

# North Ellenbrook

## Structure Plan

Project No: 18-203

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Revision	Description	Author	Date
0	Initial Issue	Philip Patterson	26 September 2018
1	Amended	Philip Patterson	14 November 2018



## 1 Introduction

The below represents a summary of engineering services, current planning in place, and availability of services to service the land north of the existing Ellenbrook townsite as identified on Rowe Group's "Various Lots North Ellenbrook" plan.

As planning for this area is in the preliminary stage, not a lot of planning has taken place so information in this report is based on information currently available from authorities and other sources.

In order to complete this assessment, Pritchard Francis acquired specific advice for power and communication servicing from 3E Consulting Engineers Pty Ltd and their information is included in this report.

## 2 Site Description

The site is located directly north of the Ellenbrook development about 30km north east of Perth CBD.

The proposed development is bounded by Railway Parade to the east, Maralla Road to the south, Halden Road to the west and Stock (West) Road to the north.

The development site has multiple land ownerships and the Perth – Darwin Highway passes through the developable land which will ultimately split the study site in half.

## 3 Aboriginal Heritage

The Aboriginal Heritage Act introduced in Western Australia in 1972 recognises the strong relationship that indigenous people have with the land. It identifies and provides protection to places and object in Western Australia that are important to the culture of aboriginal people. Based on the information obtained, it appears that the area is part of a registered site, Aboriginal Site 352S refer to Appendix One covers the majority of the proposed development area. This indicates the area has significance to the Aboriginal people and will require further investigation and reporting to determine and identify significant sites that may require protection or relocation.

## 4 Acid Sulphate Soils

The state government has produced mapping which identifies Acid Sulphate Soils. This plan identifies and risk areas and the level of risk expected. From information obtained for this development site, the majority of the developable area shows a moderate to low risk rating with some areas of high risk shown in isolated areas across the study area, see attached Appendix Two. It should be noted that the possibility of iron staining from use of groundwater is high risk for this development and coincides with the Acid Sulphate Soil Mapping and Risk Plan – Refer Appendix Three.

## 5 Topography

Based on Esinet mapping, land to the east is reasonably gently sloping, grading from about RL30m on the eastern boundary to RL40m about half-way across the study site.

Land on the western side is more undulating with steeper areas with ground levels ranging from RL40m on the eastern edge (middle of study area) RL70m on the western boundary – refer Appendix Four. The western area has more hilly like terrain.

## 6 Groundwater Level

Based on information available it appears that the depth below natural surface to the water table is about 4m below the surface and 55m to the base of the aquifer, see attached Appendix Five. This advice and mapping provides limited information and further work would be required to satisfy local authority requirements. This will involve additional water monitoring and reporting before signing off.



## 7 Utilities

### 7.1 Water Supply

There is a significant existing water supply infrastructure system that services the Ellenbrook townsite. This includes a Water Corporation overhead tank that is located 2.7km west of Ellenbrook and 3.8km south of the proposed DSP area. There are diameter 1200mm and 900mm trunk mains that cross the Tonkin Highway that feed smaller reticulation mains for distribution. Whilst there is currently no potable water supply servicing the DSP area, (or agreement between the Water Corporation as service provider and the proponents with regard to development and financing of these essential services), it is anticipated that reticulation extensions will come from this supply with alignment in future road reserves heading north to the structure plan area.

### 7.2 Wastewater Servicing (Sewerage)

The DSP area is currently outside the Water Corporations service area, however, the future planning has commenced to provide a servicing strategy for waste water.

The Water Corporation has recently undertaken conceptual wastewater planning for North Ellenbrook and the wider West Bullsbrook Industrial area which identifies the DSP within the Bullsbrook Sewer District. This wastewater planning allows for wastewater from both the east and west DSP's to be pumped from North Ellenbrook southwards into the Ellenbrook (Barrambie Way) Main transfer Water Pump Station ("WWPS"). This solution will require the construction of a 900mm diameter gravity sewer from the Barrambie Way WWPS northwards to a suitable high point to accept pumped flows from future station within North Ellenbrook. Capital funding for the sewer extension is currently not on the Water Corporations 5-year capital program. Should development proceed ahead of Water Corporation funding being allocated for the works, the proponent may elect to fully fund the extension of the necessary headworks infrastructure and WWPS.

### 7.3 Gas Supply

There is no gas supply in the proposed development area and until development is proposed a gas supply will not be investigated or planned but it is expected that an extension of the gas mains from Ellenbrook can and will be required to service the proposed development. Extension of these mains will be carried out as development progressed.

### 7.4 Power Supply

#### 7.4.1 Proposed Development / Load

Based on the size of the development area, a new zone substation is required. Western Power would require a 1ha site for the zone substation. Once an additional demand is requested, Western Power will investigate the requirement for the zone substation. The installation of these substations are standard for developments of this type and Western Power are familiar and cater for development expansion on a regular basis.

#### 7.4.2 Existing Network

This development area is currently serviced by the Muchea Zone Substation, which has spare capacity of just over 25MVA, and is located about 17km north of the site. The Network Planning Tool indicates limited expected load demand growth off that zone substation over the following few years, and thus no upgrades are planned. When development of the area proceeds, a review of the substation would be initiated and planning to service the development area would proceed.





Just south of this area, around Aveley / Ellenbrook the area is serviced by the Henley Brook Zone Substation off Gnangara Road, which is reaching the limit of its supply capacity. Some zone substation upgrade works are required at Henley Brook in order to be able to balance servicing in the area. If any of the land was to be serviced from this substation, Wanneroo Zone substation to the west may be able to provide some power and is about 20km away from the site.

Muchea Zone substation feeds the area through a 22kV HV aerial network up to the site. Based on the load that is to be connected to the overall network, a network upgrade will need to be considered and funded as part of this development – refer Appendix Six.

As a standard, network upgrades would be addressed through the HV pool of funds.

## **7.5 Communication**

### **7.5.1 Existing Telstra Network**

The Bullsbrook development falls within the Telstra Bullsbrook East Exchange area, which we understand parents on the Midland exchange – see Telstra Dial-Before-You-Dig (DBYD) attached – refer Appendix Seven. Telstra network throughout the area largely consists of direct buried cable with the occasional route incorporating P50 pipe. Direct buried cable pair counts on most routes typically total less than 50 pair, however a Telstra 24 Single Mode Optical Fibre (SMOF) does route adjacent to the Railway Reserve. This cable however is likely dedicated to Telstra's interexchange network and would most likely not be released for direct customer use.

Telstra's 4GX mobile network provides indoor coverage over the new development area and could deliver reasonable download speeds with the current population density but would need significant upgrade to provide for the expected demand. The Optus mobile network provides 4G outdoor coverage. See coverage maps below

### **7.5.2 Existing Nextgen Network**

Nextgen own a 96 direct buried SMOF on or near the rail reserve, which is dedicated to inter-capital use and would most likely not be allocated to customer use – see Nextgen DBYD attached – refer Appendix Eight.

### **7.5.3 Existing NBN Co Network**

NBN Co have already provided Fixed Wireless to over half of the development but it currently falls outside the NBN Co's Fixed Line Footprint. We understand that there is no NBN Co fixed line infrastructure within the development.

### **7.5.4 Proposed Telstra Network**

Telstra are effectively ruled out of providing voice and broadband infrastructure by Federal Ministerial policy, for a new development of this size, within the Fixed Line Footprint, but would be able to compete with NBN Co and other niche providers for point to point fibre bases services.



### 7.5.5 Proposed NBN Co Network

Developers have two obligations in relation to communications. Firstly, to provide fibre ready pit and pipe and secondly to provide telecommunications infrastructure. The Federal government, in its telecommunications policy statement on new developments, has determined that Telstra and NBN Co must function as Infrastructure Providers of Last Resort (IPoLR's), should Developers wish to engage them for telecommunications infrastructure. However, Developers have the choice of engaging the services of competitors, such as Opticomm or LBN, should they wish. The nearest portion of the Fixed Line Footprint is Bullsbrook town site to the north east and the Vines to the south of Maralla Road. Whilst the new development is currently regarded as a country area, where Telstra is the IPoLR for voice and NBN Co for broadband, NBN Co would most likely reclassify this area to fall within their Fixed Line Footprint, in which case NBN Co would be IPoLR for both voice and broadband infrastructure. Given the possible yield of the development, NBN Co must accept IPoLR responsibility, should the Developer wish to engage them. If engaged, NBN Co would most likely service the development with Fibre to the Premises (FTTP) technology, however, if there were areas of lower density, say 4 hectare lots, then NBN Co may elect to service those with Fixed Wireless, as FTTP may be uneconomical.

NBN Co charge for telecommunications infrastructure on a partial cost recovery basis, which normally works out at a reasonable cost to Developers, when compared to other alternatives. We are not aware of any reason as to why the Developer should not engage NBN Co for telecommunications infrastructure and recommend such engagement. NBN Co levy two infrastructure charges, a Deployment Charge of \$600/premise for single residential services or \$400/premise for Multi Dwelling Units and a Backhaul Charge, where there is insufficient infrastructure.

The first development within this precinct will need to negotiate with NBN Co charges for Backhaul if any at all.

### 7.6 Conclusion

Limited planning has been carried out across the study area at present, however, agencies have commenced planning or intend to commence planning in early 2019.

There is no noted shortfall in regional infrastructure or constraints that would prevent development of this land.



## Appendices

Appendix One:	Aboriginal Heritage Area
Appendix Two:	Acid Sulphate Soil Risk Map
Appendix Three:	Iron Staining Risk Map
Appendix Four:	Existing Ground Contours
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## Appendix One:

## Aboriginal Heritage Area



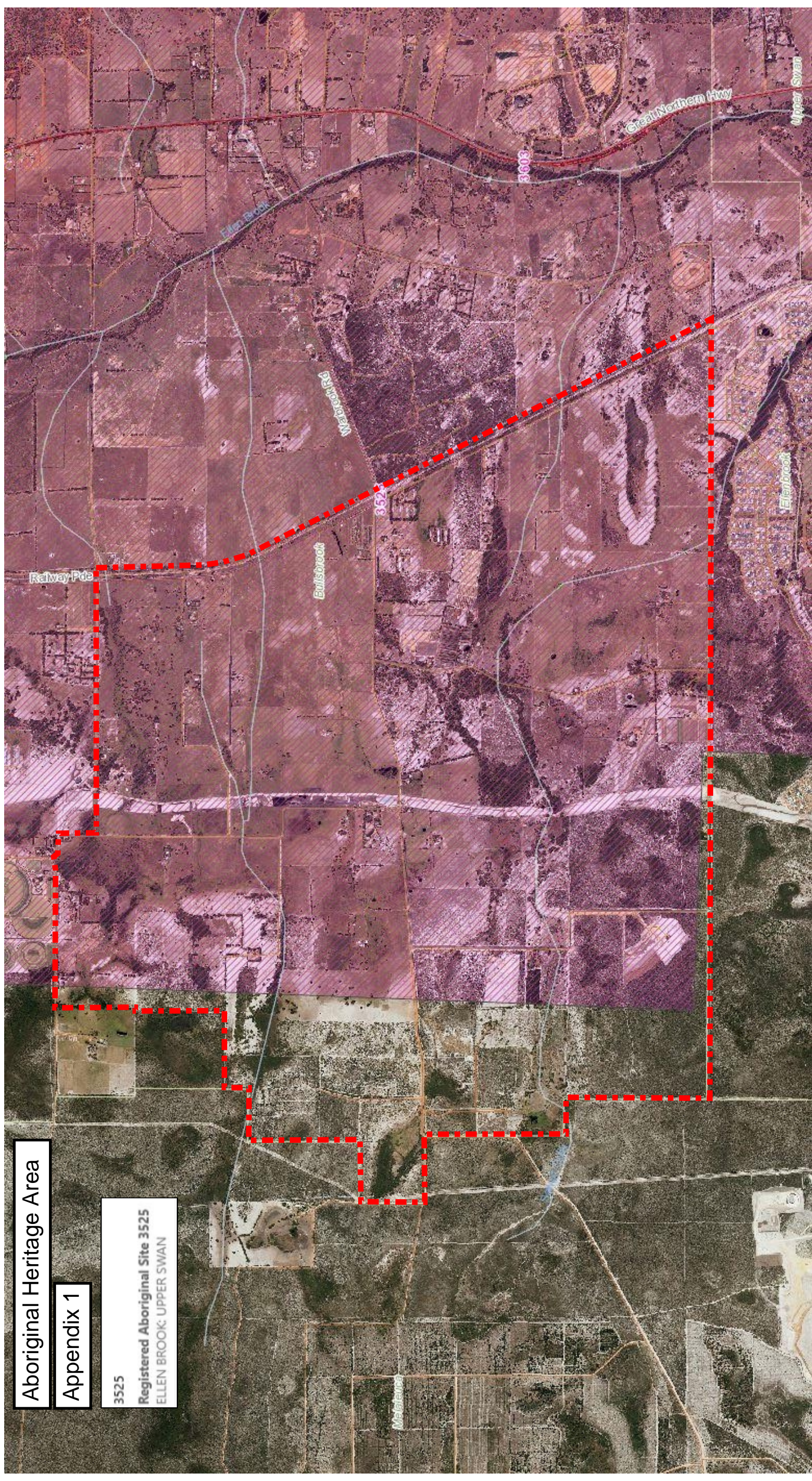


Aboriginal Heritage Area

Appendix 1

3525

Registered Aboriginal Site 3525  
ELLEN BROOK: UPPER SWAN





## Appendix Two:

## Acid Sulphate Soil Risk Map



## Acid Sulphate Soil Risk Map

## Appendix 2

## Legend

## Transport

Roads (Simplified) (LGATE-195)

Freeways &amp; National Highways



Freeway



National Highway



State Highway

Main Roads



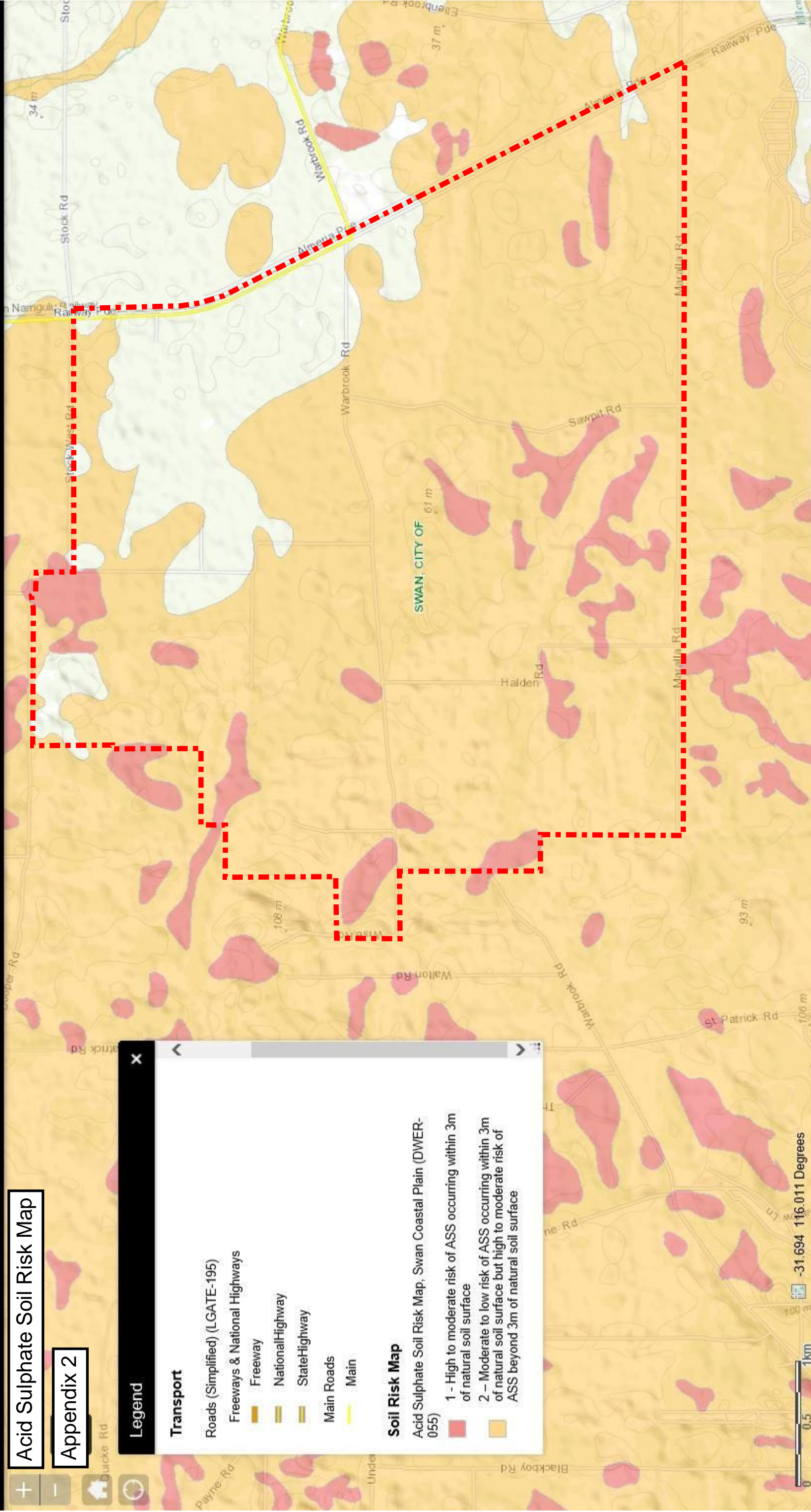
Main

## Soil Risk Map

Acid Sulphate Soil Risk Map, Swan Coastal Plain (DWER-055)

1 - High to moderate risk of ASS occurring within 3m of natural soil surface

2 - Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface



## Appendix Three:

## Iron Staining Risk Map

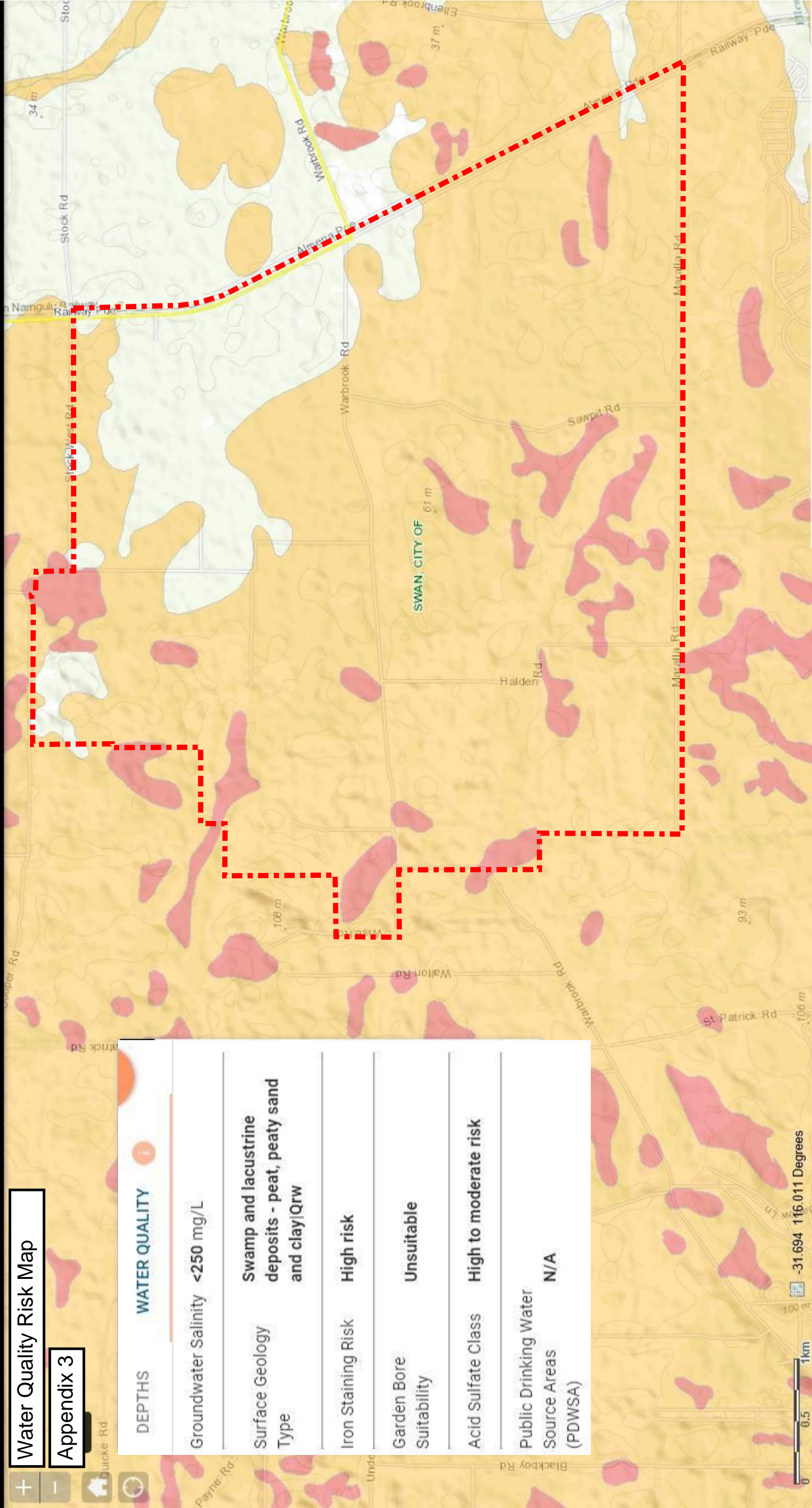




Water Quality Risk Map

Appendix 3

DEPTHS	WATER QUALITY
Groundwater Salinity	<250 mg/L
Surface Geology Type	Swamp and lacustrine deposits - peat, peaty sand and clay Qrww
Iron Staining Risk	High risk
Garden Bore Suitability	Unsuitable
Acid Sulfate Class	High to moderate risk
Public Drinking Water Source Areas (PDWSA)	N/A



## Appendix Four:

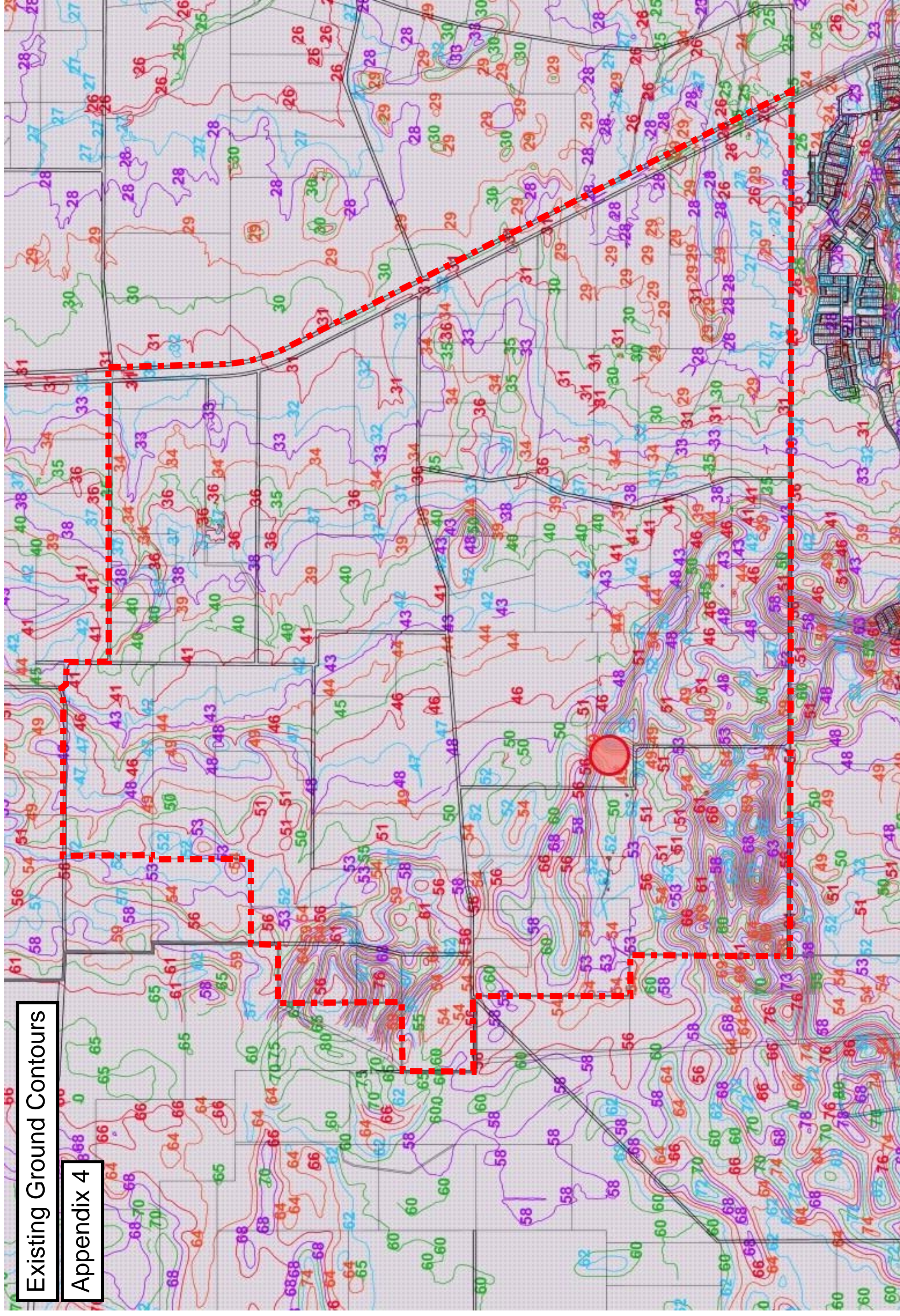
## Existing Ground Contours





# Existing Ground Contours

## Appendix 4





## Appendix Five:

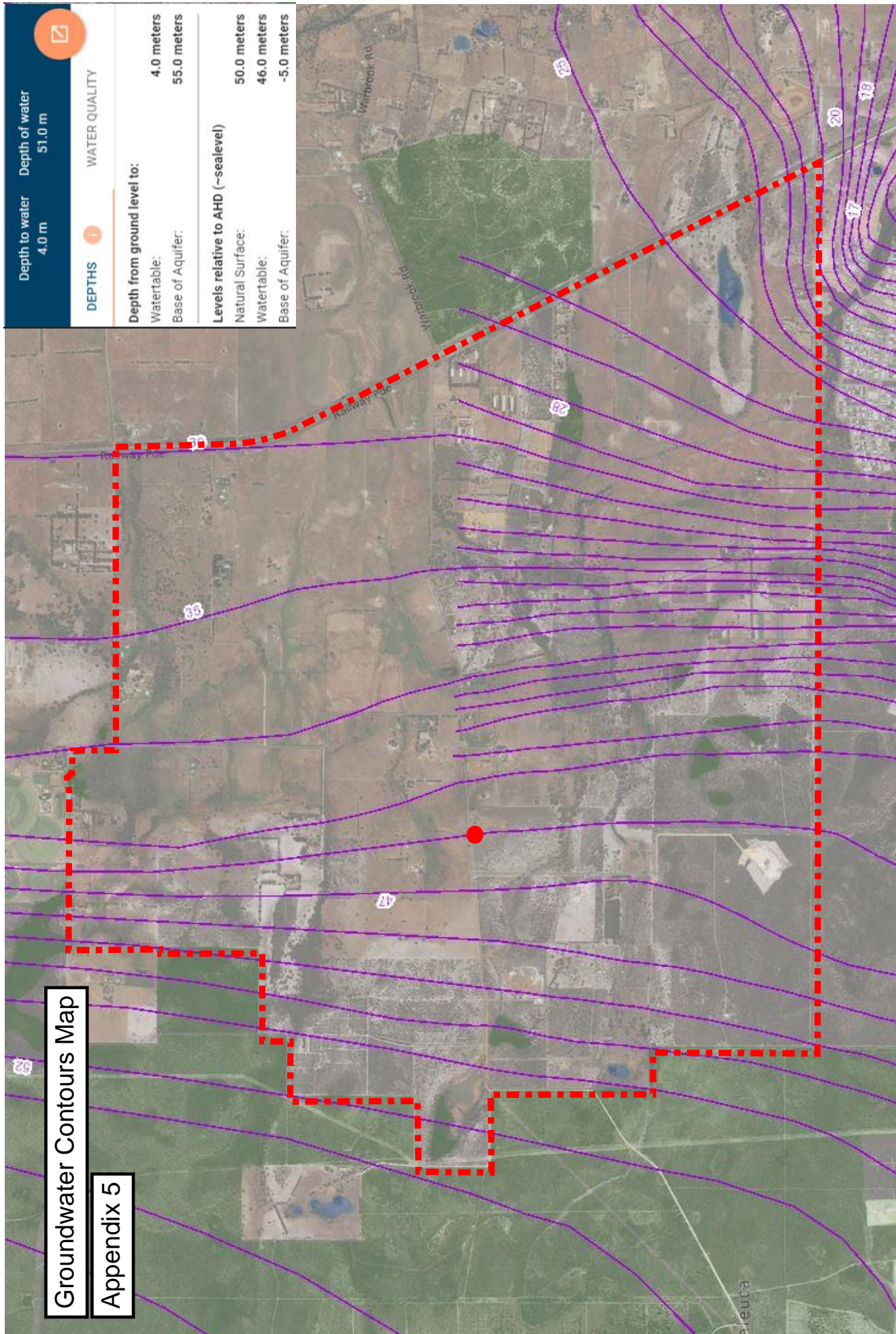
## Depth to Groundwater Mapping





# Groundwater Contours Map

## Appendix 5



## Appendix Six:

## Power (Substation Location)





Power (Substation Locations)

Appendix 6

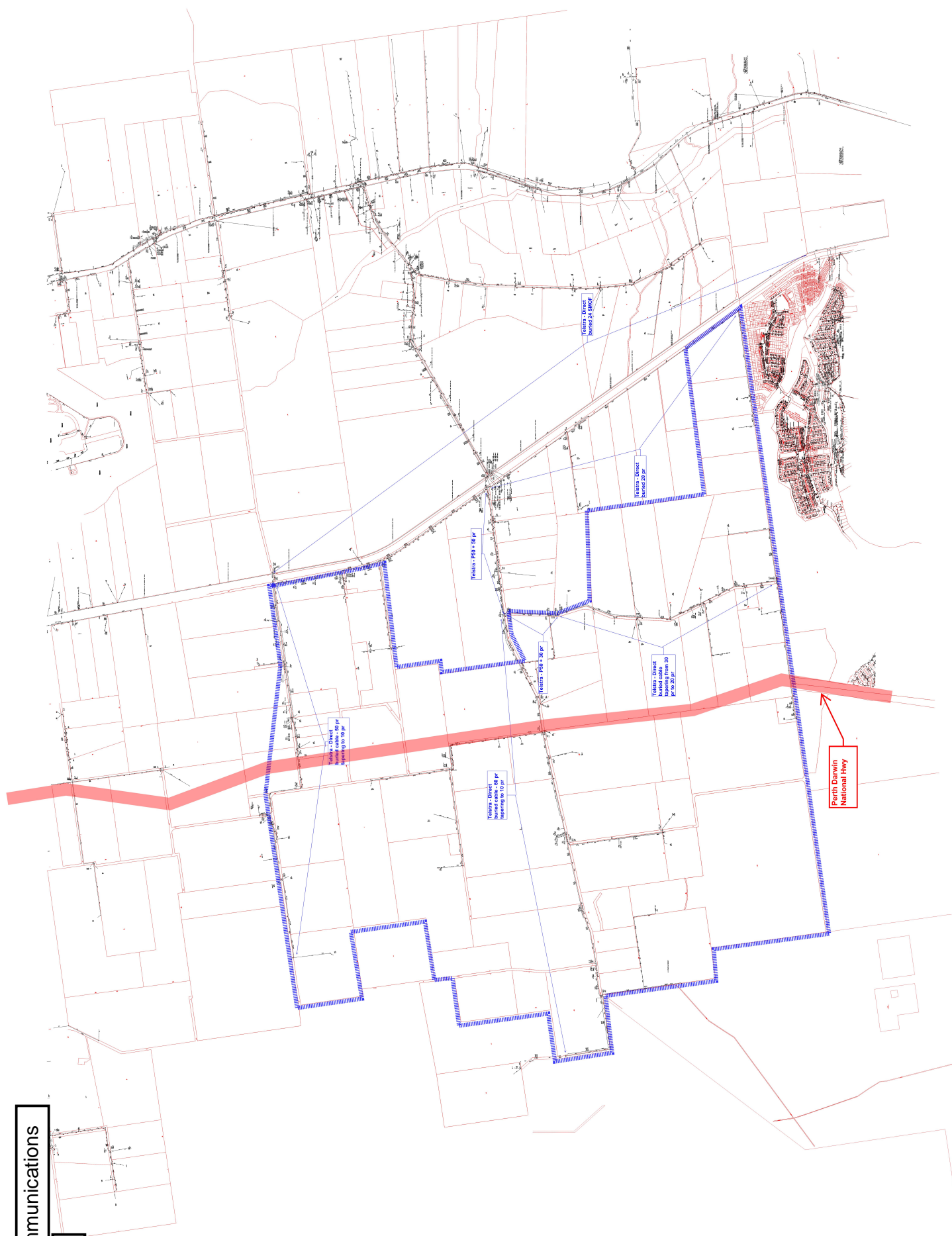


## Appendix Seven: Existing Telstra Mapping





## Appendix 7



## Appendix Eight:

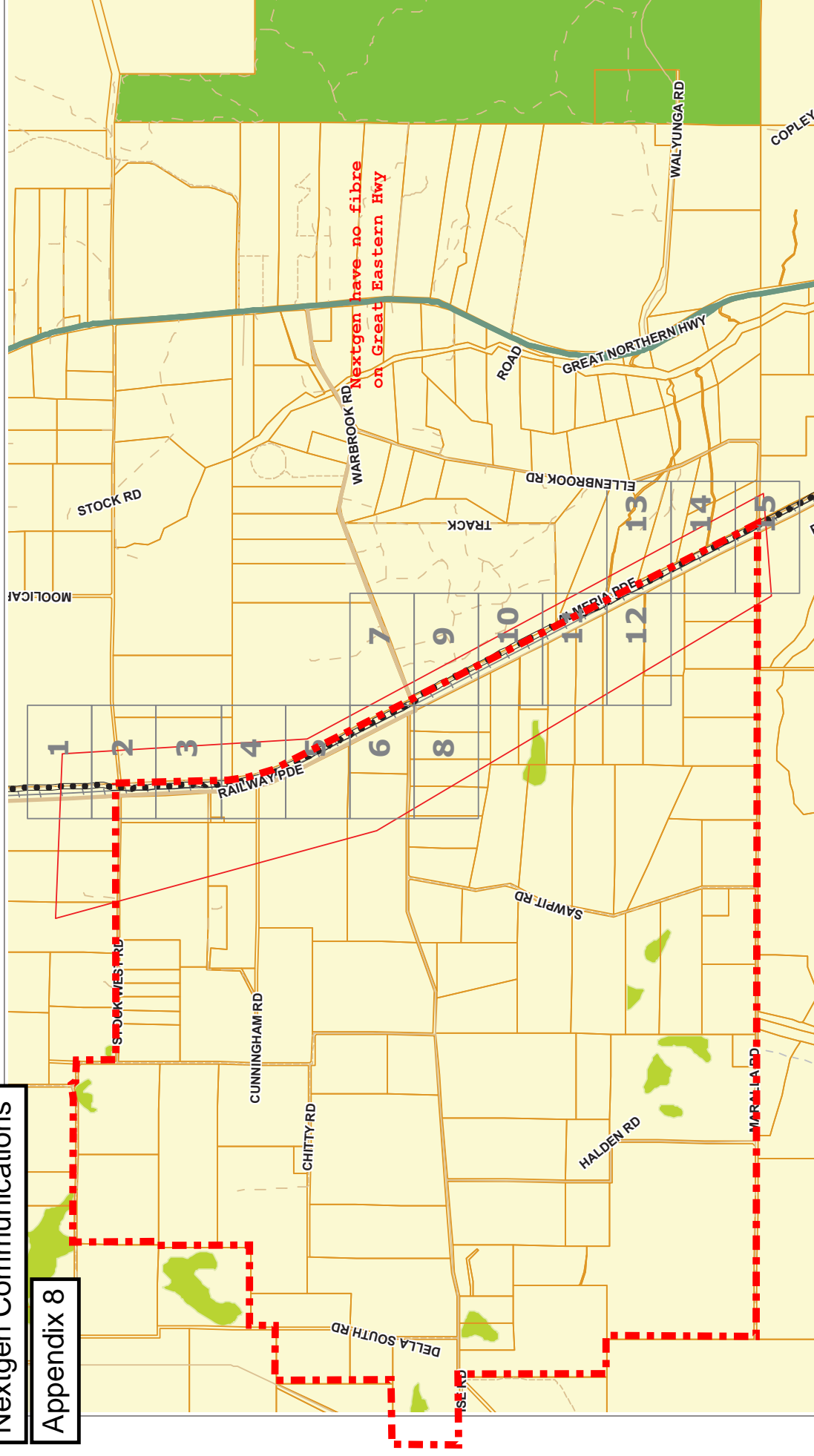
## Nextgen Mapping



Nextgen advise 96 SMOF direct buried,  
Intercapital route, ~70% utilisation Aug 2018, ~10% reserved, ~20% spare

## Nextgen Communications

### Appendix 8



Sequence Number: 74298402

Date: 09/08/2018

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#### LEGEND

Digsite	Assets
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Line	3rd Party Duct
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