

Lot 5131, Jandakot Road, Treeby

Engineering Infrastructure Report

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Date: 14 June 2021
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Revision

Revision	Date	Comment	Prepared By	Approved By
0	14 June 2021	Original Issue	Lauren de Verteuil	Jermayne Fabling

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1. Background

Stantec Australia Pty Ltd have been engaged by Perron Developments Pty Ltd to undertake an assessment of civil infrastructure requirements for the development of Lot 5131 Jandakot Road Treeby.

The purpose of this report is to outline the servicing strategy as supplementary information for the adoption of a Local Structure Plan.

In summary, Lot 5131 Jandakot Road can be serviced by the construction, upgrade and/or extension of service infrastructure to the site.

2. Earthworks

The final earthworks levels for the site are a complex combination of geotechnical, hydrological, planning, environmental, engineering design and marketing factors.

The existing topography of the site varies in elevation from RL28m on the eastern boundary of the site to RL40m on the northern boundary of the site, with undulation varying between these levels over the site. The gradient available provides the subject land with the flexibility to orientate the home sites to suit passive solar orientation and to obtain some cut material, together with imported fill material to achieve required lot levels to suit clearance to groundwater and storm event flood routing.

This site is located in an area of Moderate to Low Risk of Acid Sulfate Soils occurring within 3m of the ground surface, as shown in the Western Australian Planning commission's Planning Bulletin No. 64 (Acid Sulfate Soils).

A hydrogeological investigation has been previously undertaken for the site by JDA Consultant Hydrologists, which detailed a typical subsurface profile of Bassendean Sands overlaying cemented "coffee rock" at depth may be encountered. It is anticipated this would result in a site classification of Class A in accordance with AS2870-2011.

Market forces are currently in favour of the provision of flat building sites with retaining walls to accommodate level differences. It is anticipated that lots will be designed with a maximum of 500mm front elevation from the verge level, with retaining walls installed for greater elevations.

Final earthwork levels will be designed to accommodate market requirements together with ensuring adequate clearance to the 1% AEP storm event level for the local and district drainage network, providing adequate clearance to groundwater and ensuring roadway geometrical design incorporates flood routing constraints. Sufficient site levels will be required to be provided for the operation of gravity sewer connections.

3. Stormwater Drainage

The Better Urban Water Management requirements for Western Australia prescribes that storm water drainage design ensures that the post development flows are maintained to the predevelopment levels specified, as well as incorporating best practice water sensitive urban design.

It is proposed that minor drainage events (typically less than 20% AEP) discharge via a piped drainage network to drainage treatment train systems with water quality structural controls. Major storm events (those in excess of the 20% AEP and up to the 1% AEP) are to be conveyed via roadways to detention/soakage systems within public open space.

A Local Water Management Strategy for the site has been completed by JDA Consultant Hydrologists. The Local Structure Plans developed for the development will incorporate storm water detention requirements of this Local Water Management Strategy, with POS locations selected to logically and sympathetically cater for proposed catchments.

Individual lot levels will need to have sufficient clearance to the average annual maximum groundwater level to achieve the desired site classification.



4. Roadworks

Lot 5131 Jandakot Road is bounded by Jandakot Road (to the north) and Solitaire Road South for a portion of the eastern boundary.

The development of Lot 5131 will include the realignment of Jandakot Road for the frontage of the site. The realignment has generally been shown in accordance with discussions held with City of Cockburn. The upgrade of Jandakot road for the frontage of Lot 5131 includes a full connection to the proposed roundabout at Solitaire Road and a transition back to the existing single carriageway prior to the right turn lane at Skotsch Road. The proposed upgrade is for a kerbed dual 8.5m wide dual carriageway with a 6m central median island with brick paved median island noses.

Solitaire Road has recently been constructed to the eastern boundary of the development. This includes a roundabout at the intersection of Torwood Avenue which provides direct road access to the site.

Roadways within the development area would be constructed in accordance with the configurations established as part of the traffic engineering requirements of this proposal and the City of Cockburn standard requirements. Road pavement configuration would be designed in accordance with specific geotechnical advice.

5. Wastewater

Wastewater disposal for Lot 5131 will be by separate Northern and Southern wastewater catchments, in accordance with the Water Corporation's wastewater planning. Disposal of wastewater within each respective catchment will be achieved via a network of gravity reticulation sewers.

The northern catchment is provided with an existing gravity wastewater connection at the intersection of Torwood Avenue and Solitaire Road, as shown within Appendix A.

The southern catchment will be provided with a gravity sewer connection discharging to proposed Jandakot Wastewater Pumping Station B located within Lot 705, Armadale Road, Treeby. This pumping station is currently being designed and is proposed to discharge to an existing gravity sewer located in Ghostgum Avenue, Treeby. The attached catchment plan shown with Appendix C details the Southern catchment of lot 5131.

The Local Structure Plan for the development has been designed to have a layout sympathetic to the landform, while providing very direct links through the development to the wastewater pumping station to ensure minimisation of sewer extent and depth.

6. Water Supply

The Water Corporation have undertaken conceptual water supply planning, as an extension of the Thomson Lake Gravity Supply Scheme. This indicates that provision of a DN375 water main extension from the existing DN760 water distribution main crossing Liddelow Road south of Armadale Road and the provision of DN500 water main extension from the existing DN760 water distribution main to Armadale Road, becoming a DN375 within the DSP area. Details of the Water Corporation's preliminary water planning is shown in Appendix D.

An existing DN250 water reticulation pipe located at the roundabout intersection of Torwood Avenue and Solitaire Road that is proposed to service the development of Lot 5131, ultimately this would link back to the reticulation mains constructed as part of Lot 705 Armadale Road, Treeby, as shown within Appendix B.

Provision of a potable water supply to individual lots would be achieved the construction of a network of DN100 to DN200 throughout the internal road network of the landholding.



7. Underground Power

Power supply to Lot 5131 Jandakot Road can be achieved via expansion and/or upgrading of Western Power's network in the vicinity of the site. There are currently 22kV high voltage overhead power lines installed in Jandakot Road to the east of the site. There is also existing underground high voltage infrastructure that has been constructed as part of the adjacent Calleya development.

An underground network will be progressively constructed through the proposed subdivision with interconnected switchgear and transformers located about the site being reticulated as a low voltage underground network connecting to each lot.

It is anticipated that the existing overhead power lines located in Jandakot Road adjacent to the development will be removed and replaced by underground power cables as part of the development works.

8. Telecommunications

Recent amendments to the *Telecommunications Act 1997* (Cth) give developers the option of choosing a provider other than NBN Co for telecommunications infrastructure.

In this case NBN has already been installed within the Calleya development and it is expected that the NBN network would be extended to the site. An underground network of NBN cabling (in a common trench with underground power) would be progressively constructed through the proposed land parcel with fibre distribution hubs located about the site as required.

9. Gas

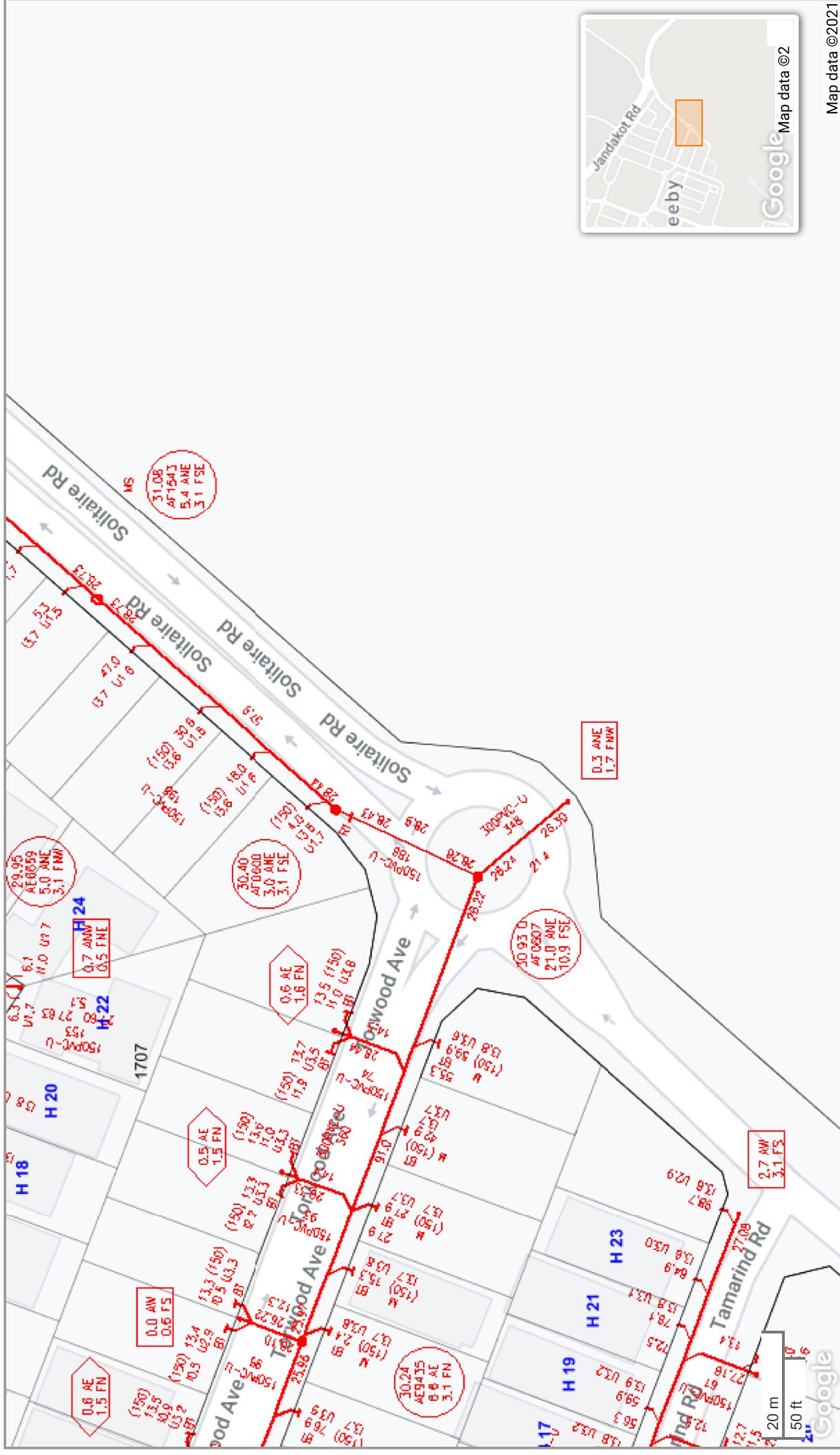
It is anticipated that ATCO Gas will service this development by the internal reticulation of natural gas about the subdivision, utilising a common trench with water reticulation being provided by the developer, connecting to the existing gas mains adjacent to the site.



Appendix A ESINET Existing Wastewater Services



ESINET - Existing Wastewater Services



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Appendix B ESINET Existing Water Services



ESINET - Existing Water Services

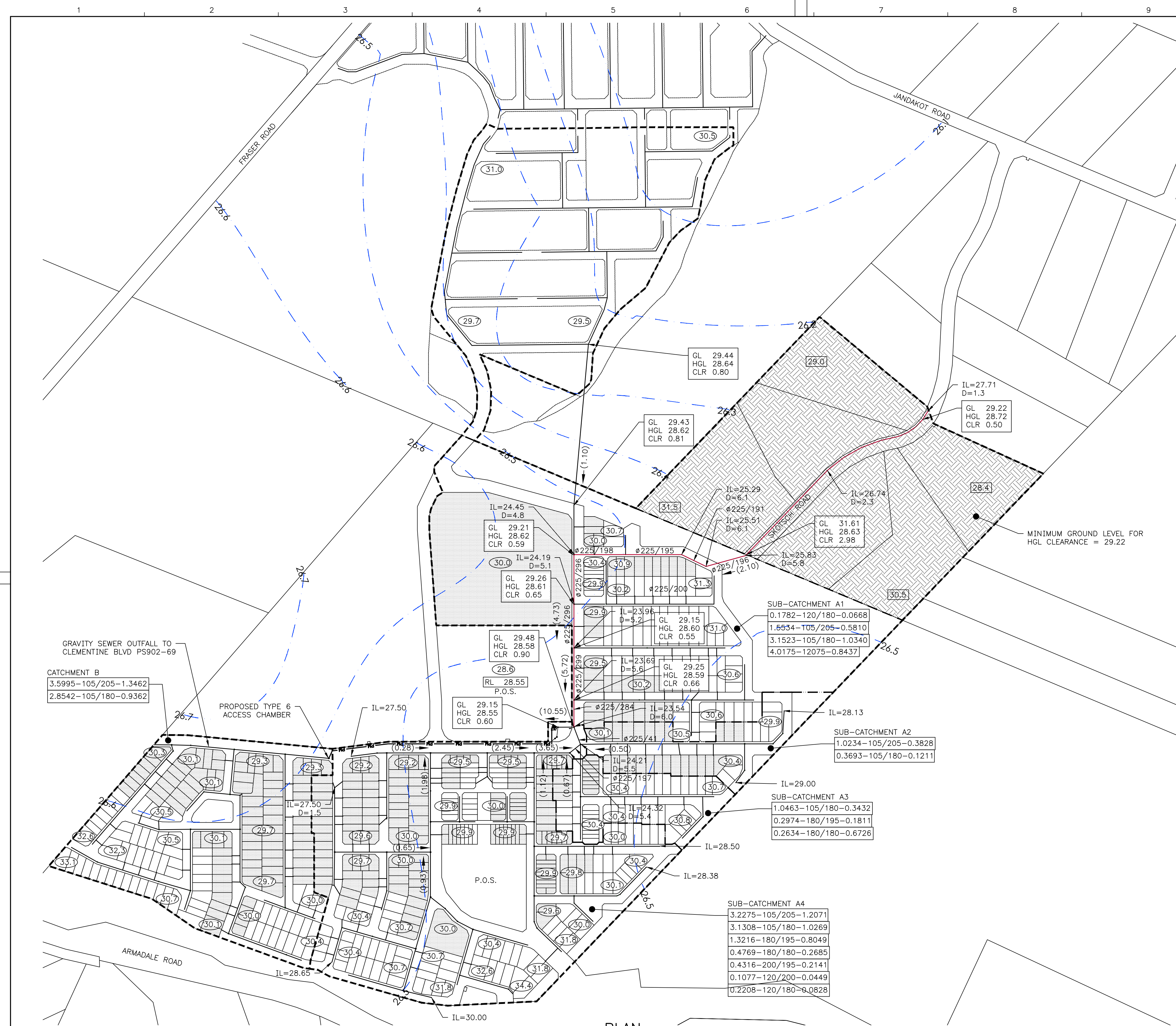


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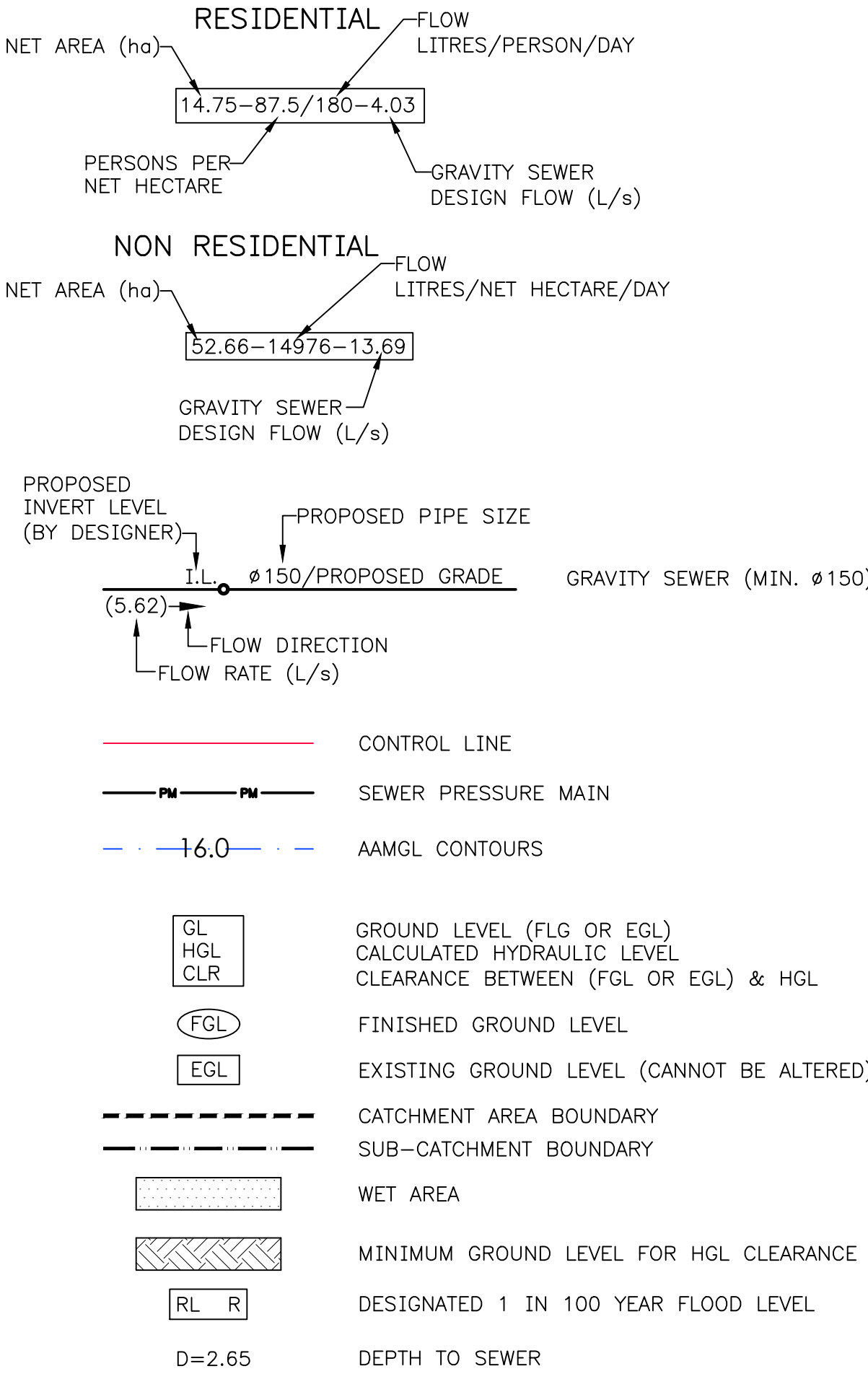
Appendix C Southern Catchment Plan of Lot 5131, Jandakot Road, Treeby





PARAMETERS JANDAKOT WWPS 'B'		ULTIMATE
GROSS CATCHMENT AREA:		71.12 ha
NET CATCHMENT AREA:		36.20 ha
MAXIMUM INFLOW TO PUMPING STATION:		10.55 L/s
PUMPING FLOW RATE(S):		14.03 L/s
STORAGE TIME IN SEWERAGE SYSTEM AT ULTIMATE GRAVITY SEWER DESIGN FLOW CONDITION BETWEEN HIGH LEVEL ALARM LEVEL 22.24 AND INVERT LEVEL 28.55 OF EMERGENCY OVERFLOW PIPE (OVERFLOW TO ENVIRONMENT).		2.77 hrs
STORAGE VOLUME OF WET WELL BETWEEN CUT OUT-AT LEVEL 21.45 AND ULTIMATE DUTY CUT-IN LEVEL 22.09		7200 L
BASED ON 5 STARTS/HOUR (3 MIN STORAGE AT PUMP RATE) THIS IS SUITABLE FOR A MAXIMUM PUMPING FLOW RATE OF:		40 L/s
TOTAL STORAGE VOLUME		110m³
- SYSTEM STORAGE VOLUME		-
- STORAGE TANK VOLUME		-
ODOUR BUFFER RADIUS (FROM CENTRE OF WET WELL)		30m

LEGEND



- NOTES:
- EXISTING GROUND CONTOURS FOR LOTS 69-73 SKOTSCH ROAD SOURCED WATER CORPORATION ESINET INFORMATION AND IS SUBJECT TO FEATURE SURVEY AND DETAILED DESIGN.
 - EXISTING GROUND CONTOURS FOR LOTS 705 AND 707 ARMADALE ROAD AND LOT 5131 JANDAKOT ROAD SOURCED FROM STANTEC DESIGN INFORMATION.
 - FLOOD AND GROUNDWATER INFORMATION FOR LOTS 705 & 707 ARMADALE ROAD, TREEBY SOURCED FROM URBAN WATER MANAGEMENT STRATEGY BY JDA CONSULTANT HYDROLOGIST, REPORT J6889a DATED NOVEMBER 2020.

A1

ISSUED FOR APPROVAL

STN REV

DESCRIPTION

JN

DRAWN

VER

APPO

DATE

566

ISSUE

DATE

GRID

REVISION

DRN

REC

APPD

DESIGN SURVEY

NONE

ASCON SURVEY

NONE

VERTICAL DATUM

AHD

COORDINATE SYS

MGAS4-50

DES REF

25421

DES CALC

J.NGUYEN

DES CHD

J.FABLING

DRN

L.BRISCAN

Q.C. CHD

J.NGUYEN

NORTH POINT

RECOMMENDED

J. NGUYEN

RECOMMENDING ENGINEER

APPROVED

J. FABLING

APPROVING PROJECT ENGINEER

METROPOLITAN WASTEWATER WAPC 159402

JANDAKOT PUMPING STATION NO. B - NORTHPARK PDE & PM

CATCHMENT PLAN

FILE

PLAN

PROJECT CS03648

XX##-95-1

CAD

ISSUE

A

MF

ORIGINAL SHEET SIZE

A1

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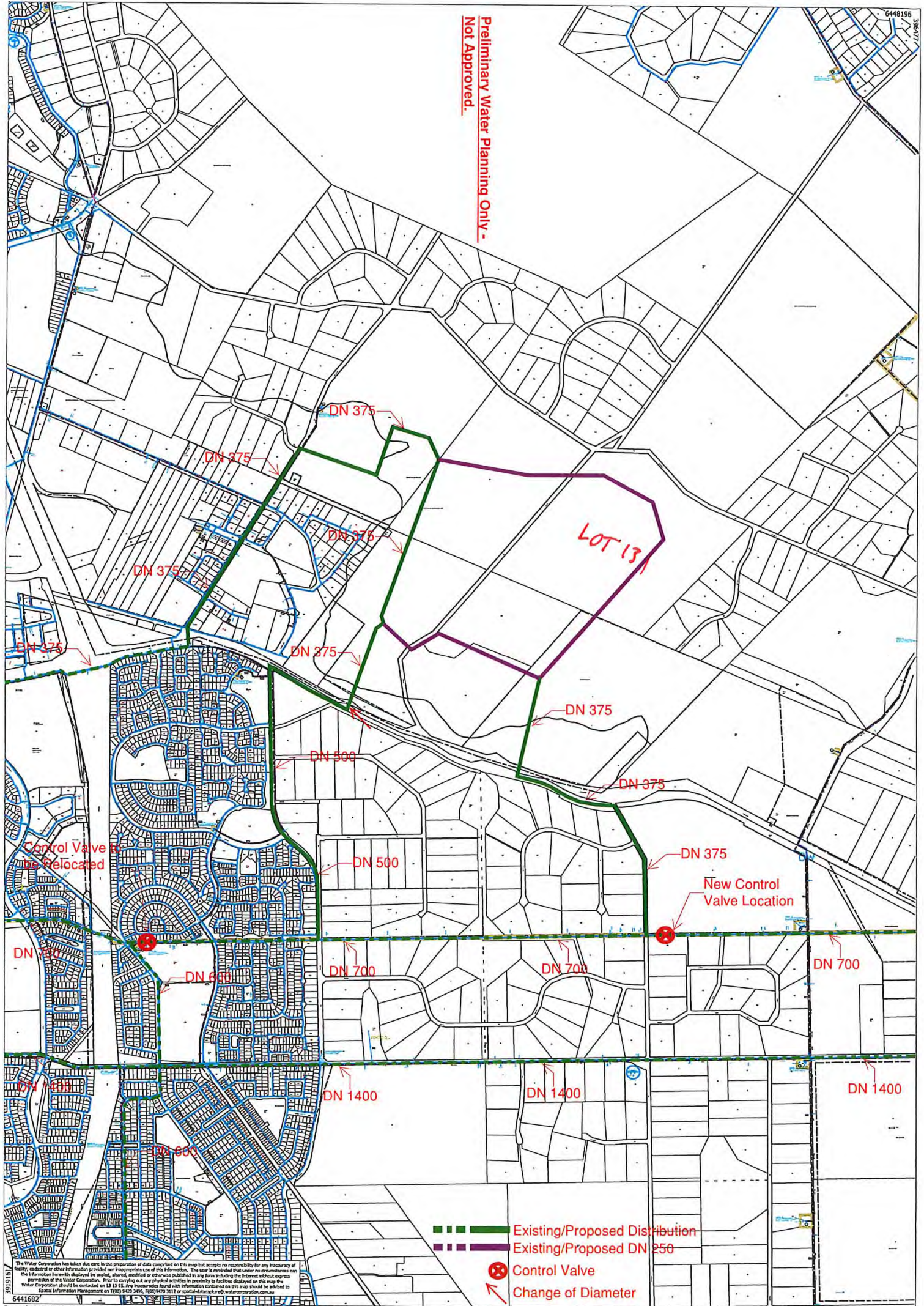
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Appendix D Water Supply Planning



Preliminary Water Planning Only -
Not Approved.



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