

## APPENDIX 8 ENGINEERING SERVICING REPORT



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Servicing Report 5- 8 Kerosene  
lane Oct 2015

October 8, 2015

## **TERRANOVIS PTY LTD**

### **LOTS 5 – 8 KEROSENE LANE, BALDIVIS**

#### **ENGINEERING SERVICES REPORT.**

##### **1. General.**

The above land is to be developed into an urban subdivision containing some 135 residential lots plus POS. This report covers existing and proposed services plus proposals for earthworks, retaining walls, roads, drainage, groundwater, water supply, power supply, gas, telecommunications and sewerage as required for current urban development standards.

##### **2. Executive Summary.**

The land the subject of this report is located on the south side of Kerosene Lane in the northern area of Baldivis, within the City of Rockingham. The land is between 300m and 700 metres east of Mandurah Rd and between 2km and 2.4km west of Baldivis Rd. The APA high pressure ethane gas pipeline is located just east of lot 5 in the adjacent land being developed as "Paradiso Estate". This pipeline runs north – south.

The land is uncleared, with houses and sheds located on lots 5 and 7, both of which have power and telephone services. Kerosene Lane is a sealed rural road in fair condition with centerline marking. It lacks kerbing and formal drainage. A high (22kVa) and low voltage aerial power line is located on the south verge of Kerosene Lane abutting the site.

The basic land form is free draining sand over limestone. The Environmental Geology map of the Geological Survey of Western Australia classifies this site as generally "S7" Sand derived from Tamala Limestone on the eastern half and "LS1" Tamala Limestone on the western half. The current process is listed as "ground water recharge".

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 and telephone services already pass along the site frontage. A LWMS for the area is being prepared. All storm water generated from the development for storms up to the 1 in 100 year storm will be contained on site in swale drainage basins located at low points within local catchments. Houses will discharge roof storm water to on site soakwells. According to the 1997 Ground Water Atlas, the land is a minimum of 4.5 metres above the water table at its lowest point on the south west corner of the site.

The site is undulating, sloping to the south off Kerosene Lane, which will necessitate construction of medium height retaining walls to provide level building blocks.

### 3. Site

Lots 5 – 8 are located on the south side of Kerosene Lane, some 500 metres east of Mandurah Rd at its mid-point, and some 2.4km west of Baldivis Rd. The land is currently uncleared, with lots 5 and 7 having residences and sheds.

Kerosene Lane abutting the site on the north is a rural road, generally with an 8 metre wide seal, no kerbing nor formal drainage. This is the only access to the site at present.

Generally the land is undulating, falling steeply to the south off Kerosene Lane from a high point of RL 22m AHD at the north-west corner to a low area at RL 8m AHD at the south east corner.

The geology of the land is described by the Environmental Geology Map of the Geological Survey of WA, as “S7 being sand derived from Tamala Limestone, and “LS1” Tamala Limestone, both of which are described as being suitable for urbanization.

The site is adjacent, on its eastern side, to a new subdivision (Paradiso Estate) which will extend to the eastern boundary of the site in the near future. This development will extend all services through to the site. To the west and south is another development site which is undergoing design (lots 9 and 302).

The existing buildings on lots 5 and 7 are serviced with septic tanks for site waste water disposal and roof tanks and groundwater bores for water supply. Power and telephone services are located in Kerosene Lane and are connected to each site.

Just east of the eastern boundary of the site is the APA Gas Pipeline, which is a high pressure ethane gas trunk pipeline placed within an easement within the Paradiso Estate. This pipeline has a mandatory buffer to any residential house of 32 metres. Provision has been made in the planning to allow for this, with POS and a road reserve located alongside the pipeline.

### 4. Development Proposal

It is proposed to develop the land as a 135 lot residential subdivision. The development will be provided with all normal services, with links to the abutting development on the east of the site for sewer, water, power, roads, gas and telephone services, with all drainage to be retained on site using best management practices. The development will have one road connection to the eastern development (Paradiso Estate) and two to Kerosene Lane.

Water Corporation sewer and water services exist in the abutting new development on the eastern boundary of the site, and connection will be made to them in Maranca St where convenient and as approved by the Water Corporation. Water Corporation policy requires developers to extend sewer and water services to the boundary when further extension is planned. Fill will be required to provide cover to the sewer extension across the southern portion of lots 5 and 6. This sewer will also connect to the adjacent new development on lots 302 and lot 9 south and west of the site.

The development will entail earthworks to provide level, free draining building blocks with extensive low height retaining walls, given the undulating site. Lots abutting

Kerosene lane will be constructed to the same level as Kerosene lane to provide proper amenity and outlook.

Drainage will be managed by on-site drainage swales to be located at the lowest points of the site as detailed by the drainage catchments and LWMS. All residential storm runoff will be directed to individual lot on-site soakage.

The development will allow provision for the implementation of the NBN network.

## 5. Earthworks & Retaining Walls.

Because of the undulating nature of the site, overall earthworks will be required to provide level building blocks, thus necessitating extensive low to medium height retaining walls. No retaining wall is envisaged to be higher than three metres in height.

All retaining walls will be subject to Council building approval.

Earthworks on site will entail removal of topsoil, cut and fill, and stabilization of finished land surfaces. Some importation of fill is required to fill the low southern areas on lots 5 and 6 for sewer cover, and to lift lots abutting Kerosene Lane to the level of the road.

It is envisaged that the total site will be earthworked in one contract so as to provide efficiencies in cut to fill and imported fill operations. There is an earthworks embargo for this site during the months of November to March.

## 6. Roads

All roads will be constructed to City of Rockingham standards and approval, including kerbing and piped drainage plus provision of footpaths as required.

The existing Kerosene Lane is a rural road in good condition, with no kerbing or formal drainage. It will need to be upgraded with such as part of the development along the frontage of the land.

## 7. Drainage

The site will be self-contained as far as storm water drainage is concerned. The soil characteristics of the site will allow site soakage, based on the geology and the depth to groundwater. The whole site is contained within one drainage catchment, with low point being in the south east corner of the site. Some allowance for Kerosene Lane drainage will be made.

Storm Water design will be done to the standards of the City of Rockingham, with a storage facility to contain the 1 in 100 year storm runoff from roads located in the proposed POS in the south east corner of the site. The LWMS will detail drainage storm runoff basins.

## 8. Groundwater

According to the 1997 Ground Water Atlas, the groundwater level at the site is approximately RL3.5m AHD across the middle of the site, some 4.5 metres below the lowest site ground level of RL 8m AHD at the south east corner of the site. This low

area will be filled in order to provide cover for the sewer extension to a minimum of RL 10m AHD, thus providing a minimum of 6.5 metres to the groundwater level.

## 9. Power

It appears that sufficient power supply exists in the area to supply the development. A high and low voltage aerial power line is located along the southern verge of Kerosene Lane. It is likely this line will be relocated underground along the frontage of the site as part of the development. Underground power reticulation will also be extended from the adjacent Paradiso Estate into the development.

Lines and poles inside the lots will be removed as part of the development. Maintenance of power to occupied homes and the business occupying the next property west of the site will not be required as these residences are being removed as part of the development.

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

## 10. Water Supply

At present there is no public water supply to the site. The adjacent Paradiso Estate development is fully reticulated with Water Corporation mains, and these will be extended into this development, both from the internal road connection and also along Kerosene Lane. There is no high level water supply requirement in this development.

## 11. Sewer

The site is not currently connected to sewer.

The site can be served from the Water Corporation's Baldivis North Pump Station (WWPS) "McDonald Rd" south of the site. Connection to the existing 225mm gravity sewer in the adjacent "Paridiso Estate" subdivision along the future Maranca St will allow the site to be served by this pump station, with the proviso that fill is placed to provide cover to the sewer.

Water Corporation planning shows that the site is contained within the catchment of this WWPS.

## 12. Telephone & NBN

Telstra services exist in the area along Kerosene Lane and in the adjacent Paradiso Estate subdivision. These are most likely to be able to be extended to service this proposed development. Some upgrading may be required.

If Telstra is to be the servicing authority, Telstra normally requires twelve months' notice of development starting to ascertain any upgrading requirements.

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 in the abutting subdivision. Gas will be extended to this development by ATCO in the normal way, with trenching done by the developer.

DEVELOPMENT ENGINEERING CONSULTANTS PTY LTD

THIS REPORT IS DATED 7<sup>TH</sup> OCTOBER 2015.

## APPENDIX 9 PRE-LODGEMENT CONSULTATION

## PRE-LODGEMENT CONSULTATION

AGENCY	DATE OF CONSULTATION	METHOD OF CONSULTATION	SUMMARY OF OUTCOME
City of Rockingham	Circa 05/2015 – 09/2015	Meetings/Telephone/Emails	<p>Preparation of SP required prior to subdivision approval. SP lodgement post new Plannign Regulations operational date so SP to follow new format.</p> <p>An east-west collector road to be provided as extension of 17.9m NC road from Paradiso Estate connecting with Kerosene Lane.</p> <p>The proposed road layout in the SCP was generally supported 'in-principle', however City officers indicated design should try and retain as many significant trees as possible.</p>
Western Power	During 2015	Email/telephone discussion	SP development area can be connected to reticulated power supply.
Water Corporation	During 2015	Email/telephone discussion	SP development area can be connected to reticulated water and sewer.
Landowner Lot 9 & 302	During 2015	Meetings/telephone/emails	Agreement as to SCP interface with Lots 9 & 302 allowing for future road connections, location of POS and provision of servicing and infrastructure for urban development of Lots 9 & 302.