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Engineering Servicing Report

West Coast Drive, Sorrento

Megara

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May 2022

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DOCUMENT REVIEW				
Revision	**Date Issued**	**Issue Type**	**Written By**	**Approved By**
Rev A	08/02/22	Issued for Client Review	MS	JG
Rev B	08/02/22	Updated with Client Comments	MS	JG
Rev C	12/05/22	Updated with Client Comments	MS	JG

1 Introduction

JDSi Consulting Engineers have been engaged by Megara to assess the Engineering constraints and opportunities associated with a mixed use 8 storey development on Lots 2 & 149 West Coast Drive, Lot 148 The Plaza, Lots 146 & 147 Padbury Circle, and Lot 145 Drakes Walk, Sorrento (the Site), refer Figure 1 below.

Based on preliminary information provided by the Client, the Development is likely to include establishment of a ground floor commercial area and a multi-storey residential unit development.

This report assumes the following Development yield:

- Multi storey mixed use building containing 8 levels.
- A commercial site of 1000 - 1500m² capable of facilitating a number of separate uses.

The key objectives of this report are to:

- Document existing infrastructure assets in the immediate vicinity of the site.
- Advise on infrastructure requirements for the planned development.
- Demonstrate the development can be serviced in the short to medium term.
- Advise on the implementation of key infrastructure requirements.
- Demonstrate existing road networks and planned road networks are cable of supporting the development in the short to medium term.

This report covers the engineering infrastructure requirements to service the proposed Development. JDSi have considered earthworks, roads, stormwater drainage, wastewater, potable water and utility services with a particular emphasis on the existing service capacity and the potential infrastructure upgrades required to support the proposed development.

The report has been largely based on a desktop study of existing services information, aerial imagery, preliminary advice from the various service authorities, industry standards and policies and JDSi's in-house experience related to other developments in the area. The information is current as of January 2022 and may be subject to change as development progresses in the area.

Figure 1: Site Location

2 Study Area

The site is located approximately 22km north of the Perth CBD and 1km south of Sorrento Quay. The site is within the municipality of the City of Joondalup.

The Site is bounded by West Coast Drive to the west, The Plaza, Padbury Circle and Drakes Walk to the North, existing residences to the east, and an existing service station to the south. The site is currently occupied by a mixture of commercial properties, with one residential property and one vacant lot. (refer Figure 1).

The site has a combined land area of 0.58 ha and is currently zoned “Centre” under the City of Joondalup Local Planning Scheme No. 3.

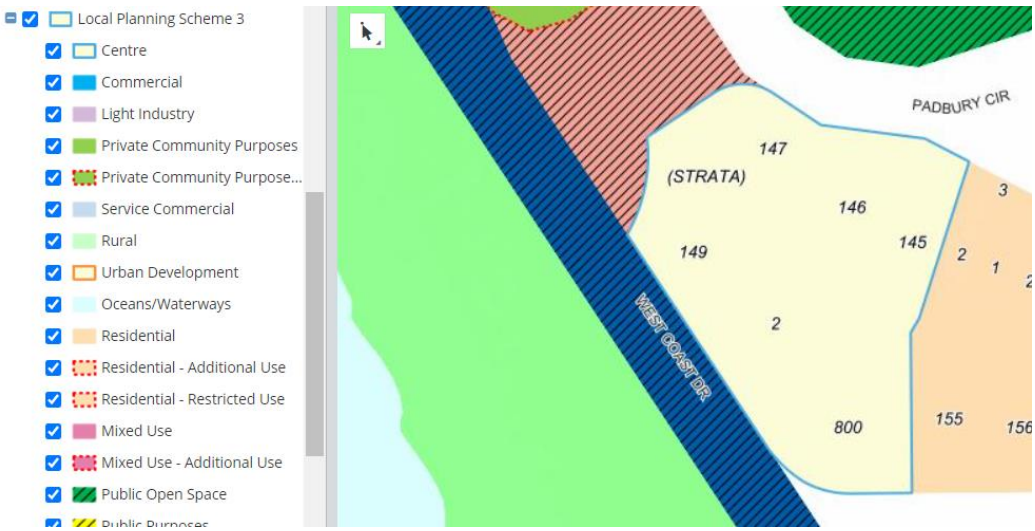


Figure 2: Local Planning Scheme

2.1 Topography

The Site is a trapezoid shaped parcel of land with surface elevations across the site ranging from approximately RL 12m AHD in the eastern portion of the site to approximately RL 4.5m AHD in the western portion of the site (refer Figure 3).

The feature survey of the site will require review for completeness prior to detailed design for the development including service potholing.

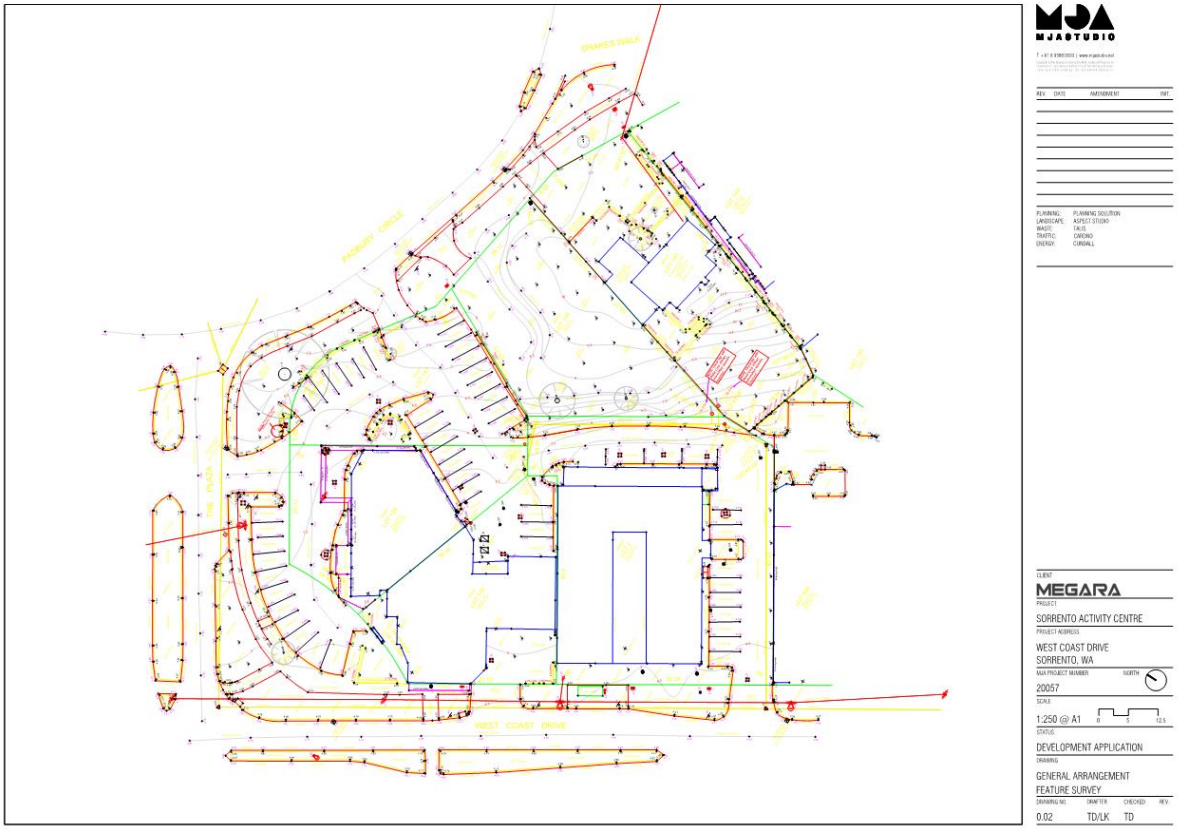


Figure 3: Site Topography (Feature Survey supplied by Megara/MJA Studio)

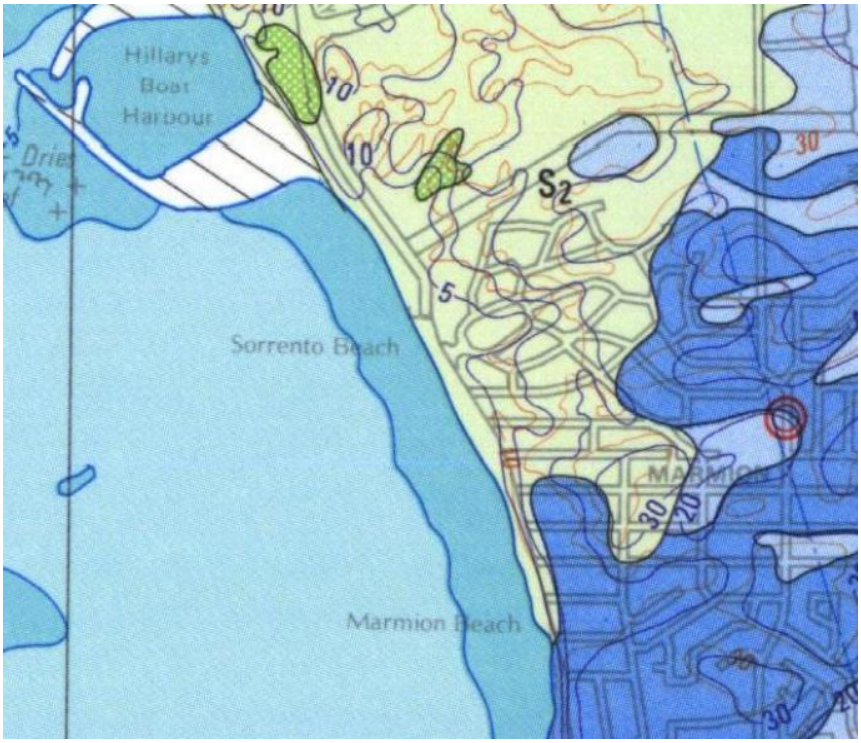
2.2 Groundwater

Based on information available from MNG Access, groundwater levels are at approximately RL 1m AHD. JDSi understand that a basement at RL 2.0m AHD is a proposed option for the development, therefore groundwater levels will need to be further investigated. It is recommended that specialist consultants to be engaged to confirm maximum groundwater levels for the Site and this is considered as part of the structural design for the development.

2.3 Geological Conditions

The published geological map (Perth, 1:50,000 Environmental Geology Series) indicates the subject site is located on the Swan Coastal Plain within the Spearwood dune system, an area characterised by low dunes of calcareous sand of eolian origin.

Due to the proximity of limestone and potential basement excavation requirements, it is recommended a further geotechnical study is undertaken to confirm underlying soil characteristics

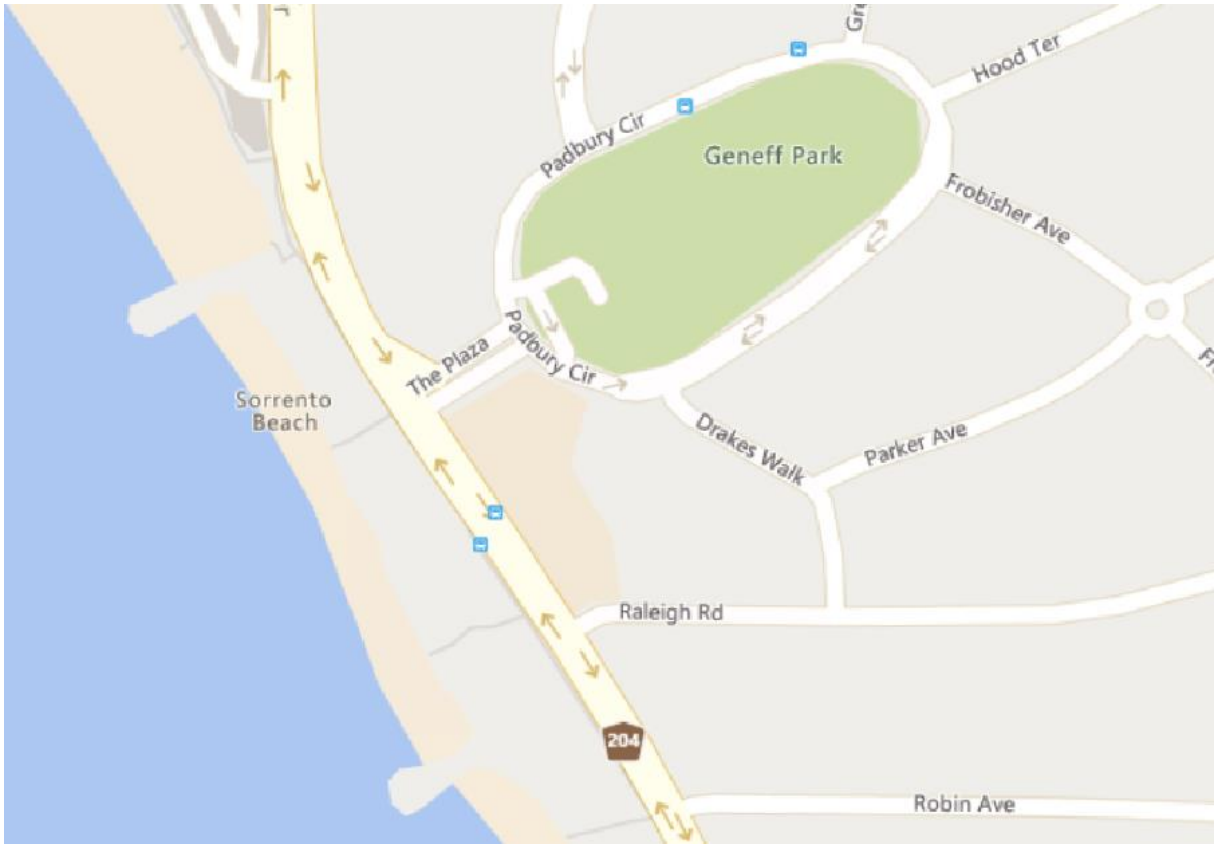


S_1		CALCAREOUS SAND – white, fine to medium-grained, sub-rounded quartz and shell debris, of eolian origin	Safety Bay Sand (Qhs)
S_2		CALCAREOUS SAND – as S_1	
	LS	LIMESTONE – pale yellowish brown, weakly cemented, friable, medium-grained, sub-rounded quartz and shell debris, of eolian origin	

Figure 4: Geological Context (Perth, 1:50,000 Environmental Geology Series)

2.4 Acid Sulphate Soils

Mapping compiled by Department of Water and Environmental Regulation indicates the site has no known risk of ASS within 3m of the surface (refer Figure 5). Regardless it is recommended a high-level investigation into the occurrence of ASS should be included in a future geotechnical and environmental investigation to ensure any risks of encountering ASS are mitigated.



User Data
Risk Class
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

Figure 5: ASS Risk Map (DWER Data)

3 Earthworks and Demolition

3.1 Demolition & Clearing

- No review of demolition and clearing was undertaken as part of this servicing report.

3.2 Earthworks and Retaining Walls

All earthworks will need to be undertaken in accordance with recommendations from a detailed Geotechnical Investigation and AS3798 '*Guidelines on earthworks for commercial and residential developments*'. Due to the grades across the site it is anticipated that retaining walls will be required, or level differences will be taken up in the built form. This is subject to further detailed design and will depend on layouts, setbacks and finished floor levels.

The magnitude of earthworks to be undertaken and the final earthworks levels will be dictated by the following:

- A detailed Geotechnical Investigation, including any recommendations.
- The requirement to contain stormwater drainage onsite and applicable levels for this to be achieved. This is subject to further advice provided by the hydrologist and will be verified during preliminary design.
- Drainage outfall levels for the stormwater drainage system and industry standard requirements for free-board from the finished floor level to the 1:100 flood level. This is subject to further advice provided by the hydrologist and will be verified during preliminary design.
- The invert level of the existing gravity sewer mains that the development will discharge into.
- Interface and coordination with the existing levels of the adjacent road network, including allowances for vehicle and pedestrian access.
- Rationalisation of any required retaining walls.

It is anticipated that the earthworks can be undertaken onsite utilising standard civil construction equipment, however the potential for limestone and hard digging cannot be excluded without further geotechnical investigations.

4 Sewer Reticulation

The Water Corporation owns and maintains the sewerage reticulation system in the vicinity of the Site. Any connection into this system will need to be designed, approved and constructed in accordance with standard Water Corporation requirements. Any internal plumbing works on the Site will need to meet the requirements of AS3500 '*Plumbing and drainage'* as documented by the Building Services consultant.

Based on Water Corporation Esinet data there is an existing DN225 PVC gravity main on the eastern side of West Coast Drive and southern side of The Plaza. In addition, there is an existing DN150 PVC gravity main running through Lot 2 which currently serves all existing lots within the site, as well as the existing service station on Lot 153/Lot 154 (refer Figure 6).

Based on a preliminary review, the existing sewer mains are sufficient to service the Site at its current proposed ground level of RL4.30 AHD. A DN150 lot connection will be required to be installed to service the proposed development. Further consideration will need to be given to internal plumbing routes required to suit the lot connection locations and development layout. Considering existing sewer main levels and a proposed basement level of RL2.0m AHD, it will not be possible to provide sewer connection to this level. JDSI understands from preliminary plans that there is no requirement for serviceability at this level.

Further to this, the existing DN150 gravity main running through the site will need to be removed to enable the proposed development to proceed. A new sewer connection point and internal plumbing will need to be provided to the existing service station on Lot 153/Lot 154.

Figure 6: Water Corporation Sewer Reticulation Assets (ESInet Data)

5 Roadworks

Existing public roads adjacent the site are owned and maintained by the City of Joondalup.

The site is bound by the existing West Coast Drive, The Plaza, Padbury Circle and Drakes Walk road reserves. As typically conditioned in a WAPC subdivision approval, or as part of a DA, the roads fronting the development are required to provide suitable access and egress and be designed for the intended traffic volumes.

Based on aerial imagery the roads appear to be in good condition with the intersection of West Coast Drive and The Plaza upgrade occurring sometime between December 2008 and February 2010.

Preliminary plans show access to the development will be from West Coast Highway and Padbury Circle, minor adjustments to kerbs and verges will be needed to accommodate a defined access point. Any modifications would need to cater for vehicle turning movements as defined in AUSTROADS design guidelines.

It would be anticipated that direct vehicle access from the development onto West Coast Drive would be acceptable given existing access points for commercial tenancies however this is to be confirmed during approvals.

6 Stormwater Drainage

The stormwater drainage from the development will need to be designed and constructed in accordance with City of Joondalup Stormwater design guidelines. Currently the City of Joondalup requires all stormwater falling within lot boundaries to be contained on site, either through soakwells, drainage cells, sumps or other approved methods. Additionally, for commercial and large multi residential sites, the City requires the onsite storage capacity to be designed to contain the 1 in100 year storm of 24 hours duration.

The requirements of the stormwater drainage system will need to be approved by the City of Joondalup as part of either Development Approval or building permit application, possibly through submission of a Stormwater Management Plan. It is recommended a suitably qualified hydrologist is engaged to assist with the study and preparation of the Stormwater Management Plan.

Figure 7: City of Joondalup stormwater assets (City of Joondalup Intramaps)

7 Water Reticulation

The Water Corporation owns and maintains the potable water reticulation system in the vicinity of the Site. Any connection into this system will need to be designed, approved and constructed in accordance with standard Water Corporation requirements. Any internal plumbing works on the Site will need to meet the requirements of AS3500 '*Plumbing and drainage'* as documented by the Building Services consultant.

Based on the Water Corporation Esinet data there is an existing DN150 RC water reticulation main running along the eastern side of West Coast Drive and a DN100 RC water main located on the south side of The Plaza and Padbury Circle, directly adjacent the site (refer Figure 8).

To provide a potable water and/or firewater connection to the development an application will need to be submitted to the Water Corporation for approval and the applicable headworks charges paid. Due to the presence of the existing reticulation mains it is expected that site works required will be to tap into the existing mains and install a suitably sized Authority meter, and decommissioning of existing lot connections and meters, with the existing water connection for the service station appearing to be in a location where it can be retained. This will need to be confirmed during detailed design. The Building Services consultant will confirm the required meter size and flow rate for the proposed development as part of the detailed design.

It is also recommended that a flow and pressure test is undertaken on the existing reticulation network to confirm design criteria for any fire water supplies if required.

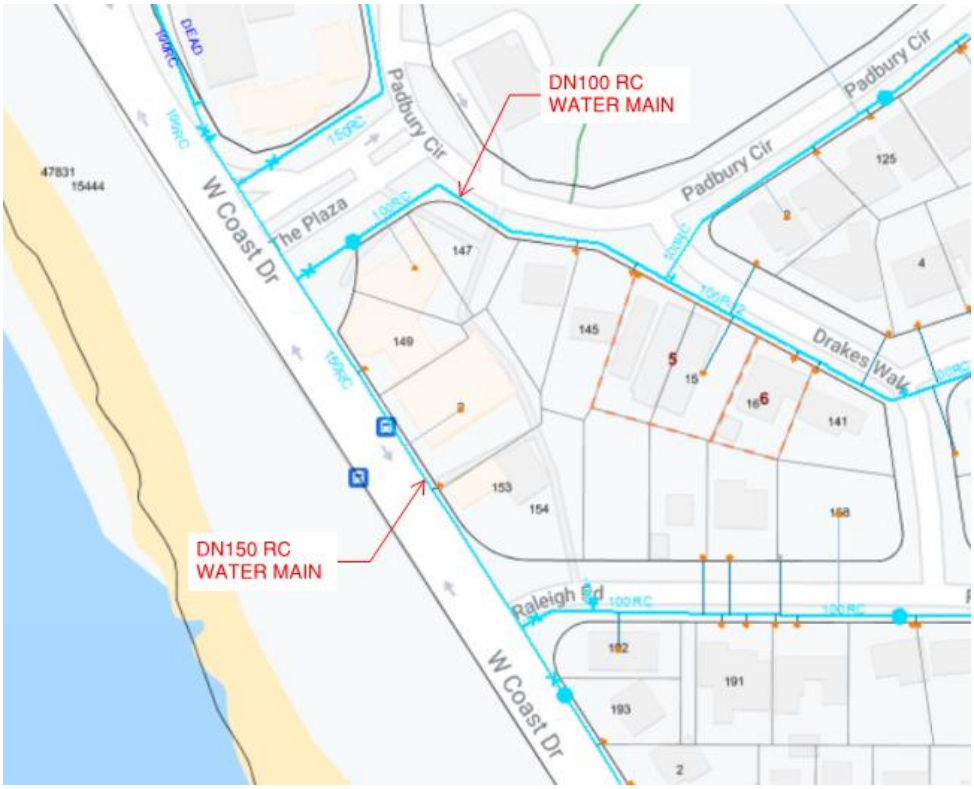


Figure 8: Water Corporation Water Reticulation Assets (Esinet Data)

8 Power Supply

Western Power owns and maintains all overhead and underground power reticulation systems in the area of the proposed development.

The following advice is based on JDSi desktop studies and support information obtained from Western Power NCMT (Network Capacity Mapping Tool) online database and Dial Before You Dig information.

Based on Western Power forecast 2026 there is capacity at the zone substation (Padbury) to supply this development.

There are existing Low Voltage (LV) overhead aerials along West Coast Drive and an overhead light connection on the development side of The Plaza. These will be required to be undergrounded and as a result, the lighting will also need to be augmented.

The proposed 8 storey mixed-use development on West Coast Drive, Sorrento is anticipated to require a substantial power supply. This will likely need a switchgear and transformer (NON MPS with LV Kiosk) on site. High Voltage (HV) power will need to be brought from the nearest overhead aerials with capacity to service the lot. Nearest HV points of connection are at Drakes Walk or Padbury Circle.

It is recommended that a formal application to Western Power for a feasibility study or Design Information Package (DIP) is requested to determine the extent of the network reinforcement, if required, for the development and provide accurate information on the available capacity.

Please note Western Power cannot reserve network capacity therefore we recommend the Developer lodge a formal application with the Utility as soon as practicable.

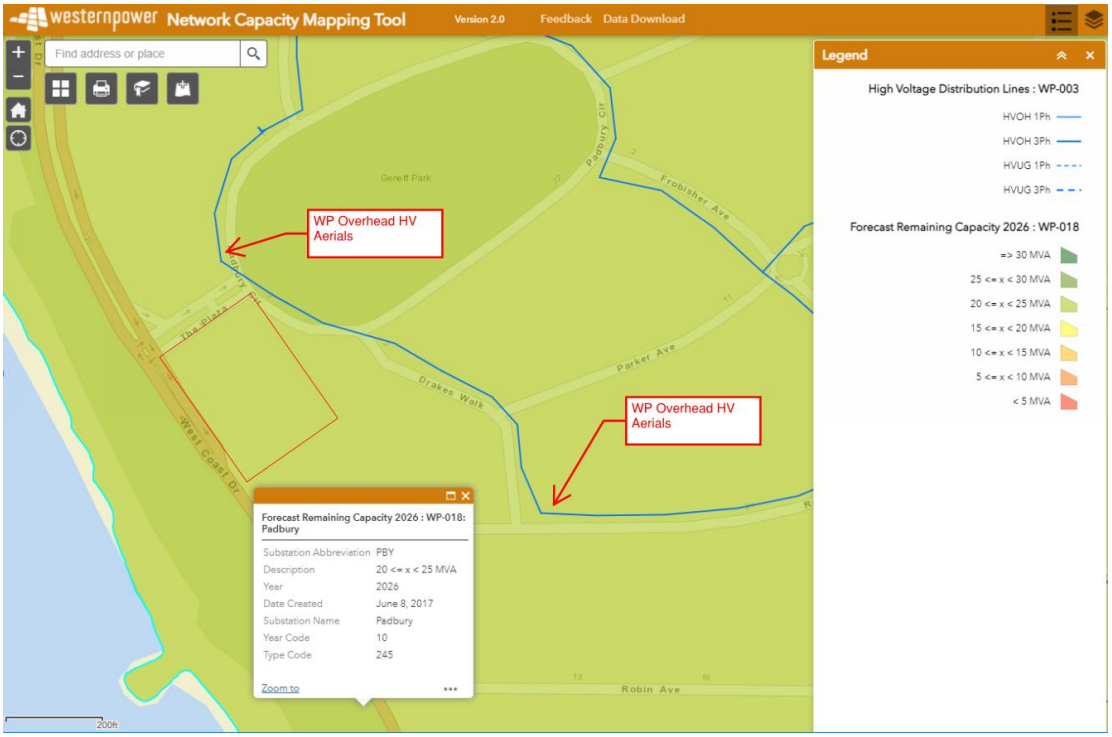


Figure 9: Western Power Network Capacity Mapping Tool (NCMT)

9 Gas

Information obtained from Atco Gas indicates that an existing DN155 PVC medium-low pressure gas main runs along the western side of West Coast Drive which is available for connection. Additionally there is a DN50 PVC medium-low pressure gas main running along The Plaza, Padbury Circle and Drakes Walk available for connection.

Reticulated gas is not considered to be an essential service and as such is not required as a condition of subdivision. However, it is usual practice to install gas reticulation network for the subdivision within a common civil trench at no cost to the developer. If there is an extension required to connect to the nearest high pressure gas main, or connection works to the existing live network required to be carried out, the developer will be required to pay for the trenching to the gas main or authority fees as a headworks cost

10 Telecommunications

Dial Before You Dig (DBYD) information indicates existing communication infrastructure provided by Telstra and NBN currently available in the vicinity of the Development.

An existing Telstra 50mm PVC below ground conduit with NBNCo cable runs along the eastern side of West Coast Drive to approximately the mid-point of Lot 2 boundary. It appears that NBNCo is currently servicing the existing lot 2 and 149 through the existing 20mm Telstra conduit running along West Coast Drive (refer to Figure 10).

An existing Telstra 50mm PVC below ground conduit with NBNCo cable runs along the southern side of Padbury Circle to the side boundary of Lot 147/148. It appears that NBNCo is currently servicing the existing lot 145 and 147 through the existing 20/35mm Telstra conduit lot connections (refer to Figure 11).

In accordance with NBN design guidelines, a vertical MDU (Multiple Dwelling Unit) with more than 60 internal premises requires a P100 service conduit. Given there is no P100 conduit within close proximity to the development, JDSi anticipate the existing infrastructure (50mm PVC conduit) on both West Coast Drive or Padbury Circle would serve as dual connection points for the development however this would need to be confirmed with NBNCo at the time of making an application for connection and is dependent on the final number of services required for the development.

General communication services for the Site will consist of the installation of a standard pit and pipe network in accordance with NBNCo guidelines and standards for Multiple Dwelling Units (MDU's). The pit and pipe system, and any internal cable routes, are funded by the Developer with NBNCo funding the provision of installing cable into the Network Termination Device's (NTDs) or Communications Room located in the development. Due to the proximity of the existing communications infrastructure it is not expected that significant service back haul would be required, however if it is this is a cost that will be borne by the Developer.

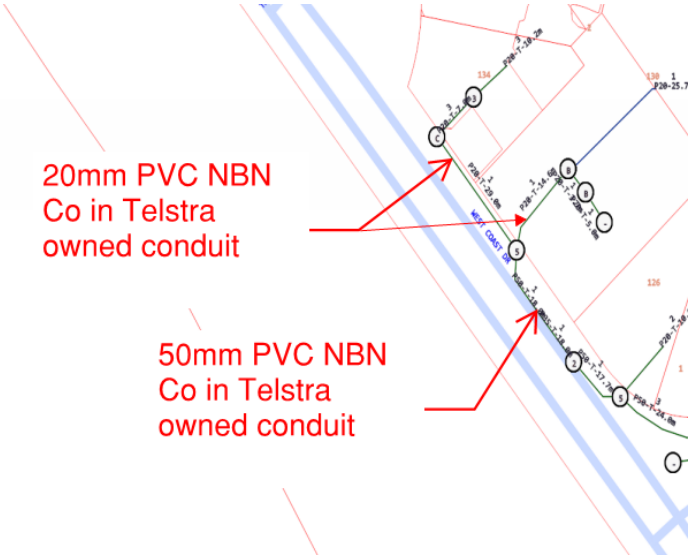


Figure 10: NBNCo Assets

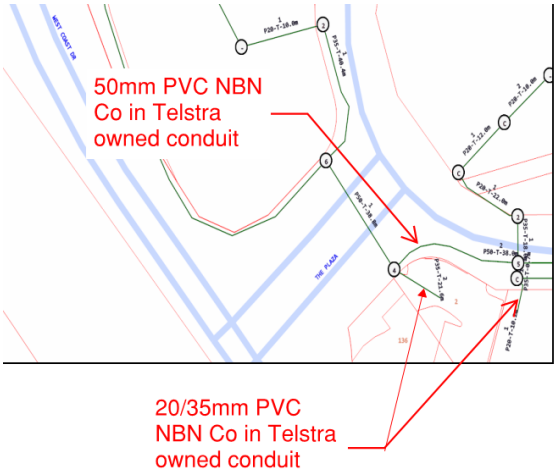


Figure 11: NBNCo Assets

11 Disclaimer

JDSi have undertaken this assessment based on a desktop study and subsequently assumptions have been made which, if incorrect, have potential to change the assessment and/or recommendations. Major cost implications exist through factors which cannot be assured at this time including upgrading and provision of utility services, WAPC conditions of development, Local Authority Scheme Requirements, ground conditions, timing of adjacent developments, etc.

While JDSi has taken all care in the preparation of the likely development requirements and has noted key assumptions, JDSi accepts no responsibility for the accuracy of this report and provides it only as an indicative summary of engineering requirements.

If any further information is required or should you wish to clarify any issue, please contact our office.