## Appendix 7

Engineering Servicing Report





## Engineering Servicing Report December 2017

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### 1. INTRODUCTION

The following report has been prepared by Cossill & Webley Pty Ltd (C&W) and summarises the results of a preliminary assessment of the engineering aspects of the proposed urban development of the Catalina Grove site located at Lot 9025 Connolly Drive and adjacent WAPC land in Clarkson, City of Wanneroo which for the purposes of this report shall collectively be referred to as "the Site".

The Site is covered by the Tamala Park Local Structure Plan No. 79 as shown by the black boundary in the figure below.



Figure 1: Tamala Park Local Structure Plan No. 79 – Amendment 4 (TPG, 2016)

The Site is bound by the Mitchell Freeway to the east, Neerabup Road to the north, Connolly Drive to the west and parks & recreation zoned land to the south.

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Figure 2: Existing Road Network (Spookfish, 2017)

The landholding is predominantly zoned Urban under the MRS with a small section zoned Urban Deferred in the south-west corner. The Site is zoned Urban Development under the City of Wanneroo's District Planning Scheme No. 2.

The Site falls within the City of Wanneroo's *Clarkson Butler District Distributor Road Contribution Scheme* and is therefore subject to contributions being made towards Distributor Roads and pedestrian crossings.

### 2. SITE DESCRIPTION

#### 2.1 Site Vegetation

The Site is approximately 52.13 hectares in area. Approximately 0.24 hectares of this land is zoned Urban Deferred. The land is partially cleared with a number of trees and bush which are particularly dense on the eastern portion of the Site.

There are a number of existing trees on site that have been assessed by an arborist as having high and very high retention values. The design was completed with the view of retaining trees with very high retention values wherever engineering constraints make this practical, and retaining high retention value trees wherever the cut and fill levels are less than 300mm. There are sections, particularly to the north-east of the site adjacent the existing freeway underpass and freeway reserve, where the interface is reasonably steep. This may dictate that an engineering treatment is required to address the interface, which may impact on tree retention in some areas.

The planning layout and installation of services required to develop the site will also impact on the retention of trees. This will require further investigation at detailed design stage.



#### 2.2 Geology

The Geological Survey of Western Australia Perth Metropolitan Region soils map for Yanchep indicates that the Site is characterised by sand and limestone as shown below in Figure 3. This soil type is generally pale to grey sands at the surface with yellow sands at depth. It is free draining and is well suited to urban development.

![](_page_6_Figure_4.jpeg)

Figure 3: Geotechnical Information (Geological Survey of WA)

#### 2.3 Acid Sulfate Soils

A desk top review of the Department of Environment and Conservation's ASS Risk Map for the Central Metropolitan Region for potential acid sulfate soils (ASS) indicates the Site is classed as having no known risk of ASS occurring within 3m of natural surface (or deeper), as can be seen below in

Figure 4.

![](_page_6_Picture_9.jpeg)

![](_page_6_Figure_10.jpeg)

Figure 4: Acid Sulphate Soils Risk Mapping (Department of Environment and Conservation)

![](_page_7_Figure_0.jpeg)

#### 2.4 Site Contours

The Site is characterised by a low hollow in the south-western portion of the site, with a general uphill grade towards the north-east, south-west and south-east, as shown below in Figure 5. It is anticipated that some sand can be cut to create fill for use elsewhere in the development, although the extent of this will be dependent on the extent of vegetation that is to be retained on Site. Some retaining walls will be required as part of the future development.

Preliminary earthworks design has been completed over the site. This design has been prepared based on the tying in with levels of the existing freeway reserve, the existing Neerabup Road underpass, and with an emphasis on tree retention, particularly of high value trees identified by an arborist report over the site. The preliminary design indicates that there is a significant level difference on the interface to the north-east of the site against the freeway reserve and the Neerabup Road underpass. It is likely that an engineering treatment will be required to address the level difference in this area.

![](_page_7_Figure_5.jpeg)

Figure 5: Existing Ground Contours of the Site (Water Corporation, 2017)

#### 2.5 Groundwater and Wetland Mapping

A review of available groundwater contour information from the Department of Water Groundwater Atlas indicates the historical maximum groundwater level on the Site is between RL 3-4m AHD as depicted in Figure 6.

The maximum groundwater levels indicate there will be significant separation to groundwater for typical works required for urban development of the area. It is not anticipated that dewatering will be required for any of the trenching works throughout the Site other than potentially for the construction of a wastewater pumping station.

![](_page_8_Picture_1.jpeg)

Figure 6: Historical Maximum Groundwater Levels (Department of Water, 2017)

### 3. DRAINAGE AND GROUNDWATER MANAGEMENT

The Site consists of free draining sand with substantial cover to the prevailing groundwater. As such, it expected that stormwater will readily infiltrate into the insitu ground. It is anticipated that stormwater runoff within proposed residential allotments will be contained within their property; with stormwater disposed via soakwells or other infiltration facilities which form part of the building. In areas of high urban density, allowance may be made to manage a proportion of the runoff in the City of Wanneroo controlled street drainage network which will ultimately discharge into the Public Open Space (POS) areas. This would provide a more practical response for higher density sites and allows the runoff from larger storms to be managed away from the built form.

Given the geology and high permeability soils, where practical storm events up to 1 in 1 year – 1 hr Average Recurrence Interval (ARI) would be infiltrated at source via localised rain gardens, swales (within or adjacent to road reserves), gully pits with permeable bases, tree wells, porous road pavements, flush kerbing etc subject to City of Wanneroo approval. Stormwater from the 1:1 year event that cannot be infiltrated at source, as well as all stormwater from the 1:5 year event will need to be conveyed to the local low points where stormwater runoff infiltration areas will be co-located within POS.

Roads and POS areas will be designed to cater for the surface overflow for more severe storms with building pads constructed at least 300mm above the 1 in 100 year ARI flood or storage level at any location.

### 4. ROADWORKS & FOOTPATHS

The existing road network surrounding the Site is depicted in Figure 2. It is anticipated that the predominant traffic movement from the development will be travel to and from the intersection of Connolly Drive and Aviator Boulevard to the Mitchell Freeway and south along Connolly Drive. Three left-in left-out intersections are currently proposed to assist with access to and from the development as well as providing egress for bushfire requirements.

The existing roads surrounding the Site are in good condition and built to City of Wanneroo specifications. There is an existing underpass to the north-east of the site, which is anticipated to provide thoroughfare for public transport, pedestrians and cyclists to the existing Clarkson train station. As part of development, a connection will be required to be constructed to complete this link.

All newly created roads, drainage, crossovers and footpaths will need to be designed and constructed to the satisfaction of the City of Wanneroo.

### 5. WATER RETICULATION

The existing water network is depicted below in Figure 7. There is an existing 1000mm water reticulation main located in the eastern verge of Connolly Drive. Preliminary advice from the Water Corporation is that the cover to this main will need to be below 2m for maintenance purposes. This will dictate earthworks levels on the western boundary of the site.

It is anticipated that the site will require connections to the existing network on the western and northern boundaries of the site.

Standard Water Corporation water headworks will apply.

![](_page_9_Figure_9.jpeg)

Figure 7: Existing Water Reticulation (Water Corporation 2017)

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## 6. SEWERAGE RETICULATION

The existing sewerage reticulation surrounding the Site is presented in Figure 8. There are two existing sewer stubs to the north-west of the site on Neerabup Road and Connolly Drive. Preliminary sewer planning indicates the north-western third of the development can be served by existing gravity sewer. The remainder of the site will require a wastewater pumping station. It is anticipated that this pump station will be located adjacent POS in the southern portion of the site with an emergency overflow outlet to an adjacent drainage basin. The pump station will be connected via a pressure main discharging to the existing gravity main along Connolly Drive near the northwest of the Site.

Standard Water Corporation sewer headworks will apply.

![](_page_10_Figure_4.jpeg)

*Figure 8: Existing Sewer Reticulation (Water Corporation 2017)* 

### 7. POWER

The Western Power Network Capacity Mapping Tool was used to determine future forecast remaining capacity in the electricity network. This indicates that the network will have 10,000-15,000kVA remaining capacity in 2018, and it is therefore anticipated there will be adequate capacity in the network to supply future residential development. This will need to be confirmed formally with Western Power during detailed planning and design.

There is existing underground power infrastructure within the road reserves on Neerabup Road and Connolly Drive.

All power within the proposed development will be underground and fed from existing infrastructure in the adjacent areas. It is not anticipated that any off-site headwork upgrades will be required.

As part of the development it is anticipated that Western Power will require Earth Potential Rise (EPR) testing to be undertaken.

### 8. GAS SUPPLY

There is an existing 155mm medium pressure gas main that runs along the western side of Connolly Drive. It is anticipated that this will not impact on development of the Site. ATCO Gas has confirmed there is sufficient capacity in the network to facilitate the development of the Site. It is likely that a connection to the medium pressure gas will be required as part of the works.

### 9. TELECOMMUNICATIONS

As per the Federal Government's New Developments Policy, new developments with 100 premises or more will be prioritised by NBN Co to have optic fibre infrastructure installed. The subject area is within NBN Co's fibre footprint, and hence can be serviced with optic fibre under their NBN roll-out scheme for Greenfield developments.

Given that the NBN network has substantially commenced in Catalina Central, no backhaul will be required.

Under the current scheme, the developer is required to enter into an agreement with NBN Co to provide design, and pit and pipe infrastructure which is handed over free of charge to NBN Co upon completion. A network deployment charge of \$400 per multi-dwelling unit and \$600 per single dwelling unit will be charged by NBN Co.

Alternative private telecommunication providers may also be considered to service this area.

### 10. CONCLUSION

Our preliminary investigation of the Site confirms that services planning are generally in place to accommodate residential development of the Site. The major infrastructure required in order to facilitate development of the Site is a wastewater pumping station and associated pressure main in the southern portion of the Site.

From an engineering perspective, the Site is well suited to urban development.

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![](_page_12_Picture_0.jpeg)

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