

INFRASTRUCTURE SERVICING REPORT

ISR

Yanchep Central Fuel Station

Yanchep

March 2024

Rev B



HISTORY AND STATUS OF THE DOCUMENT

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Author	Colin Kleyweg
Project Director / Project Manager	Colin Kleyweg
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1. KCTT Infrastructure Servicing Report

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1.1 Location

Lot Number	House Number	Area	Road Name	Suburb	Locality (Shire, City etc.)
395	n.a.	46,950m ²	Marmion Avenue	Yanchep	City of Wanneroo

Brief Description of Investigation Area:



Figure 1 - Proposed Concept Roadworks for Yanchep Central Fuel Station

The investigation area requires minor clearing and bulk earthworks to tie-in with previous construction to the south to be upgraded to suit the proposed Development Application. A sketch completed by Transcore showing the proposed access / egress road upgrade is shown above.

The land is proposed to be subdivided as shown on the figure below: -

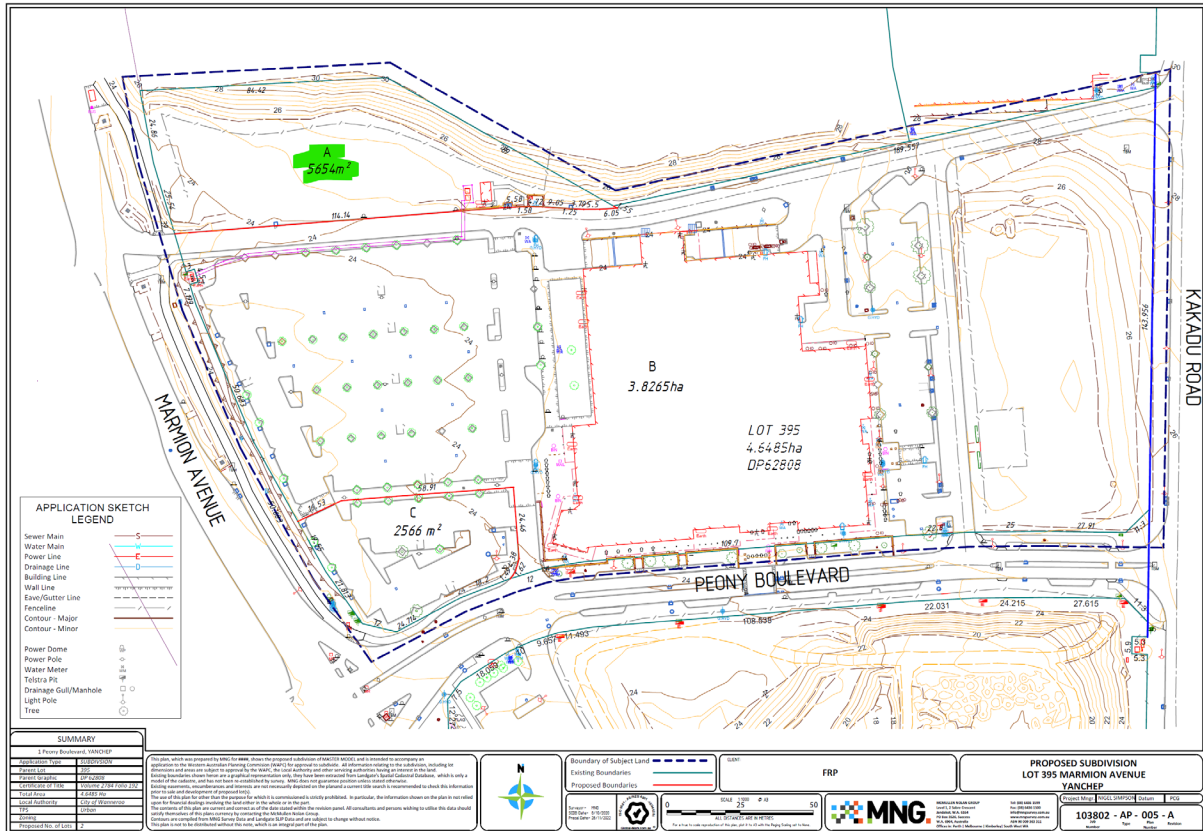


Figure 2 - Proposed Subdivision of Area A (MNG Survey)

Using the City of Wanneroo’s Intramaps service, the following points are pertinent to the development of the subject landholdings: -

- The land is presently zoned as Commercial.
- There are no nominated wetlands on the subject landholdings.
- There are no nominated TPS9 Conservation Zones on the subject landholdings.
- The area is not considered “flood prone”.
- The area is not included in SCA Aircraft Noise restrictions.

1.2 Proposed Development Type

Development Type: Commercial – Fuel Station

1.3 Proposed Yield

TYPE: (Residential, Commercial, Industrial and Other)

Commercial Development

The proposal is for a future fuel station on the north-western corner.

1.4 Remediation

Does the landholding feature existing buildings?	NO
Is asbestos likely to be an issue? YES / NO	NO
Are septic tanks present? YES / NO	NO
Did the site store, or have a history of storage of chemicals?	NO – not apparent from aerial imagery.
Contaminated Sites Database	No. The subject landholdings are not on the contaminated sites database.

1.5 Earthworks

The topography data and the soil/geotechnical information has been gathered from the online mapping system Perth Groundwater Map and from ESINet data.

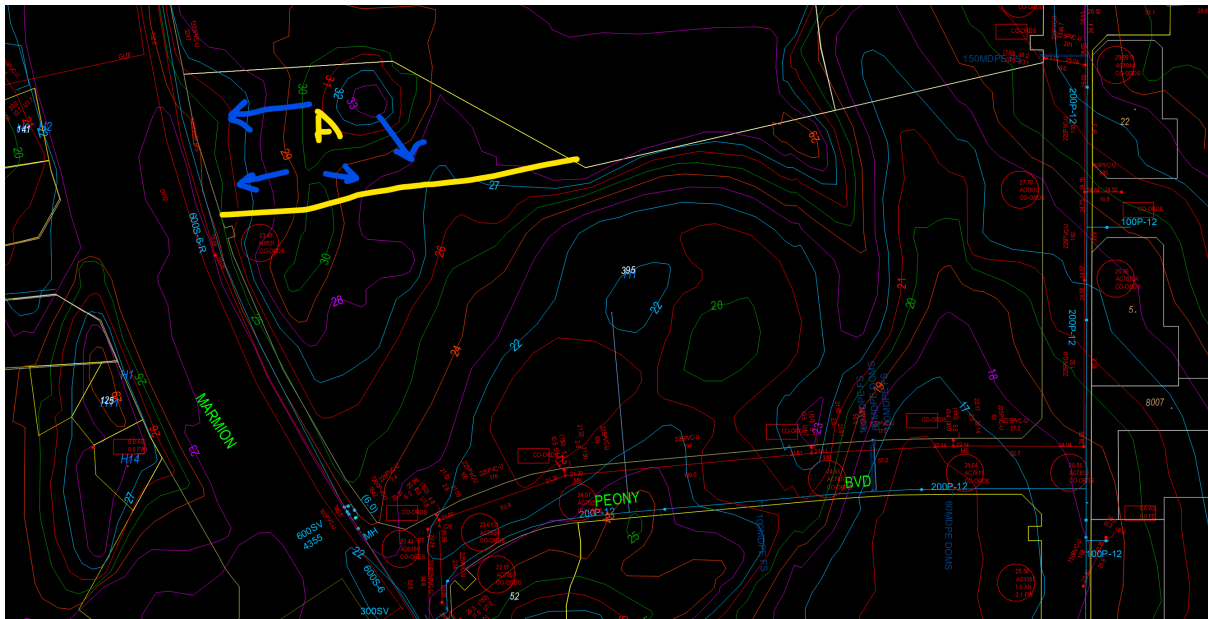


Figure 3 - Proposed Subdivision A and Existing Contour Overlay

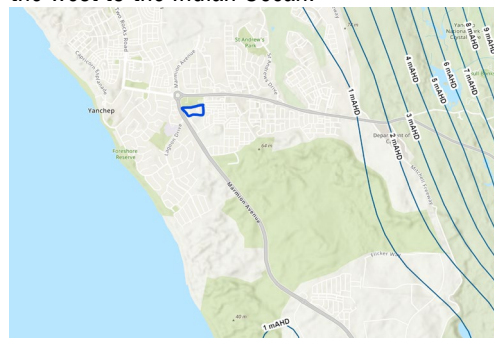
Describe the general levels across the site

The original site generally falls from the north-western boundary of Lot 395 from RL 33.0m AHD to a pair of trapped lowpoints; the first at RL25.0m AHD located along Marmion Avenue, with the second trapped lowpoint at RL 26,5m AHD located generally in the south-eastern interface of the proposed Area A to be subdivided, to the existing access / egress road.

The site adjoins previous development and will need to be cleared and bulk-earthworked to suit.

Describe AAMGL levels across the site

The Perth Groundwater Atlas notes groundwater as being 0.0 metres deep. The groundwater generally falls towards the west to the Indian Ocean.



Describe MGL levels across the site

The Perth Groundwater Atlas does not provide separate MGL levels, however given the depth of AAMGL contours, even if the MGL is 2 to 3 metres above the AAMGL (which in our experience is the largest difference between AAMGL and MGL in the Perth Metropolitan region) there will not be a requirement for subsoil drainage.

Is Groundwater an issue on this site?

No. The groundwater is over 20 metres below the natural surface.

Can cut to fill techniques be utilised?

Yes, pending proposed levels for the development.

What is the likely depth of topsoil (mm)?

100mm to 150mm topsoil.

Is the topsoil suitable for re-use?
If YES, is there a suitable location to bury?

YES. In our experience the topsoil will be suitable for re-use in the following areas: -

- Blended with any required import material (with the removal of organic materials)
- In verges

Describe the natural vegetation on the site?
Dense / Moderate / Sparse / Cleared

The site was cleared as part of previous roadworks and carparking. This Development Application is for additional development over the subject site and modification to the access road as shown in the Figure on Page 4 of this report.

Are there significant trees that need to be kept?

Not Applicable.

What is the likely soil profile?

Safety Bay sands: Aeolian and Beach lime sands.

Risk of acid sulphate soils? High / Moderate / Low

Online mapping indicated the site has a low to moderate risk of acid sulphate soils occurring within the first 3m of surface.

Is there peat or other unsuitable materials?

No, peat is unlikely.

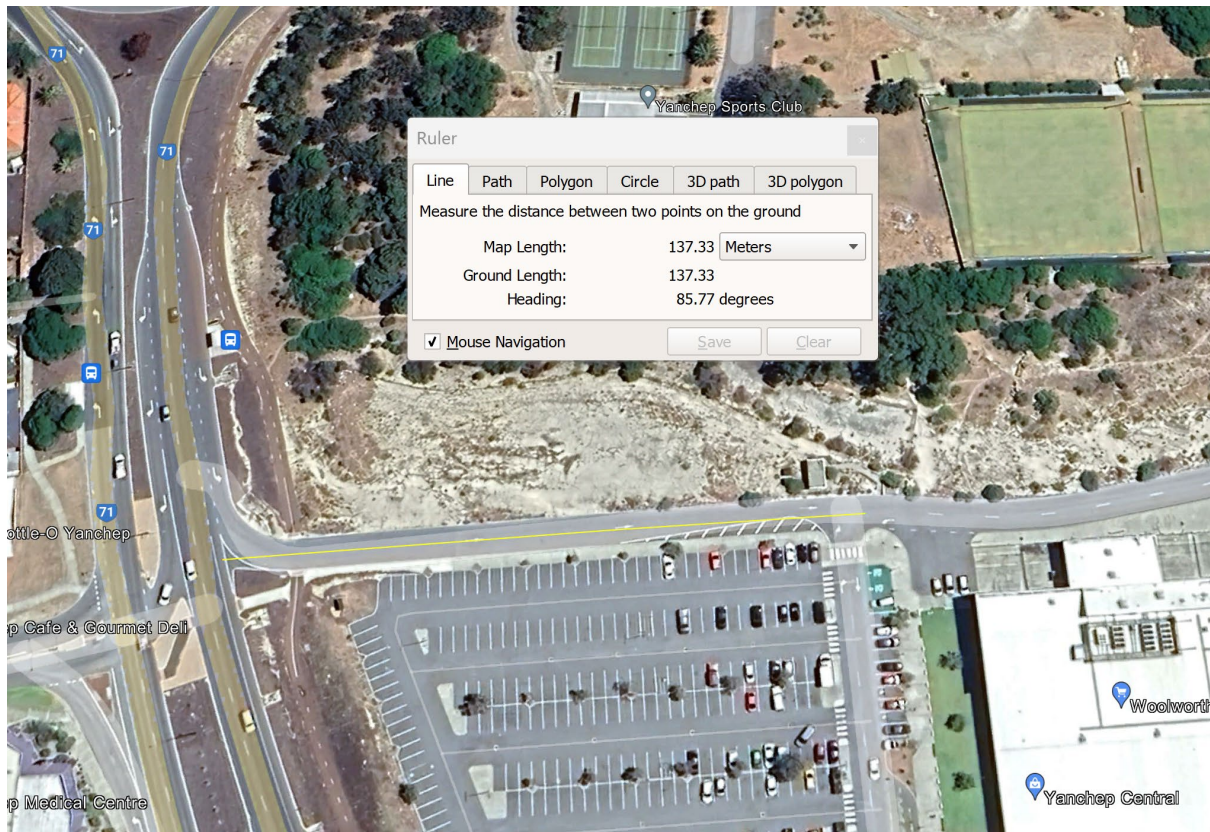
1.6 Roadworks

Do existing roads require upgrade?

YES – Proposed Access Road on the northern side of Lot 395

- At present the northern access road is one-way inbound (eastbound).
- The Development Application proposes a two-way upgrade to this road with the intersection of Marmion Avenue to be a sign-controlled Left-In, Left-Out (LILO) intersection.
- The intersection will need to be designed to suit turning movements for semi-trailers to 19.0 metres inbound and outbound.
- The proposed design requires a splitter island to delineate the turning movements.
- The left-in and left-out will require modification to existing kerb alignments.
- The left-out will require extensive modification to existing stormwater drainage assets.

Road Name	Length	Road Width	Road Reserve
Lot 395 Access / Egress Road	137 (approx.) metres	2 x 3.5m wide carriageways with widening to allow 19.0m semi-trailer movements through the proposed upgraded LILO intersection.	Not Applicable.



Further information on the road network is provided in Transcore’s Transport Impact Assessment.

1.7 Stormwater Drainage

The image below shows the existing drainage assets on either side of the existing Left-In Intersection of the Access Road from Marmion Avenue southbound.



Figure 4 - Example of Existing Drainage Assets

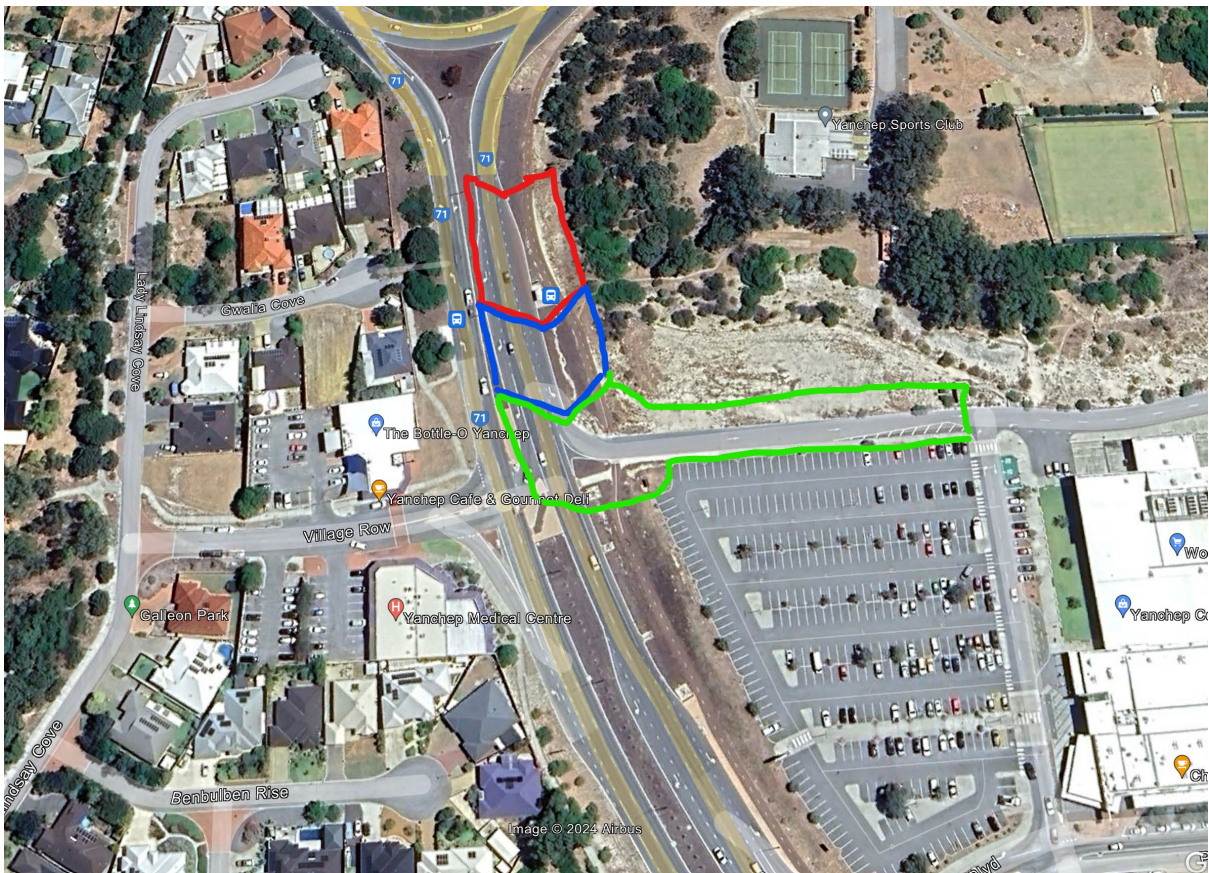


Figure 5 - Existing Drainage Catchments

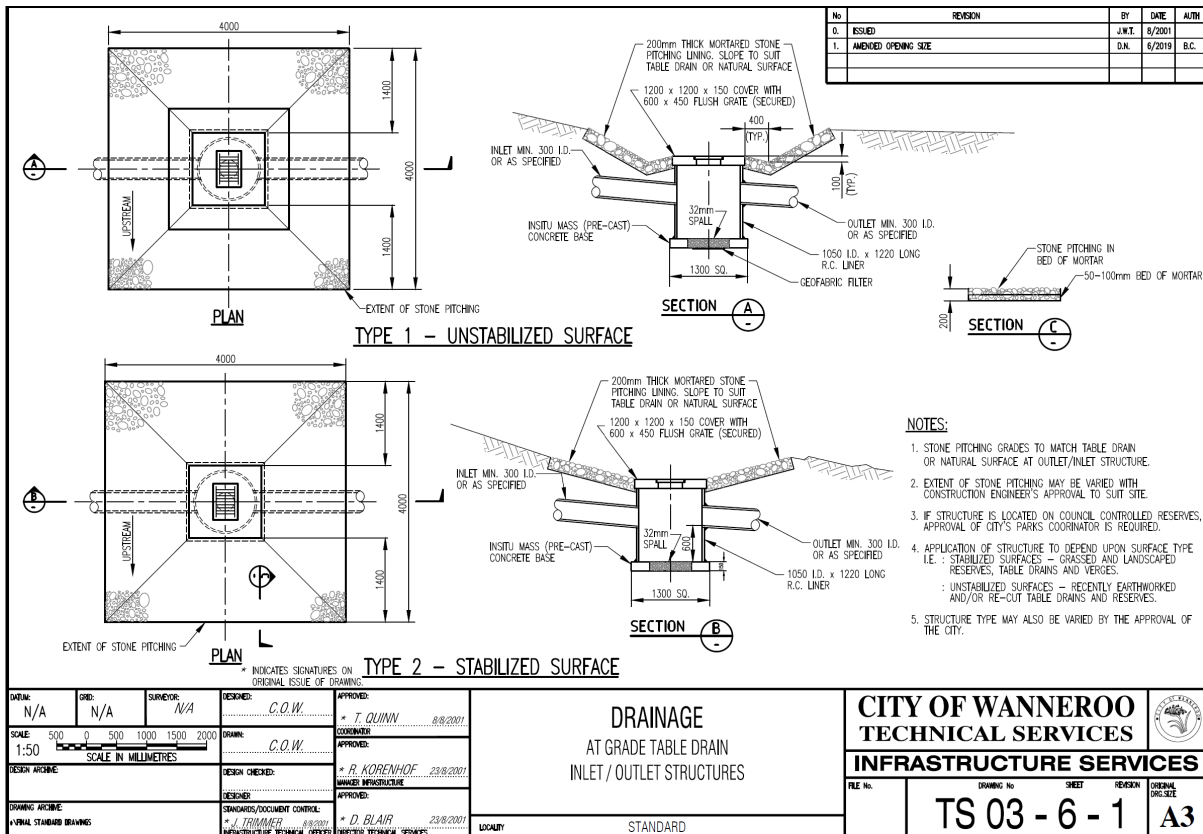


Figure 6 - Stormwater Drainage Structures - Bubble Inlet Pits in Graded Table Drains (City of Wanneroo)

Does the location have suitable flow-paths for existing overland flow?

YES. Marmion Avenue features semi-mountable kerbs with swales graded from the back of kerb in both directions. The intent of these swales is to store flows from the verge and from the road pavement in Marmion Avenue in the southbound carriageway.

Can infiltration drainage techniques be used?

The subdivision of Area A will require a detailed Stormwater Drainage Strategy to manage all onsite flows and detain to the 1 in 10-year event.

YES.

The site features Safety Bay sands and has excellent clearance to groundwater for infiltration drainage techniques. KCTT expect that local infiltration rates will be greater than 10m/day for these soil types.

YES.

Do existing stormwater drainage systems exist in site vicinity?

Figure 2 shows an example of the existing drainage assets in Marmion Avenue.

The existing catchments drain towards existing mortared rock pitched depressions with bubble inlet pits.



Figure 3 shows the catchments with approximate areas as follows: -

- a. Green catchment = 2,400m²
- b. Blue catchment = 1,160m²
- c. Red catchment = 1,400m²

In detailed design phase, KCTT will calculate the exact storage requirements based on the additional works and provision of accurate detailed feature survey. For the purposes of this ISR for DA approval, we propose the following: -

- Green Catchment
 - Demolish and Remove Existing Inlet Pit
 - Construct new inlet pit and swale to suit new kerb geometry for left-out
 - Design swale to accommodate minimum 18.1% AEP with no overflow into adjacent Marmion Avenue pavement.
 - Check 1% AEP storage will be no greater than 1.0m into Marmion Avenue southbound lane.
- Blue Catchment
 - Demolish and remove existing mortared rock pitching.
 - Construct new mortared rock pitching to suit new alignment of kerbs on northern side of intersection for Left-In traffic flow.
 - Design swale to accommodate minimum 18.1% AEP with no overflow into adjacent Marmion Avenue pavement.
 - Check 1% AEP storage will be no greater than 1.0m into Marmion Avenue southbound lane.
- Red Catchment
 - No works planned.
 - Run detailed drainage check based on updated feature survey.

1.8 Water

Are suitable water services located adjacent to the site?

YES, however 600mm-diameter adjacent to site.

Road Name	Pipe Diameter	Location (distance from site if no)
Marmion Avenue	600S	Located in Marmion Avenue in the area of the works.
Peony Boulevard	200P-12	Located on southern side of Peony Boulevard with existing connection into Lot 395 Marmion Avenue.
Kakadu Drive	200P-12	Located on eastern side of Kakadu Drive.

Lot 395 is connected to water services as shown on Water Corporation ESINet and BYDA Maps from Water Corporation. This service includes 80mm water service and 1 x 100mm and 1 x 150mm-diameter fire services.

Should the subdivision be strata or similar, the proponent will need to accurately locate these existing services and apply to the Water Corporation via their Builder Net system to expand the connection to the proposed Fuel Station. This is a standard process, therefore KCTT believe the subject site has been serviced sufficiently for the proposed development.

When a green-title subdivision is undertaken, the subject site will need to be serviced with its own water connection. In this scenario, there are three options for servicing: -

- a. To extend a 150mm-diameter service from the intersection of Peony Boulevard and Marmion Avenue off the existing 200P-12 service, on a 2.1m alignment in the Marmion Avenue reservation.
- b. Should the above not be possible, to connect a local 150mm-diameter service to the 600mm-diameter service in Marmion Avenue under the approval of the Water Corporation.
- c. To extend a 150P-16 service from Kakadu Drive, however this would need to be under an easement.

KCTT have provided multiple options for the connection points, as additional information will be required to confirm the suitability of a 2.1 metre alignment in Marmion Avenue in relation to existing services and proximity of excavations to major services. Generally, minimising connection points to large mains is preferred by the Water Corporation, however we note that the 200P-12 services in Peony Boulevard are connected to the 600mm-diameter main from the existing services layout. We believe that the above order of options would be the order of preference by the Water Corporation. We confirm the site can be connected to existing water mains, pending the choice of connection.

For all proposed intersection construction work over the existing 600mm-diameter steel water main in Marmion Avenue, the Water Corporation will need to be contacted prior to commencement of the works with the service depth accurately located by a licensed surveyor and the alignment of the works confirmed with the Water Corporation.

No proposed lighting will be allowed within 3 metres of the existing service without an approved APRA from the Water Corporation. This, however can be managed during the construction phase of the works.

1.9 Wastewater

The wastewater (sewer) information has been sourced from the Water Corporation's ESINet and from BYDA (Before You Dig Australia).

Is the development BROWNFIELD / GREENFIELD? Describe the location and sizing of existing services and their proximity to the subject landholdings.

Describe the sewer servicing strategy

Can the development be serviced adequately without the need for import fill? If NO, describe the fill requirements;

GREENFIELD (The proposed site is a subdivision of the remaining northern portion of the previously developed site).

Existing 225mm-diameter PVC services on the northern side of Peony Boulevard with multiple connections to the existing developed portion of the subject site.

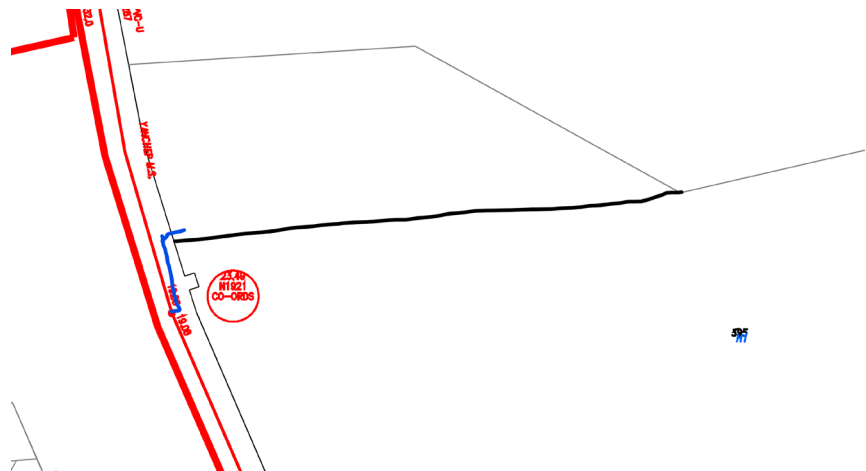
Existing 1200mm-diameter Yanchep Main Sewer and 100mm-diameter pressure mains are present through the subject intersection upgrade works.

Chamber N1921 on the 1200mm-diameter main is located approximately 20 metres south of the proposed subdivided lot.

The Peony Boulevard 225mm-diameter services were connected successfully to chamber N1920 on the 1200mm-diameter sewer main in Marmion Avenue.

Our opinion is there is insufficient space within the Marmion Avenue reservation to extend a 225mm-diameter sewer from the higher-level Peony Boulevard system within the road reservation and on the correct alignments.

The location of the existing chamber N1921 provides an opportunity to provide a similar connection point to the major 1200mm-diameter system as was provided to the south at the intersection of Peony Boulevard. The sketch below shows a similar configuration to the existing configuration described to the south.



Like the requirements for construction over major water assets, the developer will need to engage a surveyor to undertake detailed service locations to accompany the detailed design of the road. This detailed design phase should commence after Development Application is approved with a condition that the intersection upgrade drawings are approved by the City of Wanneroo prior to the commencement of any works onsite.

YES. The site has already been earthworked. The north-western corner of the site is significantly higher than the interface to Peony Boulevard, therefore any internal sewer plumbing systems will have ample fall to Peony Boulevard in accordance with the Water Corporations Design Standards.

Is groundwater likely to be an issue?

NO

KCTT believe the optimum connection point is at Manhole N1921 with an internal or external drop to protect the base of the existing manhole. Due to land levels of the proposed subdivision rapidly rising, we believe the maximum depth of the service connecting into this existing manhole needs to be around 1.5 metres. With the existing manhole being 4.4 metres deep, the manhole integrity is preserved with the proposed connection being just over 33% of the depth of the chamber. The connection to this system would be completed by the Water Corporation at the developers' expense.

The information in this report should be suitable for Development Application Approval.

1.10 Gas

Gas services are available in the area.

Are suitable gas services located adjacent to the site?

YES.

Describe the location of the assets

Peony Way

110mm-diameter PE on southern side of Peony Way.

Kakadu Drive

110mm-diameter PE on eastern side of Kakadu Drive.

Marmion Avenue

225mm-diameter PE on western side of Marmion Avenue.

The developer will need to liaise with ATCO Gas should they require an extension of internal gas service to the subject development.

Future Servicing Strategy

There are no gas services in the vicinity of the proposed intersection upgrade works.

1.11 Power

An electrical consultant shall be used for all liaison with Western Power. The information provided below is general in nature as Western Power only confirm design requirements when an electrical consultant submits for Design Information Package or DIP as part of the development design process.

Figure 7 on the following page highlight critical infrastructure within the proposed intersection upgrade works area, which needs to be considered during the design and construction processes.

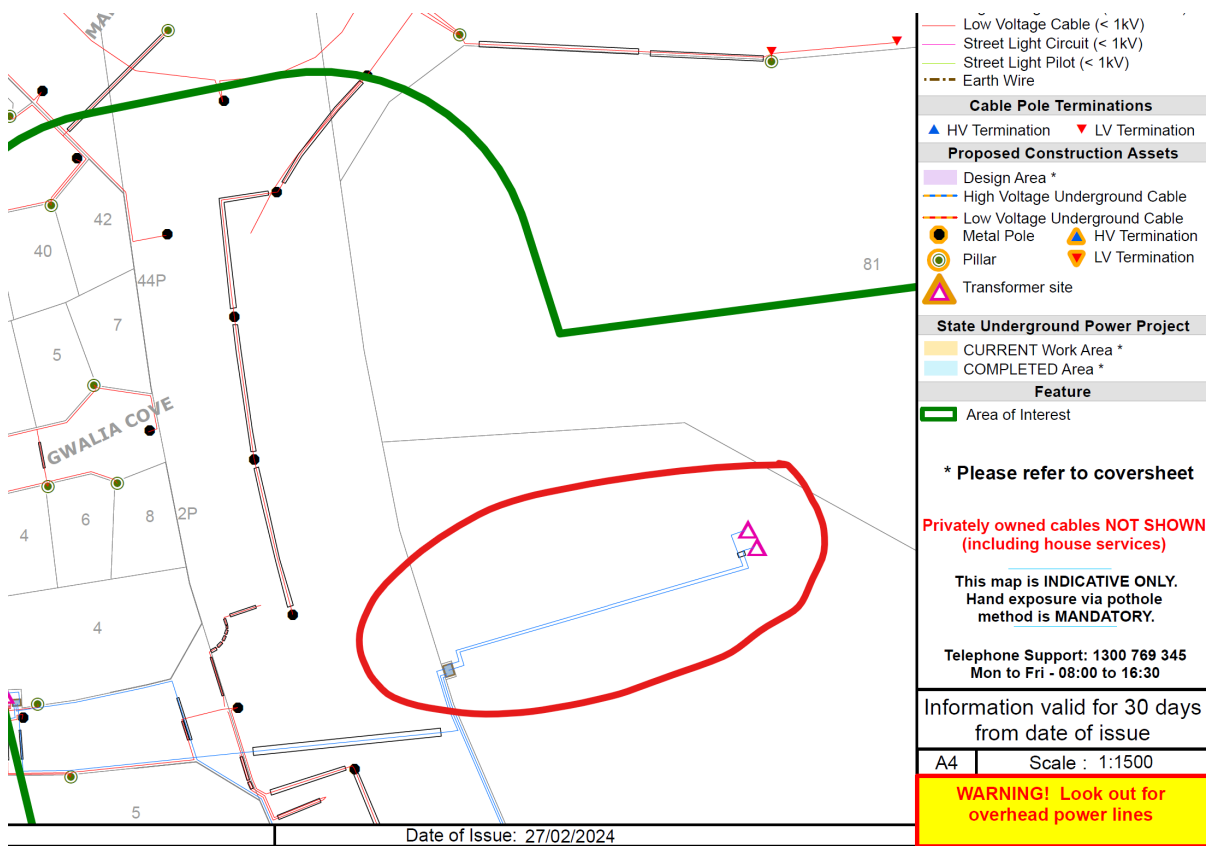


Figure 7 - Critical Power Infrastructure in the Vicinity of the Intersection Upgrade Works

Existing Services Location	Underground/Overhead	Location	Type
Marmion Avenue	Overhead	Existing lighting in Marmion Avenue median in the vicinity of the proposed intersection.	Street Lights
Marmion Avenue	Underground	Street light cabling in median	SL
Marmion Avenue and Access Road	Underground	HV cable connections between transformer sites in Marmion Avenue and on northern side of access road.	HV (to 33kV)
Impact on Works Area?	YES.		

The location of the existing transformer site is significantly higher than the adjoining road reserve where the intersection widening and realignment works are proposed.

A detailed survey showing levels and features should be provided with the levels of the transformer / switchgear site clearly shown. The proposed design for the upgraded LILO intersection will need to consider appropriate batters within the road reserve and any additional requirements for retaining.

All existing underground HV cables should be accurately located by a licensed surveyor to determine clearance to works in the design phase.

Power for the subdivision of the subject site can be taken from one of the Transformer sites. This will be the subject of design by a power consultant and approval by Western Power.

1.12 Telecommunications

	YES/NO	If YES/NO nominate type (NBN /Velocity Fibre Optic/Standard Telstra Copper/Other) and location?	If NO, distance from site (m)?
Are existing underground services available and suitable for connection immediately adjacent to the site?	NO		Peony Boulevard
Are there Telstra Mains Cables and manholes immediately adjacent to the subject landholdings	NO		Peony Boulevard

1.13 Retaining Walls

Does the site have topography requirements that increase the general retaining requirements?	<p>YES.</p> <p>There is difference in height between the subject subdivision area “A”, the adjoining development carpark, the existing transformer site and the road reserve into Marmion Avenue.</p> <p>Some additional retaining may be required along the boundary / boundaries, pending detailed design of the proposed intersection upgrade and the proposed bulk earthworking of the site, however KCTT will aim to complete road design without requirements for additional retaining in the road reservation.</p> <p>Once the proposed bulk earthworks levels are known on the proposed subdivision area, requirements for internal retaining can be confirmed. KCTT believe some boundary retaining will be required given the existing topography and grades, but no walls should exceed 3 metres in height, thereby requiring special Council approval.</p>
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1.14 Development Application Summary and Design Brief for Detailed Design

KCTT have undertaken a detailed desktop assessment for the purposes of developing a document suitable for Development Application Approval.

In summary, we believe this report is suitable for Development Application approval as we have undertaken a detailed assessment of all requirements for a detailed design brief for the subject road upgrade. These items can become conditions of approval prior to occupation of the development.

Key Points for Discussion	Risk Management	Mitigation Strategy / Design Brief
<p>1. Sewer servicing strategy</p>	<p>Suitable connections to existing pipe not available in Marmion Avenue.</p>	<p>Connect at existing Chamber N1921, similar to the Peony Boulevard services to the south which connect into Chamber N1920.</p>
<p>2. Earthworking in Marmion Avenue</p>	<p>Changes in topography in Marmion Avenue between the subject site and the road pavement.</p> <p>Relocation of existing drainage assets on both northern and southern side of intersection.</p> <p>Protection of major sewer, water and HV power assets in road reserve during works.</p> <p>Proposed bulk earthworks levels on the subdivision area "A".</p>	<p>Developer shall organise detailed feature survey and precal pickup for detailed design phase based on current special features.</p> <p>Developer shall organise detailed service location of 1200mm-diameter sewer, 600mm-diameter water, HV power, transformer padmount site levels and existing drainage assets including pipe diameter, inverts and levels of swale.</p> <p>Upon receipt of the above, KCTT shall commence detailed design of the proposed upgraded LILO intersection, with the road design completed to City of Wanneroo and Main Roads WA standards. The intersection shall be designed to accommodate full 19.0m semi-trailer turning circles, complete "lane-correct".</p> <p>KCTT will also include detailed bulk earthworks of the subject site A in the drawing submission and confirm any requirements for retaining walls.</p>
<p>3. Stormwater Drainage Strategy</p>	<p>Existing drainage swales for storage of 18.1% and 1% AEP events on northern and southern sides of proposed intersection in Marmion Avenue.</p>	<p>KCTT will provide detailed stormwater drainage calculations and drawings showing exact catchment areas based on survey data showing the existing swales and piped drainage systems, inclusive of all pipe sizes and invert levels.</p> <p>During the detailed design phase, KCTT will detail each swale, its storage volume and we will run detailed calculations showing the inundation levels expected in the 63.2%, 18.1% and 1% AEP storm events with the goal to store completely the 63.2% and 18.1% AEP events and to allow inundation to the edge line of Marmion Avenue.</p>