



## APPENDIX 7

### **7. ENGINEERING REPORT**

Prepared by: Pritchard Francis

Reference: 15-322

Dated: 8 June 2016

**15-322**

**Engineering Servicing Report**

**for**

**The Glow Development**

**on**

**Lot 19 Sixty Eight Road, Baldivis**

Revision	Description	Date
0	Issued for Structure Plan Report	18-Nov-15
1	Electrical Reticulation Revised	24-Nov-15
2	Structure Plan Revised	07-Dec-15
3	Issued for Structure Plan Report	08-Jun-16

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## 1 Introduction

At the request of The Glow Development, this Engineering Servicing Report has been prepared in support of lifting the Structure Plan report for Lot 19 Sixty Eight Road, Baldivis.

The servicing strategy outlined within this report is based on the subdivision concept plan provided by The Spatial Group. This plan can be found in Appendix One.

Pritchard Francis is currently involved with the detailed engineering design of the adjacent Lot 20 and 21 Sixty Eight Road as well as Lots 569 and 1263 Baldivis Road and the previously completed Lot 18 Sixty Eight Road. As such, Pritchard Francis is well versed in servicing requirements for the area, and has already been liaising with service authorities to ensure this land is appropriately serviced.

## 2 Site Description

### 2.1 Locality

The site is located in the suburb of Baldivis within the City of Rockingham, west of the Kwinana Freeway and South of Safety Bay Road. The 9.1Ha site is bound by the recently completed subdivision of Lot 18 Sixty Eight Road to the west, the undeveloped Lot 20 Sixty Eight Road to the east and the undeveloped Lot 740 Baldivis Road to the north. The location of the site can be seen in the aerial image below.



*Photo 1: Location Plan*

### 2.2 Topography

Currently the northern portion of the site contains native vegetation whilst the southern portion has been cleared for market garden purposes. There are existing homesteads in the south-east corner and sheds/greenhouses remaining from when the site was used for farming/market gardens. The soils should be investigated by an environmental consultant for any potential impacts from previous land use.

The levels are around 26m AHD at the north-west corner of the site and the high point is around 34m at the north-east corner. The level towards the eastern side is likely to have been lowered to around 28m AHD at the time of development due to the development of Lot 740 and Lot 20 which are likely to commence prior to Lot 19. This is under the assumption that the owner of Lot 19 would give permission for the required batter to extend into their land.

Levels fall toward the southern end of the site such that there is a low point at 14m AHD approximately 90m north of Sixty Eight Road and the levels at the tie-in point with Sixty Eight Road are around 20m AHD.

It is understood that Lot 19 will tie-in smoothly with the surrounding developments and minimal retaining walls will be required.

## **2.3 Soils and Groundwater**

The majority of soils within the site are fine to coarse grained sand, with minor limestone formation at depth in some areas.

According to the Department of Environment and Conservation's Acid Sulfate Soil (ASS) risk mapping, the site contains soils that are identified as having low to nil risk of containing ASS.

Groundwater levels are well below the surface level across the entire lot. As a result we envisage that groundwater will not pose any constraints for the development.

## **3 Earthworks Strategy and Retaining Walls**

To meet Water Corporation requirements for provision of potable water in the Tamworth Gravity Catchment the land must be lowered below RL28 to ensure adequate water pressure is delivered to the properties. The majority of the site is already below 28m AHD and only the northern most portion of the site will require lowering to satisfy this requirement. Cut from this area can be used to fill the lower areas to the south, for example, the low point at 14m AHD within the proposed high school site. Additionally an earthworks strategy for the site needs to tie into existing Lot levels to the west, existing road levels to the south, and proposed Lot levels to the north and east as part of the proposed developments. Pritchard Francis has liaised with surrounding landholders, City of Rockingham, Water Corporation and Department of Education (School Site) in this regard.

In order to accommodate these levels the site will be terraced with retaining on lots to suit.

The key items of the earthworks concept plan are:

- Provide for a cut to fill scenario to eliminate the need to import Structural fill. It is likely that the exportation of clean material will be undertaken on this project.
- Consider the existing levels found across the site and create level Lots within the LSP area using retained Lots that step down the site.
- Match into ground levels proposed for the adjoining landholdings situated immediately to the north and west.
- Create finished levels within the subdivision that accommodate gravity-reliant infrastructure to facilitate appropriate servicing (sewer and drainage).



Pritchard Francis has also developed a Conceptual Levels Plan to ensure that the proposed development reasonably ties into the surrounding developments, the proposed high school and Sixty Eight Road. This plan is attached in Appendix Two.

## 4 Stormwater Drainage

A Local Water Management Strategy (LWMS) and Urban Water Management Plan (UWMP) will be required for the proposed subdivision as part of the Local Structure Plan process. There are currently multiple LWMS prepared for the surrounding developments/proposed subdivisions, for example, Lots 18, 740 and 21. A LWMS titled J6123a was issued by JDA for Lot 19 Sixty Eight Road in late March 2016, whilst the delivery of the UWMP is expected within the upcoming fortnight.

The provided LMWS for Lot 19 states the following requirements:

- A water quality system designed to manage a one year one hour event. All stormwater will need to be retained and infiltrated on site within bio-retention areas. These bio-retention areas are likely to be located within both of the POS areas. The bio-retention areas will need to be located within a larger retention basin, allowing for overflow during a larger event.
- Gross Pollutant Traps located at entry to POS soakage areas to ensure all litter and sediment is contained for easy cleaning.
- Pit and pipe systems designed to contain and transport up to and including five year events to the bio-retention areas within the POS.
- Up to a one hundred year event should be contained within the site. This will involve the roads grading towards the POS areas in order to retain and infiltrate all water within the retention basins.

Also, it is worth noting that the High School will be self-contained and so no runoff will need to be allowed for from the High School. The UWMP for the High School will be prepared independently of the Lot 19 UWMP.

## 5 Sewer Reticulation

Pritchard Francis were involved with the planning of the future wastewater pump station which will serve the catchment inclusive of Lot 19. The relevant sheet of the catchment plan which has been approved by the Water Corporation is attached in Appendix Three.

Ultimately, sewerage reticulation within the proposed Lot 19 subdivision will connect to a gravity main through Lot 20, north of the High School. This can be seen in the attached wastewater reticulation concept plan prepared by Pritchard Francis and approved by the Water Corporation which is attached in Appendix Four.

In order to achieve serviceability, the gravity main downstream of Lot 19, (through Lots 20 and 21 and through to the proposed pump station near Baldvis road) must be completed. This means that development of Lot 19 will be dependent on development of the lots to the east. Alternatively, development of Lot 19 could occur earlier given that coordination with the relevant land owners can occur and the downstream sewer infrastructure can be installed prior to the eastern development. This could potentially involve significant earthworks.

## **6 Water Reticulation**

Pritchard Francis has liaised with Water Corporation concerning water servicing in the area. Attached in Appendix Five is a water concept plan prepared by Pritchard Francis and approved by Water Corporation, as well as a broader area plan prepared by Water Corporation. From these plans it can be seen that Lot 19 will achieve water servicing via connection to existing water mains within the Lot 18 subdivision to the west. The water mains will either need to be extended to connect into existing water mains to the east and north or extended to provide a future connection point if the Lot 20 and/or Lot 740 developments are not yet complete.

## **7 ATCO Gas**

There is existing gas reticulation servicing the development immediately to the west of Lot 19 (subdivision of Lot 18). This reticulation is high pressure and is likely to have sufficient capacity to service the proposed subdivision of Lot 19. This will need to be confirmed with ATCO Gas however, gas servicing will not be a WAPC condition and thus cannot prevent development should it not be available.

## **8 Electrical Reticulation**

Electrical services are likely to be provided to the area by connection with the existing underground power available within Bannerdale Road, Lamorak Way and Hayling Way which are all located to the west of Lot 19. It is anticipated that the overhead power lines which are located on the southern verge of Sixty Eight Road will not be required to service this development and thus any upgrade or relocation of the existing overheads is not anticipated to be a condition of this development. It is noted that the recently completed developments to the west of Lot 19 have not been required to upgrade or relocate the existing overheads.

According to the Western Power Network Capacity Mapping Tool there is a relatively small amount of capacity remaining within this area of the Western Power network (<5MVA). There may be enough capacity for the proposed subdivision however this will need to be confirmed with Western Power. If there is not enough capacity the network may require upgrading, however, this situation is likely to change given the ongoing development of Lots 740, 569 and 1263.

## **9 Communications**

There is existing NBN Co. infrastructure servicing the Lot 18 subdivision to the west of Lot 19. As a result there should not be any significant constraints for connecting the proposed subdivision to the NBN Co network. This will involve a deployment charge of \$600 per single-dwelling unit and \$400 per multiple-dwelling unit (rates as of November 2015). It is unlikely that any co-contribution will be charged as it appears that NBN Co have sufficient infrastructure in the area to avoid considerable backhaul costs.

## **10 Conclusion**

Pritchard Francis have been commissioned by The Glow Development to review engineering servicing requirements for Lot 19 Sixty Eight Road, Baldivis.

The subject site falls within current water and sewer Water Corporation service areas which will be extended to the boundary of the site through adjacent development. As such the infrastructure will support an urban zoning.

Based on preliminary investigations, we do not envisage any issues servicing the development with Western Power. This is subject to confirmation pending application and receipt of a Design Information Package from Western Power however power infrastructure is available to the site.

Stormwater infiltration within Public Open Space is proposed to treat all stormwater run-off from the road reserves.

Based on all items within the Engineering Services Report, Pritchard Francis Pty Ltd believes that the proposed development is capable of being serviced with all essential services and with careful consideration in design will result in a high quality urban development.

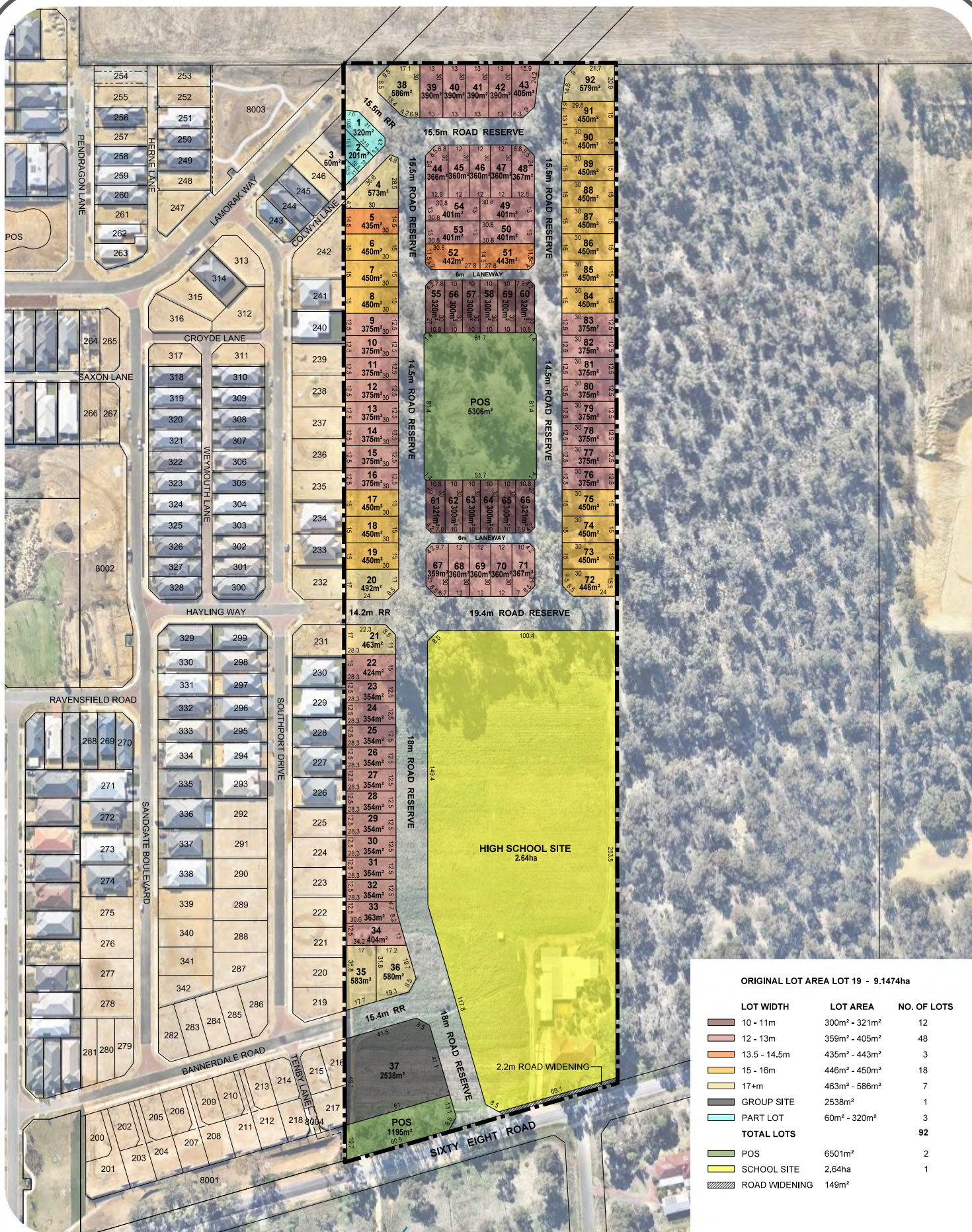


## ***Appendices***

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*Appendix One      Subdivision Concept Plan*





#### ORIGINAL LOT AREA LOT 19 - 9.1474ha

LOT WIDTH	LOT AREA	NO. OF LOTS
10 - 11m	300m <sup>2</sup> - 321m <sup>2</sup>	12
12 - 13m	359m <sup>2</sup> - 405m <sup>2</sup>	48
13.5 - 14.5m	435m <sup>2</sup> - 443m <sup>2</sup>	3
15 - 16m	446m <sup>2</sup> - 450m <sup>2</sup>	18
17+m	463m <sup>2</sup> - 586m <sup>2</sup>	7
GROUP SITE	2538m <sup>2</sup>	1
PART LOT	60m <sup>2</sup> - 320m <sup>2</sup>	3
<b>TOTAL LOTS</b>		<b>92</b>
POS	6501m <sup>2</sup>	2
SCHOOL SITE	2.64ha	1
ROAD WIDENING	149m <sup>2</sup>	

(the spatial group)

planning + design

Lot 19 Sixty Eight Road, Baldi

SUBDIVISION CONCEPT - OPTION 1

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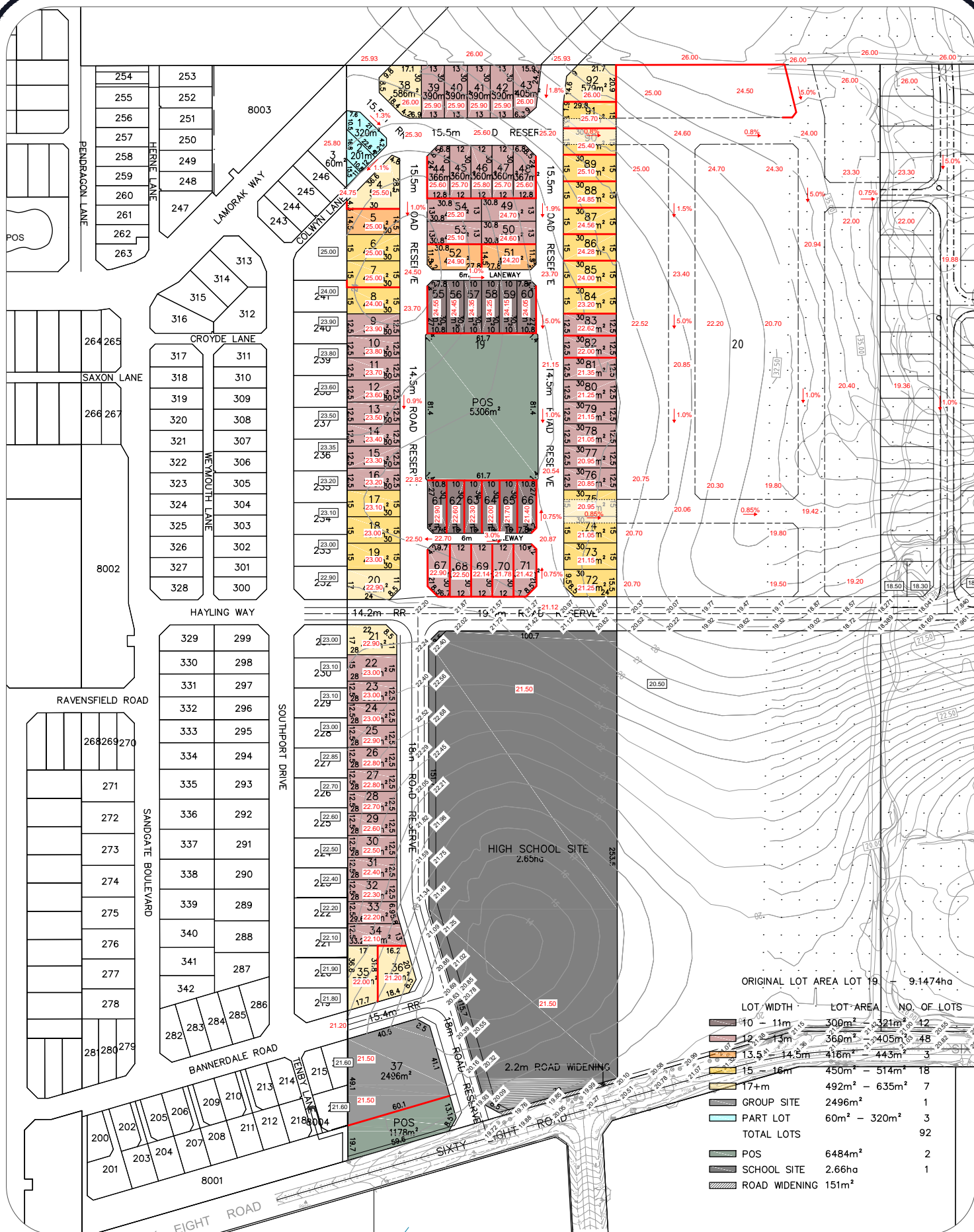


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Plan No.	: 19-subcon 3
Revision	: A
Date	: 1 December 2015
Drawn	: BDL
Scale	: 1:2,000



*Appendix Two      Conceptual Levels Plan*

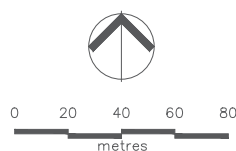


**[the spatial group]** Lot 19 Sixty Eight Road, Baldviss

planning + design

SUBDIVISION CONCEPT - OPTION 1

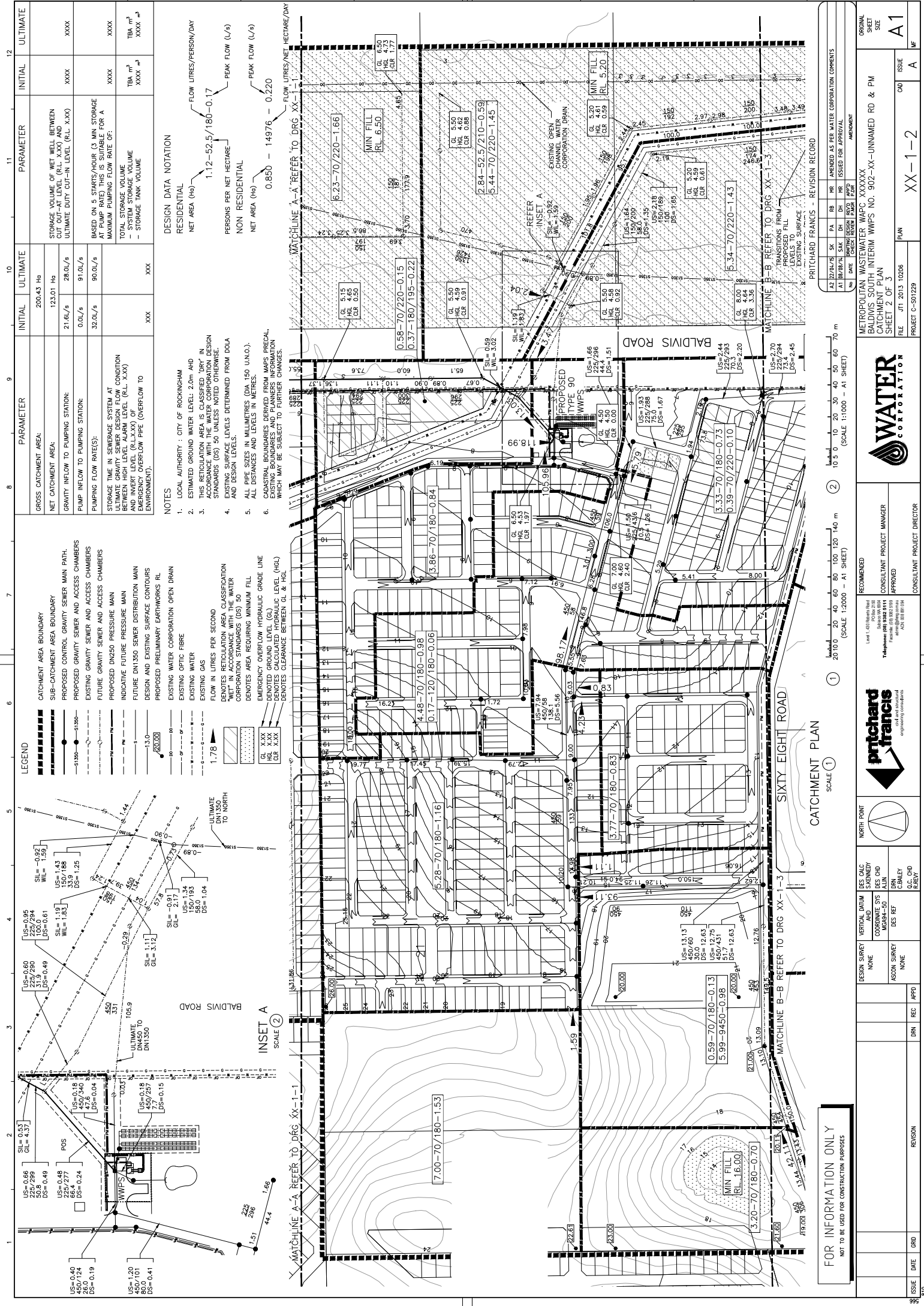
**LEIGHTON**  leighton@westnet.com.au  
land development



**Client** : The Glow Development  
**Plan No.** : 19- subcon 3  
**Revision** : A  
**Date** : 12 November 2015  
**Drawn** : BDL  
**Scale** : 1:1000

*Appendix Three      Sewer Catchment Plan*





***Appendix Four      Wastewater Reticulation – Concept Plan***



*Appendix Five      Water Concept Plans*





