER in the issue of Licence L9183/2018/1. See attached aerial photographs. 	----
Landform	----	Locate activities behind natural barriers, landform and vegetation.	<ul style="list-style-type: none"> The design of the pit and staging has been selected to provide the best screening. Excavation is conducted below the land surface. The processing and stockpile facilities are located towards the south of the site, at low elevation on the floor of the existing pit to minimise dust lift off and wind speed around the stockpiles. 	----
Landform	----	Work below natural ground level.	<ul style="list-style-type: none"> This is used and will continue. 	----

		Push overburden and interburden dumps into positions where they can form screening barriers.	<ul style="list-style-type: none"> This will be used where overburden is available to form extensions to the bunding as shown on the attached aerial photographs. 	----
Staging – Pit Design	----	Design operational procedures and staging, to maximise the separation to sensitive premises.	<ul style="list-style-type: none"> The design of the pit and staging has been selected to provide the best screening, by working outwards to the south and for the western stage from east to west. 	----
Screening/ Vegetation	----	Use landscape screening, wind breaks and tree belts.	<ul style="list-style-type: none"> Vegetation is planted on perimeter bunding. This will continue. 	----
MANAGEMENT				
Occupation	----	Provide air conditioned closed cabins on plant	<ul style="list-style-type: none"> These are used on site for operational mobile plant. 	----
Monitoring	----	Provide monitoring and supervision of the processing and other practices on site.	<ul style="list-style-type: none"> A monitoring system is proposed. see below “Trigger Conditions”. 	----
Adverse weather	Moderate - Uncommon	When winds are sufficiently strong, or other weather conditions are unacceptable, to negate the effects of dust management, operations will cease until conditions improve and compliance can be achieved.	<ul style="list-style-type: none"> Rare adverse conditions are more likely to occur on summer mornings. In winter, stronger winds are normally associated with rain and therefore carry a reduced dust risk. This policy is used to minimise impact on adjoining land holders. 	Low
Equipment failure	Low - Uncommon	In the event of dust management not being able to be achieved through equipment failure operations will cease until full capability is restored.	<ul style="list-style-type: none"> This is used on site and is committed to. 	Low
Training	----	Conduct training programs on dust minimisation practices.	<ul style="list-style-type: none"> Meteor Stone use on site induction and training to inform all personnel of the dust risk and management. 	----
Complaints	----	Provide a complaints recording, investigation, action and reporting procedure such as Appendix 3 of Land development sites and impacts on air quality, Department of Environmental Protection Guidelines, November 1996.	<ul style="list-style-type: none"> A record of all dust complaints is maintained together with the mitigation measures to be used to reduce the dust impacts. All complaints relating to dust are to be investigated immediately. A record of complaints is maintained. There have been no complaints relating to dust in the past 5 years. 	----
Monitoring	----	Provide a Monitoring procedure to minimise dust generation.	<ul style="list-style-type: none"> <i>There have been no dust complaints made within the last 5 years.</i> Dust monitoring is predominantly conducted on site at all times by all operators and the quarry manager. A readily auditable trigger of no visible dust to cross the property boundary is used, in line with DWER Licence and best practice in WA. Most dust generated from processing and vehicle movements has a very large visible component. Lesser risks emanate from excavation and opening new ground. The quarry manager and leading hands are ultimately responsible for site supervision of dust. The travel around the operations and 	----

			<p>pit frequently and are in two way radio contact with all mobile plant.</p> <ul style="list-style-type: none"> • All operators on site are instructed to be vigilant to dust generation and management and report any excessive dust or potential dust management issues. • When trigger conditions are detected and/or alerted relevant action is taken. This can include additional water suppression, modification of procedure, delay until more favourable conditions are present, use of alternative equipment etc. • This response is instantaneous and does not rely on monitoring equipment, which normally has time delays associated with it. • The amount and source of dust is observed before any dust monitoring could trigger. Treatment is therefore more effective and targeted. • When a significant source of dust is noticed it is dealt with by temporary or permanent changes to procedures and equipment or the treatment using water. • On site induction training will include observation and mitigation where possible of all dust emissions. • Occupational dust associated with the quarrying processes falls under the <i>Mines Safety and Inspection Act 1994 and Regulations 1995</i> overseen by the Department of Mines Industry Regulation and Safety who regularly inspect the site. • Operations will temporarily cease if conditions occur where dust cannot be managed. • The latest weather conditions are noted to increase the awareness of dust risk. 	
Complaints Mechanism			<ul style="list-style-type: none"> • A complaints mechanism is in place. • From 2014 – 2019 there have been no known complaints. 	
EARTHWORKS				
Land Clearing	Low - Once per year or less	Schedule activities such as vegetation removal or topsoil stripping on exposed ridgelines at times when the materials are less likely to blow or during suitable wind conditions.	<ul style="list-style-type: none"> • No Land clearing is proposed of native vegetation. • Minor land clearing of pasture occurs to expand the pit and operations as required. • Clearing of land occurs when the soils are moist or the soils are wetted down prior to clearing. 	Low
Overburden removal	Low - Once per year or less	Schedule activities such as overburden stripping on exposed ridgelines at times when the materials are less likely to blow or during suitable wind conditions.	<ul style="list-style-type: none"> • See above. 	Low
Land restoration	Low - Once per year.	Schedule activities such as ripping, overburden and topsoil spreading on exposed ridgelines at times when the materials are less likely to blow or	<ul style="list-style-type: none"> • To this point in time, there has not been any ground yet available for restoration and rehabilitation. 	Low

		during suitable wind conditions.		
EXCAVATION				
Excavation	Low - Low level continuous activity	Excavate from the face using techniques that minimise the crushing of dry matter.	<ul style="list-style-type: none"> The floor of the pit is formed on hard limestone with less fines that does not generate as significant dust. A water truck is used as required to wet down the loading areas. Water sprays are used on all block cutting machines at all times to cool the blades and suppress dust when used. 	Low
Loading at Face	Low - Low level continuous activity	Ensure that products to be loaded are moist and that the hardstand on which the loading occurs is wetted down or moist.	<ul style="list-style-type: none"> The main product loaded is dimension stone that is in solid blocks and limestone rubble that is loaded to a truck using a loader. 	Low
Haulage	Moderate - Medium level continuous activity	Maintain haul road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades.	<ul style="list-style-type: none"> The haul roads are maintained in good condition. They are regularly graded and continuously watered by dedicated water truck as required in the drier months. 	Low
		Reduce the length of the internal roads by maximising internal servicing efficiency.	<ul style="list-style-type: none"> The haul roads are designed to reduce travel distance to save maintenance costs and time and to maintain efficiency and minimize greenhouse gas emissions. 	
		Provide speed management on hardstand and the road network.	<ul style="list-style-type: none"> This is used. 	
		Provide air conditioned closed cabins on plant.	<ul style="list-style-type: none"> All vehicles are air conditioned. 	
		Treat access roads, hardstand and stockpile transport and loading areas with dust suppression sealant, water or seal coat.	<ul style="list-style-type: none"> A dedicated water truck is maintained on site and used as required during the drier months. 	
PLANT - PROCESSING				
Hardstand traffic	Low - Low key ongoing activities	Maintain hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades	<ul style="list-style-type: none"> The hard stand areas are limited in area but are able to be watered by the dedicated truck as required. 	Low
Processing	Moderate - Continuous	Treat processing areas with water sprays, shields and dust extraction.	<ul style="list-style-type: none"> Crushing operations are restricted and will be watered as required to suppress dust. Dust covers and equipment shields are maintained on all static plant where they are practicable. Continuous visual monitoring of dust is used. Regular emptying of any dust collection devices and the renewal of any filter devices is programmed in site operations. 	Low
Mobile and static plant Operation	Moderate - Continuous	Maintain all plant in good condition.	<ul style="list-style-type: none"> Meteor Stone uses modern equipment that is maintained in good condition including the maintenance of dust minimisation measures. Faults are to be repaired promptly. 	Low

		Ensure mobile and static plant is provided with dust extraction, shielding or filtration systems or wetting down as appropriate.	<ul style="list-style-type: none"> Operators are instructed to visually monitor dust, report and treat any visible dust. Drop heights from conveyors and trucks are limited to reduce dust. Screens, covers, and water sprays are used where possible to minimise dust. Regular emptying of any dust collection devices and the renewal of any filter devices is programmed. Dust management and monitoring forms part of the site induction programs. See Processing above. 	
Loading and Stockpile Creation	Moderate - Continuous	Shut down equipment when not in use.	<ul style="list-style-type: none"> Meteor Stone uses this policy to save fuel and maintenance costs in addition to noise minimisation. Drop heights from conveyors and dump trucks are limited to reduce dust. Screens, covers, and water sprays are used where possible to minimise dust. 	Low
LIMESTONE BATCHING				
Limestone batching, cement hopper and mixing	Moderate - Continuous		<ul style="list-style-type: none"> The Limestone batching plant is wet and does not generate dust. The only dust generation risk from raw materials such as crushed limestone which is wetted as required to minimise dust. The cement hopper has a risk of dust escape during loading. When loading the seals and connections are inspected to be tight prior to loading. Excess air is vented through a filter. Limestone batching was considered by the DWER in the issue of Licence L9183/2018/1 and issued for that purpose. 	
TRANSPORT				
Road condition	Low - Moderate	Maintain access roads in good condition (free of potholes, rills and product spillages).	<ul style="list-style-type: none"> The access road from Wesco Road is maintained. Meteor Stone maintains speed restrictions for safety and site management both on the haul roads and access road. 	Low
		Water and/or treat access roads and paved areas using a water tanker or sprinkler system.	<ul style="list-style-type: none"> See above. Internal roads are regularly watered as often as necessary to minimise dust generation. A dedicated water truck is retained on site and used when dust lift off is a potential hazard. 	
Road Transport	Low - Frequent	Wet down or cover loads on trucks that are likely to blow during transport.	<ul style="list-style-type: none"> Trucks are covered or wetted down prior to exiting the site as required when transporting sandy and other materials that can blow. The access road is wetted down as required to minimise dust generation when travelling to Wesco Road. The crossover to Wesco Road is sealed. 	Low
		Implement a site code outlining requirements for operators and drivers.	<ul style="list-style-type: none"> A site code and induction system is used. 	

		Maintain road trucks in a clean condition.	<ul style="list-style-type: none"> Meteor Stone road trucks are new and are maintained in a clean condition. Individual contractors are required to do likewise. 	
		Avoid spillages on roads and clean up promptly.	<ul style="list-style-type: none"> Meteor Stone has a policy of covering or wetting down loads as required and instructs drivers to report and clean up spillages. 	Low
		Ensure that during loading, product does not become lodged on the sides of trucks from where it can fall off during transport.	<ul style="list-style-type: none"> This forms part of proposed normal operational procedures. 	
		Drivers are to inspect trucks prior to leaving site. Any product not correctly located and secured is to be removed prior to exit from the site.	<ul style="list-style-type: none"> This forms part of proposed normal operational procedures. 	
STOCKPILES				
Stockpiles	Moderate - On lot 6 only	Wet down stockpiles using water canon or sprinklers as required.	<ul style="list-style-type: none"> Small stockpiles only are used on site. 	Low
		Locate stockpiles behind bunds/ windbreaks or other screening barriers	<ul style="list-style-type: none"> On Lot 6 the stockpiles are located away to the south of the block manufacturing floor, on the pit floor at low elevation. 	
		Reduce the height of stockpiles. Low flat stockpiles are less likely to be disturbed by wind than high conical ones.	<ul style="list-style-type: none"> On Lot 6 the height of stockpiles is maintained at manageable levels that remain sheltered from the prevailing winds. 	
		Provide bunding, fencing and windbreaks around stockpiles and along the tops of bunds.	<ul style="list-style-type: none"> The stockpile area on Lot 6 is well protected by the landform. 	



WATER MANAGEMENT PLAN CONTINUED LIMESTONE EXCAVATION LOTS 6 and 7 WESCO ROAD, NOWERGUP

March 2020

Water Supply

Water will only be required for dust suppression, which will be carried out as required during drier weather. A water tanker will be used to water the access road and the pit floor whenever necessary to minimise dust generation from transport and during crushing. Normally only small volumes of water will be used for a quarry of this type. A quarry could be expected to require less than 5 000 kL per year.

A licensed bore is located on site next to the administration and pumped to small tanks and then gravity fed to site. The bore water is used for dust suppression. No changes are proposed to this arrangement or water use.

Meteor Stone has a bore allocation and has water available as required. Annually the water use is around 7 000 kL. No bore monitoring is required on the Licence.

Potable water is brought to the site as required.

The aerial photograph shows the location of the bore and pipes and tanks.

Water Protection Policies

The protection of water, whether groundwater or surface water, is an important part of the management of quarries. Different types of quarries have different potential impacts which are listed below in general terms. Not all potential impacts will apply to this quarry and the main impacts affecting this site are also listed.

Guidance on the quality of water can be found in;

- *Western Australian Water Quality Guidelines for Fresh and Marine Waters, EPA Bulletin 711, 1993.*
- *ANZECC, 1992, Australian Water Quality Guidelines for Fresh and Marine Waters.*

A number of documents provide guidance on the management and disposal of surface water that can lead to waterways, wetlands and underground water systems. These mainly apply to urban development but the methods are also applicable to the quarrying industry.

Documents specific to the mining and quarrying operations are the DWER Water Quality Protection Guidelines for Mining and Mineral Processing.

- *Overview*
- *Minesite water quality monitoring*
- *Minesite stormwater*
- *WQPN 28 Mechanical servicing and workshop (2006)*
- *Mine dewatering*
- *WQPN Landuse Compatibility in Public Drinking Water Source Areas (2004)*
- *WQPN 15 Extractive Industries near sensitive water resources.*

Documents specific to the fuel and maintenance are the DWER – DMIRS Water Quality Protection Guidelines for Mining and Mineral Processing

- *Mechanical servicing and workshop facilities*
- *Above-ground fuel and chemical storage*

The limestone excavation complies with all the documents above. The most relevant document is *WQPN 15 Extractive Industries near sensitive water resources*.

Site Hydrogeology

Elevation of the land surface grades from 70 metres AHD in the west of the proposal area to 83 metres AHD in the east.

The site is underlain by a sequence of limestone and sand of the Tamala Limestone. It is a highly porous sequence with fast vertical movement of water to the ground water table and then slower lateral flow of groundwater to the west.

Elevation of the water table is 21 to 23 metres AHD. Groundwater flow is east to west. The current floor of the pit is at 74 metres AHD.

There are no wetlands on site. The closest wetland is Lake Nowergup, which lies well to the north west of the current and proposed excavation. Lake Nowergup is classified as a Conservation Category Wetland that is recognised in System Six.

Stormwater

The pit areas are internally draining to their base. There is no runoff or drainage. All stormwater is contained on site. Stormwater runoff from roads is directed to adjoining pasture which is common practice for roads that are not kerbed such as the local roads.

Limestone is very porous and runoff does not occur as is the case with all limestone and sand pits. The existing floor is below natural ground water and all surface water from active areas drains into that area where it soaks into the ground.

Salinity

The groundwater obtained from the bore on site is fresh and there is no likelihood of significant or other salinity increases apart from minor evaporation, which is no different from any garden.

Acid Sulfate

The site is such that there is no observed risk of acid sulfate conditions on site.

The site is underlain by limestone which has a high calcium carbonate content and is used to neutralise acidic soil conditions.

No peat or organic matter has been intersected in the pit, is present in the faces or floor, and none is likely as the existing excavation at around 45 metres above the water table is located in the wrong geological environment.

Recharge and Water Use

The site lies up hydraulic gradient of Lake Nowergup.

In 2014 there was 6.3 hectares open. Currently there is 7.3 hectares of open ground, and in five years time there is anticipated to be 8.0 hectares open.

The area has no surface drainage because of the permeable and porous nature of the limestone.

Discussions of the recharge on limestone areas can be found in *Environmental Protection Authority in Bulletins 512, 788, 821 and 818*, and whilst these do not specifically refer to the extraction of basic raw materials they do consider the impact of clearing, planting trees and rural residential developments. The figure the EPA used for recharge from native vegetation was 10 – 15% rainfall, whereas cleared land had a recharge of 30 – 40 %. The floor of the quarry is also cleared and so there is not expected to be any reduction in recharge to the site.

As there will be no change to the amount of open ground no changes to recharge are anticipated and no calculations are therefore required. EPA Bulletins 512, 788, 821 and 818 can be referred to for explanations.

Water used from the bore is minimal in the context of the land holding, at less than 5000 kL per year, and is used for truck wet down and sprinklers near the entrance, although nowadays most trucks have covered loads, negating the need for wetting down.

Ground and surface water is protected by the following;

Water management was considered by the DWER in the issue of Licence L9183/2018/1.

- Limestone is very porous and runoff does not occur as is the case with all limestone and sand pits. The existing floor is below natural ground water and all surface water from active areas drains into that area where it soaks into the ground.
- The extraction and processing of limestone is a chemically free operation with the only liquids used being lubricants and fuel for machinery.
- Excavation of the current floor is 45 metres above the known groundwater elevation, with the excavated area below natural ground elevation. All water from active areas is directed to the excavated areas where it soaks into the ground.
- No potential chemical pollutants, oils are stored on site. There is some fuel storage as discussed below.
- A Fuel Management Plan is provided (see below).
- A Service Management Plan is provided. (see below)

- The access road and resource area are installed with locked gates and fences when the site is unmanned to prevent illegal dumping of rubbish.
- The Department of Water Environment Regulation, and the City of Wanneroo will be notified of any fuel or oil spill greater than 5 litres. There have been no incidents since operations commenced.
- The same procedures will be used in the event of any fuel or hydrocarbon spill, including those in excess of 5 litres. Any spills will be contained by the excavation. Soil and resource will quickly be placed around the spill to contain it in as small an area as possible. When contained, the contaminated limestone will be scooped up and removed to an approved landfill or other approved site.
- Limestone around the facility, that is contaminated by leaks, is periodically scooped up and removed from site to an approved disposal area.

Dangerous Goods and Hazardous Substances

Apart from fuel there will be no transport, storage or handling of hazardous materials involved in limestone extraction.

The only materials brought to site are cement for block manufacture which are the same materials used in all concrete product manufacture. These materials have been used for the whole time of the reconstituted block manufacture and no changes are proposed.

Fuel Management

Limestone has high absorbency, and any lubricant spills are plainly visible as they remain on the surface and are easily isolated and contained.

Earth moving equipment is fuelled from a dedicated fuel and oil dispensing vehicle, which visits the site as required.

A minor amount of diesel fuel is stored on site in a bunded facility at the site maintenance facilities. Meteor Stone operations are consistent with *DWER Water Quality Protection Guidelines*.

- Fueling and maintenance will be carried out in accordance with the DWER Water Quality Protection Guidelines.
- A bunded, lined fuel tank located near the workshop is used for small vehicles.



On site fuel tank

- Soils and hardstand such as those on this site are adsorptive. The main risk of contamination is the minor drips that occur during the removal of hoses etc. Any minor spills or leaks that are undetected at the working face will normally be picked up as the limestone is excavated and removed off site with the resource. Minor spills on the floor of the pit are broken down by soil microbial material in the same manner that soils contaminated by oil are remediated.
- Refuelling and lubricating activities are 45 metres above the perched seasonal water table, and equipment for the containment and cleanup of spills is to be provided.
- Spillage will be contained in plant and working areas by shutting down plant or equipment if the plant or equipment is the source of the spill (provided it is safe to do so).
- Limestone around the facility that is contaminated by leaks is periodically scooped up and removed from site to an approved disposal area.

- All significant adverse incidents (such as a fuel spill of >5 litres) in one dump, are to be recorded, investigated and remediated. A record is to be kept of incidents, and DWER, and City of Wanneroo notified within 24 hours of an incident.
- There have been no significant spills or spills of this volume within the past 10 years that required clean up or notification.
- In the event of a spill or adverse incident, activities will be stopped in that area until the incident is resolved.
- Any spills will be contained by the excavation. Soil, sand or limestone and resource will quickly be placed around the spill to contain it in as small an area as possible. When contained, the contaminated material will be scooped up and removed to an approved landfill or other approved site.
- A spill kit containing absorbent granules is located on site for emergency use.

Servicing and Maintenance

The main risk of contamination comes from tank or hose rupture on earth moving machines.

Minor servicing is conducted on site in the new workshop and maintenance area.

All major servicing is conducted off site.

All waste products are either recycled or taken to an approved waste disposal site. Excavation of limestone is a chemically clean operation and does not use chemicals apart from lubrication materials and fuels.

All spills are to be cleaned up in accordance with the summarised procedures following.

The workshop is located at the operations and is established with concrete floors through a City of Wanneroo Building Licence.

Stormwater from the workshop area is retained in the base of the pit.

The following actions continue to be used where applicable and as the opportunity presents to maintain water quality on this site.

- A workshop and minor servicing building which was located at the operations north of Wesco Road was moved to Lot 6 around 2 years ago through a Building Licence from the City of Wanneroo. That facility has stormwater and waste water collection facilities, and being located on the floor of the pit, all water is retained.
- All major servicing of vehicles will be conducted off site. Minor servicing will be conducted in dedicated areas on the natural land surface with a separation to the water table of 45 metres.
- Waste oil and other fluids derived from the routine maintenance of mobile machinery will be transported off site and disposed off at an approved landfill site. Grease canisters, fuel filters, oil filters and top-up oils will be stored in appropriate containers in a shed or brought to the site as required.
- Vehicle washdown is not used or proposed.
- Regular inspections and maintenance of fuel, oil and hydraulic fluids in storages and lines will be carried out for wear or faults.
- Servicing plant and equipment will be in accordance with a maintenance schedule.
- Accidental spill containment and cleanup protocol will be implemented. This will normally take the form of scooping up the contaminated material and removing offsite to an approved waste facility.
- Rubbish generated is to be recycled wherever possible and periodically disposed of at an approved landfill site.
- The site will be maintained in a tidy manner by removing all rubbish regularly offsite.
- A spill kit containing absorbent granules is located on site for emergency use. A commitment is made to notify Department of Water Environment Regulation and the City of Wanneroo of any spill greater than 5 litres. Limestone contaminated by large spills will be removed from the site to an approved disposal area.
- There have been no significant spills or spills of this volume within the past 10 years that required clean up or notification.

Water collection system at the service facilities.



Limestone Batching

A Licence under Part (V) Environmental Protection Act 1986 is in place for a Prescribed Premises Category 12, Crushing and Screening and Concrete Batching Category 77.

A DWER Licence is in place, Licence L9183/2018/1 for Category Screening materials and Category concrete (limestone) batching. There is no concrete batching plant on site.

The *EP Act 1986 Part (V) Prescribed Premises* that applies to limestone batching is Category 77 (Concrete batching or cement products manufacture). There is no Category for limestone batching. The Prescribed Premises is a risk based approach and Category 77 is used for all premises where cement is used because the environmental risks are the same.

Limestone batching has been carried out on site for over 20 years and was approved in the development approvals in that time, including in 2014 where that use is shown in all aerial and ground photographs and is included in the Management Plan.

Limited amounts of limestone are extracted from Lot 6 with some material being brought to site from the adjoining Mining Tenement M70/138 operated by Meteor Stone.

Approximately 50 000 tonnes of limestone will be extracted and that, around 50 000 tonnes, will be processed on site, mainly into reconstituted blocks.

The limestone extracted from either Lot 6 or from M70/138. Lot 7 is used as the access.

There are also natural dimensions stone blocks cut from M70/138, which is not part of this approval and does not add to the 50 000 tonnes (approx.) limit.

Limestone Batching, under the landuse definition in the City of Wanneroo DPS 2, falls under the “manufacture and storage is carried out on the land from which any of those materials is extracted or on land adjacent there to”.

The taking of resource from and the manufacture of reconstituted blocks on Lot 6 has been occurring and is therefore compliant with the City of Wanneroo DPS 2 and all City of Wanneroo Approvals.

The DWER Licence is for 60 000 tonnes annually. That is a maximum volume that is approved under the EPA Act 1086 Part (V) Licence. On the other hand the City of Wanneroo approval is for extraction of “approximately” 50 000 tonnes per year.

It is conceivable that a minor amount of limestone from extraction could be screened and taken off site and therefore there is flexibility with the DWER Licence of 60 000 tonnes annually.

As part of the Limestone Batching, engineered backing blocks are produced for footings and foundations. These are manufactured from subgrade material, which retains the better material for the face blocks.

Waste Rock and Tailings Management

There is no washing of limestone or products. Subgrade materials are incorporated into the bunding to be used above the faces to protect against unauthorised intrusions.

Waste Materials

The potential for rubbish to be dumped relates mainly to unauthorised access and is low as the site is set back from roads. The site is currently fenced. Gates are locked at all times when the site is unmanned and equipment is retained on site. Fences are maintained.

Any waste chemicals derived during routine maintenance activities will be stored in appropriate sealed containers within a designated storage area or taken from site and disposed of at an approved facility.

Wastes generated are recycled wherever possible and periodically disposed of at an approved landfill site. Any illegally dumped materials are to be removed promptly to an approved landfill or other suitable site, depending on the nature of the material.

All solid domestic and light industrial wastes are removed to an approved landfill facility. There will be no waste disposal onsite.

Broken pallets are burnt annually thorough approval from the City of Wanneroo as the best means of disposal.

These pallets cannot be reused and are stored with City of Wanneroo approval to be burnt annually at an appropriate time. Annually or as required the City is contacted and issues a permit to burn the pallets. This is the most environmentally responsible method of disposal.

Taking to landfill adds putrescible materials to the landfill and the wood breaks down to carbon dioxide the same as from burning, although the process takes longer and the breakdown destabilises the landfill through reductions in volumes.

Ablutions Waste

A septic toilet system is operating on Lot 6. The system has been in place for many years and was approved by the City at the time of installation.