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NOBLE HODGE PTY LTD
LOT 1 DRIVER ROAD CNR FURNISS ROAD, DARCH
ENGINEERING SERVICES REPORT

1. General:

The subject site is approximately 11.95 hectares in size and is located on the south east corner of Driver Road and Furniss Road in Darch.

The existing site has been operated as a Class 1 inert landfill and waste recycling facility for many years and is now

It is to be ultimately developed into around 166 residential lots plus POS/Drainage and some 11 commercial allotments of around 1,120sqm fronting Furniss Road.

This report covers existing and proposed services, plus proposals for earthworks, retaining walls, roads, drainage, groundwater, water supply, sewerage, power supply, gas, telecommunication as required for current urban development standards.

2. Executive Summary

The land the subject of this report is located on the corner of Driver Road and Furniss Road in Darch in the City of Wanneroo. It can be easily developed immediately by extending all required services from abutting roads.

The land has previously been used for recycling demolition waste and building materials, and is occupied by large stockpiles of variable quality materials, disused machinery and a number of temporary structures. There is a large earth bund constructed around the perimeter of the site to shield the recycling works from the surrounding developed areas. There is some minor regrown vegetation on the site but no other significant trees.

Both abutting roads are constructed to urban road standard, sealed in fair condition, although portions of Driver Road and the majority of Furniss Road abutting the site is unkerbed. This would need to be kerbed and drained as part of the required subdivision works.

The original basic land form is sand derived from Tamala Limestone. The Environmental Geology map of the Geological Survey of Western Australia classifies this site as generally "S7" sands of residual origin derived from Tamala Limestone. Despite this, geotechnical excavations over the site indicate that the natural sands have been removed and refilled with building rubble to a depth of up to 18m.

No visual or anecdotal evidence of water ponding has occurred in this area.

The land can be connected to all services, either by extension and upgrading from existing infrastructure, or by provision of new infrastructure as set out below. Power, telephone, gas, sewer and water services already pass along the site frontage.

It is proposed that all road stormwater from the development up to and including the 1% AEP (1 in 100yr) event will be retained on site. Houses will discharge roof stormwater into on site soakwells.

To balance the existing materials on the site and ensure a minimum of 1.0m capping over the site once the site has been rehabilitated to ensure that housing construction can occur.

3. Site

The subject site is approximately 11.95 hectares in size and is located on the south east corner of Driver Road and Furniss Road in Darch. The land has previously been used for recycling demolition waste and building materials, and is occupied by large stockpiles of variable quality materials, disused machinery and a number of temporary structures. There is a large earth bund constructed around the perimeter of the site to shield the recycling works from the surrounding developed areas. There is some minor regrown vegetation on the site but no other significant trees

The majority of the site is underlain by inert fill. Due to the large stockpiles, the site levels are variable although the general grade of the peripheral roads is RL53/82mAHD along Furniss Road with Driver Road falling from around RL53.00mAHD to RL46.00mAHD at the southern boundary of the site.

The site is adjacent Water Corporation sewer and scheme water, as well as telephone, gas and power. Access is from the existing abutting sealed roads; Driver Road and Furniss Road. The site has an existing driveway off Furniss Road mid-way along it's the frontage. Both roads abutting the site are both constructed to urban standard, and are of fair quality, having been built many years ago. There is no kerb on the southern side of Furniss Road and some kerb is missing along Driver Road which will need to be constructed. There is a path along the western side of Driver Road to provide pedestrian access to houses opposite.

4. Development Proposal

It is proposed to develop the land ultimately as 166 residential lots plus POS/Drainage and 11 commercial lots of around 1120sqm each.

Access to the proposed subdivision will be by way of a new subdivisional road off Driver Road, located approximately 60 metres south of the existing intersection between Waterford Parade and Driver Road. The commercial lots will front onto Furniss Road opposite the existing commercial area, to provide a buffer between the residential and commercial precincts.

The development will be provided with all normal services, with links to abutting developments for sewer, water, power, roads, gas and telephone services, with all drainage to be disposed on site via soakage.

Water Corporation reticulated sewer and water services exist in Furniss Road and Driver Road.

The development will entail significant earthworks to process the existing material on site and sort through to separate unsuitable materials stockpiled on the surface. Geotechnical investigations indicate that there is a risk of reasonably large settlements, so to account for this, it is proposed to create a large "raft" approximately 2.5m below the finished surface levels and recompacting and filling to ensure settlements are minimal and will be uniform rather than differential. This will then provide level, free draining building blocks with low to medium height retaining walls.

All residential lot storm runoff will be directed to individual site soakage. Internal road stormwater will be directed to a proposed storage basin to be located both the north eastern and southern POS areas.

It is expected that some upgrading of the abutting roads will be required as part of the development.

5. Earthworks & Retaining Walls

Earthworks will be carried out over the site to process and sift the existing stockpiles to separate out and dispose of unsuitable materials. The whole site will be excavated to approximately 2.5m below finished surface levels and a "raft" consisting of geotextile and limestone will be constructed generally to mirror the finished surface levels. The existing inert materials will be compacted above the raft to around 1.0m below finished surface levels then will be capped with 1.0m of clean imported sand fill.

The lots will be filled to be slightly above the existing roads, rising to a peak of around RL56mAHD on the eastern boundary of the site to match the neighbouring development proposal.

Most lots will require medium height retaining walls throughout the site to enable the earthworks to be stepped up.

All retaining walls will be subject to Council building approval.

6. Roads

All new subdivisional roads will be constructed to City of Wanneroo standards and approval, including kerbing and piped drainage plus provision of footpaths as required. Access to the site will be by way of a new subdivisional road off Driver Road, located approximately 60m metres south of Waterford Parade.

The existing Driver Road is a 7.4m wide urban carriageway in fair condition, kerbed only on the western side and generally kerbed with some exclusions on the eastern side. There is a footpath on the western side of the road.

Furniss Road is a 10m wide urban standard road in fair condition, with kerbing and drainage on the northern side but no kerbing or drainage on the southern side.

It is expected that upgrades to both Driver and Furniss Roads will be incorporated into the subdivision approval requirements.

7. Drainage

Drainage from the whole site is wholly contained within the proposed drainage basins in the southern and north eastern corners of the development.

Lot drainage will be self-contained in soakwells. The soil characteristics of the site in conjunction with the depth to groundwater will allow site soakage.

Stormwater design will be done to the standards of the City of Wanneroo and will be detailed in the Local Water Management Strategy (LWMS) submitted with the structure plan documentation, and the Urban Water Management Plan (UWMP) which will be done in conjunction with the detailed subdivision design.

8. Groundwater

Based on regional mapping, the ambient groundwater level at the site is expected to peak at around RL38.5mAHD being a minimum of 7.5m below finished surface levels. This is not expected to impinge in any way on the development of the site.

9. Power

Sufficient power supply exists in the area to supply the development. Low and high voltage underground power is available along both abutting roads.

It is expected that a high voltage power extension will be required together with the installation of a new transformer and switchgear to service the required development.

All subdivisional power reticulation lines and transformer installations will be constructed at the cost of the developer. Transformer sites will be determined at the detailed subdivision design stage.

10. Water Supply

Sufficient water supply exists in the area to service this development.

At present there is a 200mm reticulation water main and a 400mm steel distribution main on the northern and southern verges of Furniss Road and a 150mm and 375mm on the western and eastern verges of Driver Road. It is likely that the development will be either connected to the 150mm main or the 375mm main in Driver Road.

11. Sewer

The site is not currently connected to sewer, although a 150mm reticulation sewer main is located along the western verge of Driver Road and a 225mm main along the southern verge of Furniss Road.

A 150mm sewer pressure main is located along the eastern of Driver Road abutting the development.

The commercial lots fronting Furniss Road together with the eastern portion of the site will be connected to the existing DN225mm dia sewer in Furniss Road. The remainder of the site will be connected to the existing sewer on Driver Road, both through the access location and into the proposed development to the south.

Internal sewers will allow for future extensions to abutting properties as required.

12. Telephone & NBN

Telstra underground infrastructure services exist adjacent to the site along the frontage to the site in both Driver Road and Furniss Road. The infrastructure in Driver Road is most likely to be able to be extended or upgraded to service this proposed development.

In accordance with recent requirements, the developer is required to install NBN "pipe and pit" to allow for future installation of cables for the NBN. The design of the "pipe & pit" is the responsibility of the developer, and will be designed in conjunction with the underground power network, and installed during the construction phase of the development.

13. Gas

Gas mains are installed in this area, with a 110mm medium pressure main located along the western verge of Driver Road. It is expected that reticulated gas services will be extended into this development for residential lots by ATCO in the normal way, with trenching done by the developer. It is unlikely that gas will be extended for the commercial lots.

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THIS REPORT IS DATED 30TH MARCH 2021.