Expert Witness Statement

Utility Services Infrastructure – Boral Waurn Ponds

V191012

Prepared for

Boral Property Group

8 November 2019

Cardno

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1 Introduction

Amendment C395 to the Greater Geelong Planning Scheme seeks to implement Councils Settlement Strategy of October 2018 together with the Northern and Western Geelong Growth Areas Framework Plan of March 2019 by incorporating them into the Geelong Planning Scheme.

Boral owns a 1020 ha property at 130 Reservoir Road, Waurn Ponds which is currently subject to a special use zone that supports the use and development of the site for extractive industry. Extractive operations on the site are being wound down. Boral has made a submission in response to the exhibition of Amendment C395, pursuant to Boral's objective of facilitating future urban development of the site.

1.1 Expert Witness Qualifications

I, Nick Glasson of Level 4, 501 Swanston Street, Melbourne have been instructed to prepare an Expert Witness Statement pertaining to the provision of Utility Services Infrastructure to cater for the development of the Waurn Ponds site. I have read, understood and complied with the Expert Witness Code of Conduct.

Professional Qualifications:

- Bachelor of Engineering (Civil, Hons) 1987, Monash University

Professional Experience:

- Principal – Cardno Grogan Richards / Cardno 2007 - present
- Director - Grogan Richards Pty Ltd 2005 - 2007
- Associate - Grogan Richards Pty Ltd 2001 - 2005
- Senior Engineer - Grogan Richards Pty Ltd 1993 - 2001
- Design Engineer – Koukourou & Partners 1992 - 1993
- Design Engineer – City of Plymouth, England 1991
- Design Engineer – Borough of Southwark, London 1990
- Design Engineer – WBCM Consultants 1988 - 1990

Areas of Expertise:

Roads and utility services infrastructure for urban development projects, specifically Stormwater Drainage, Sewer and Water Reticulation.

Planning, design and documentation, and construction management of these works.

Expertise to Prepare this Statement:

My training and experience qualifies me to comment on the urban development matters for this property.

Identity of Persons Undertaking the Work:

Nick Glasson of Cardno.

I have made all the inquiries that I believe are desirable and appropriate, and no matters of significance, which I regard as relevant, have to my knowledge been withheld from the Panel.

Nick Glasson

Principal – Urban Infrastructure

2 Servicing Summary

Following is a summary of the servicing strategies for the development of this site.

2.1 Initial Development

Utility Service	Servicing Strategy
Sewerage	Discharge to a new sewer pump station at the north east corner of the site, with rising main outfall to existing sewer 1.7 km to the north east.
Potable Water	Supply from new water pump station at Pettavel Basin on western boundary of site feeding new trunk main looping through the site.
Recycled Water	Supply from new trunk main extending from new storage tank on Mount Duneed with new booster pump station.
Electricity	Planned new zone substations to increase supply availability from Waurn Ponds Zone Substation. Augmentation or replacement of existing Boral substation in McPhersons Road may be required.
Gas Supply	Extension of new gas main from existing main 1.8 km to the north east.
Telecommunications	Fibre optic services to be provided by NBN Co as provider of last choice under their mandate, or by alternative telecommunications provider.

2.2 Balance Development

Utility Service	Servicing Strategy
Sewerage	Discharge to a new sewer pump station and storage at the south east corner of the site, with rising main outfall to the Main Outfall Sewer 8.5 km to the east. Upgrade Main Outfall Sewer and Black Rock WRP.
Potable Water	Gravity supplied from Pettavel Basin via connection to existing transfer main running through the site. Extension of pump boosted trunk main for higher area. Upgrade Pettavel Basin and Wurdee Buloc Water Treatment Plant.
Recycled Water	Supply from new feeder main extending from new storage tank on Mount Duneed with new booster pump station.
Electricity	New zone substation within site fed by augmented / new sub-transmission lines.
Gas Supply	New gas distribution network from new field regulator connection to existing gas transmission pipeline within site.
Telecommunications	Extension of fibre optic services.

3 Site Description

Boral's Waurn Ponds property is located on the south western edge of Geelong and directly abuts the Armstrong Creek Growth Area to the east and existing low density development to the north, as shown in the regional context plan below.

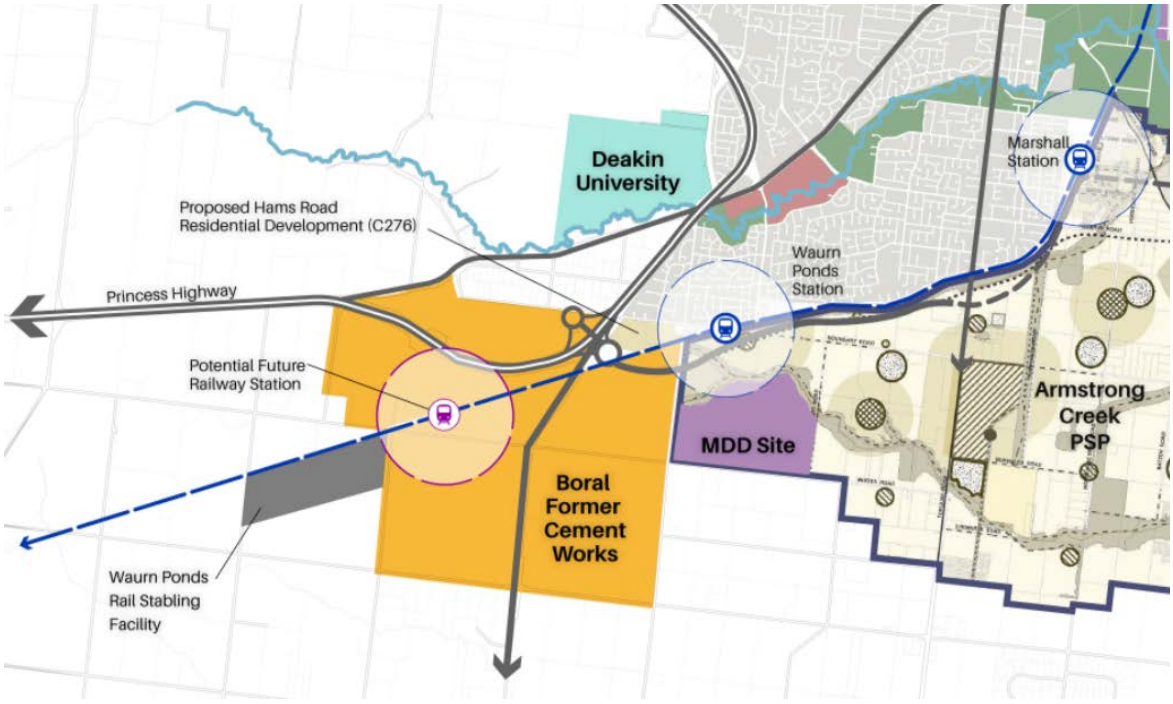

Figure 3-1 Regional Context Plan

The overall site is approximately 1020 ha in area with the extents of the site shown in green on the land use zone plan extract below.

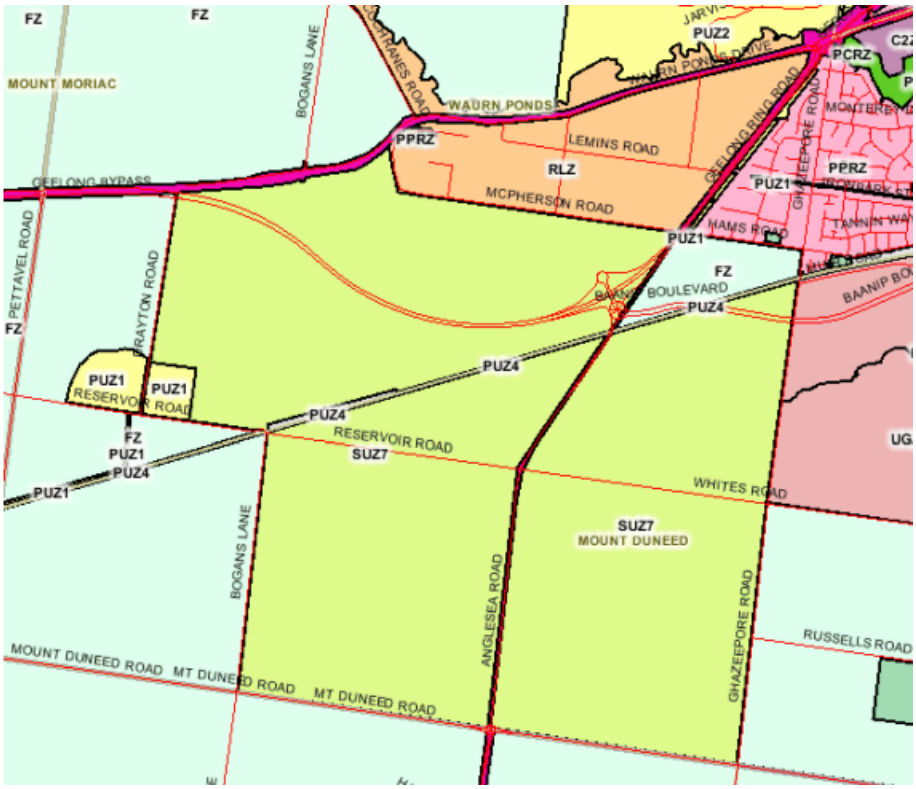

Figure 3-2 Site Extents and Current Zoning

The Boral land holding is bounded to the north by McPherson Road and Waurn Ponds Drive, to the east by Ghazeepore Road, to the south by Mt Duneed Road and to the west by Bogans Lane and Drayton Road. The Princes Freeway and the Geelong – Colac Railway Line traverse the northern half of the site. Within the overall site there are two distinct areas as outlined below.

3.1 Northern and Central Precincts

The land north of Reservoir Road and west of Anglesea Road outlined in green in the figure below totals approximately 290 ha in area.

Figure 3-3 Northern and Central Precincts

The northern and central precincts house the existing cement works between Reservoir Road and the railway line. The remainder of these precincts area have been extensively excavated as limestone quarries then backfilled as part of the remediation of these areas. The waterbodies shown in the figure above are at the base of areas not backfilled, which are in the order of 20 m below the surrounding backfilled areas.

The underlying gradient of the area is typically to the east / south east however a large portion of the land between the freeway and the railway line falls into the ponds. The north west portion of the site fronting Waurn Ponds Drive falls from a ridge line running parallel to the road steeply to the north.

Existing underpasses under the freeway and railway line provide access links. There is an extensive network of existing access tracks through the precincts, of varying formality and quality. An electrical zone substation is located on the McPherson Road frontage of the site.

3.2 Southern Precinct

The balance southern precinct of approximately 730 ha is largely flat open land that has been used for agricultural purposes only. The land typically grades gently to the east / south east and the extents are shown in the figure below.

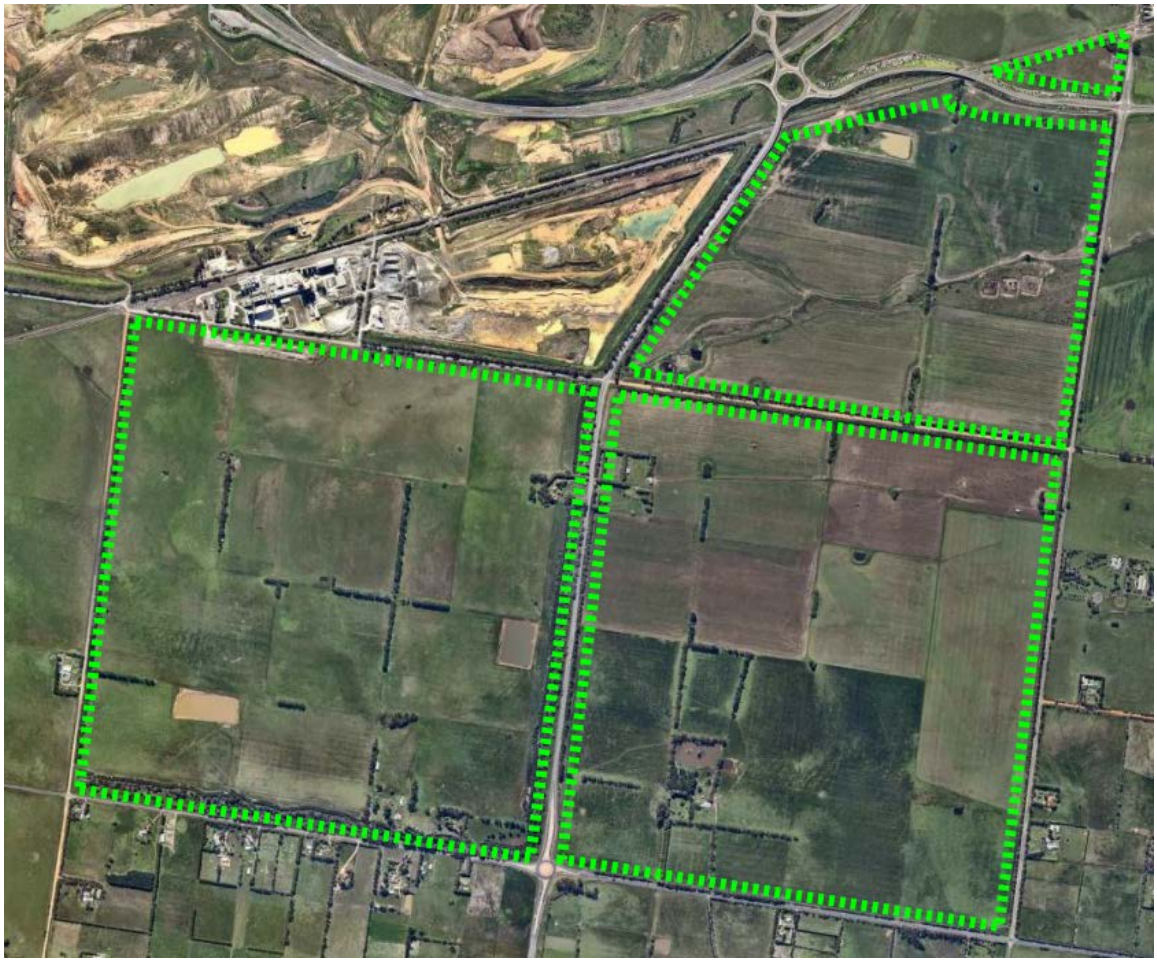

Figure 3-4 Southern Precinct

4 Development Proposal

Boral is investigating the potential for development of the site as a sustainable, affordable development to support Geelong's future growth requirements. The following figure indicates the potential staging of development and shows indicatively existing infrastructure in the vicinity of the site. There is potential to develop the area north of Reservoir Road in the short term, with the balance land to the south to be developed in the longer term.

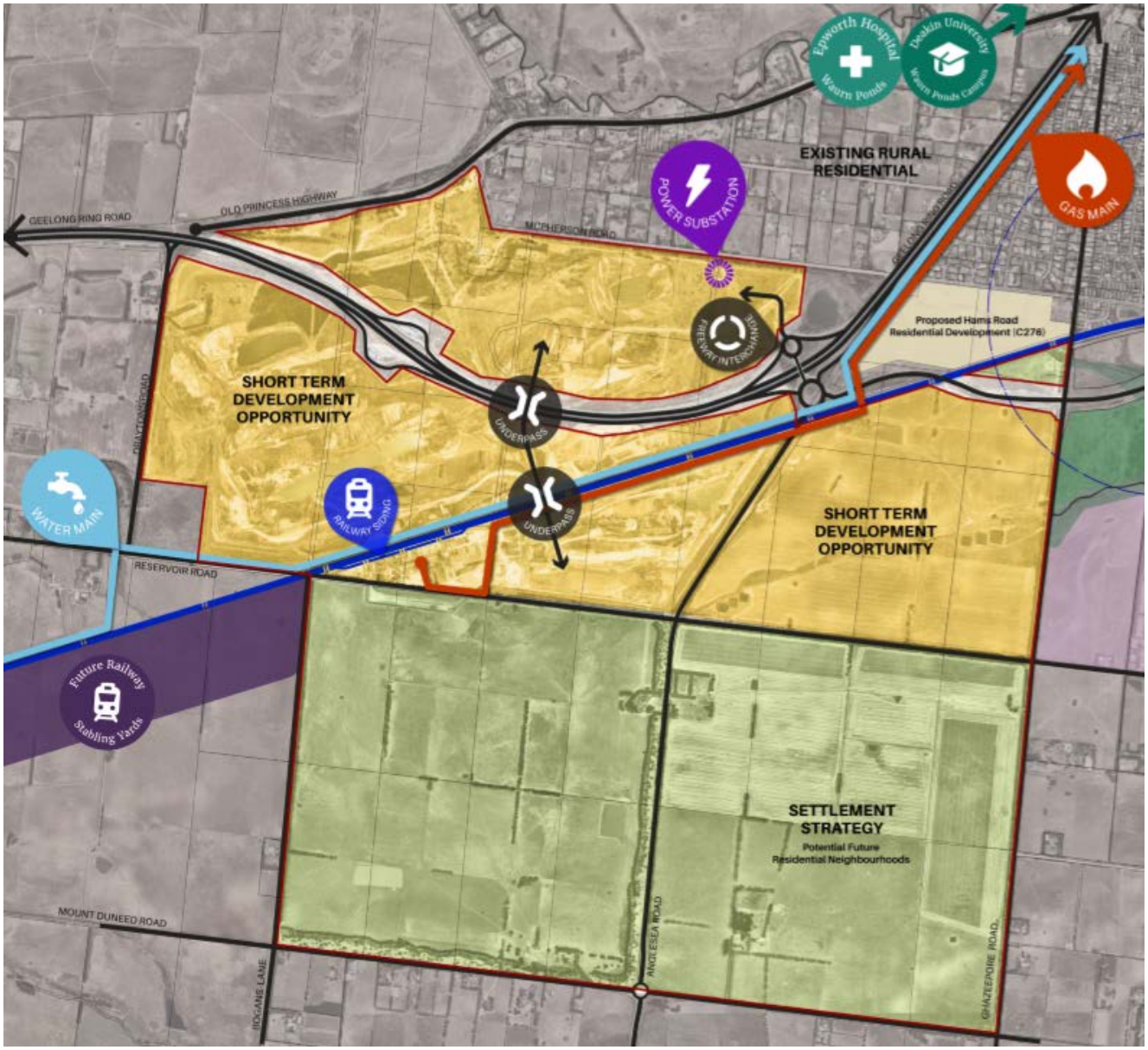

Figure 4-1 Existing Infrastructure & Staging

5 Sewerage Reticulation

5.1 Existing Infrastructure

Barwon Water is the authority responsible for the provision of sewerage reticulation facilities for the region.

Sewage from the Greater Geelong region is conveyed to the Black Rock Water Reclamation Plant (WRP) via the 1650 mm dia Main Outfall Sewer (MOS), which runs south from Geelong along the Barwon Heads Road approximately 8.5 km to the east of the Waurn Ponds site. The following figure shows the proximity of this trunk sewer infrastructure to Waurn Ponds.

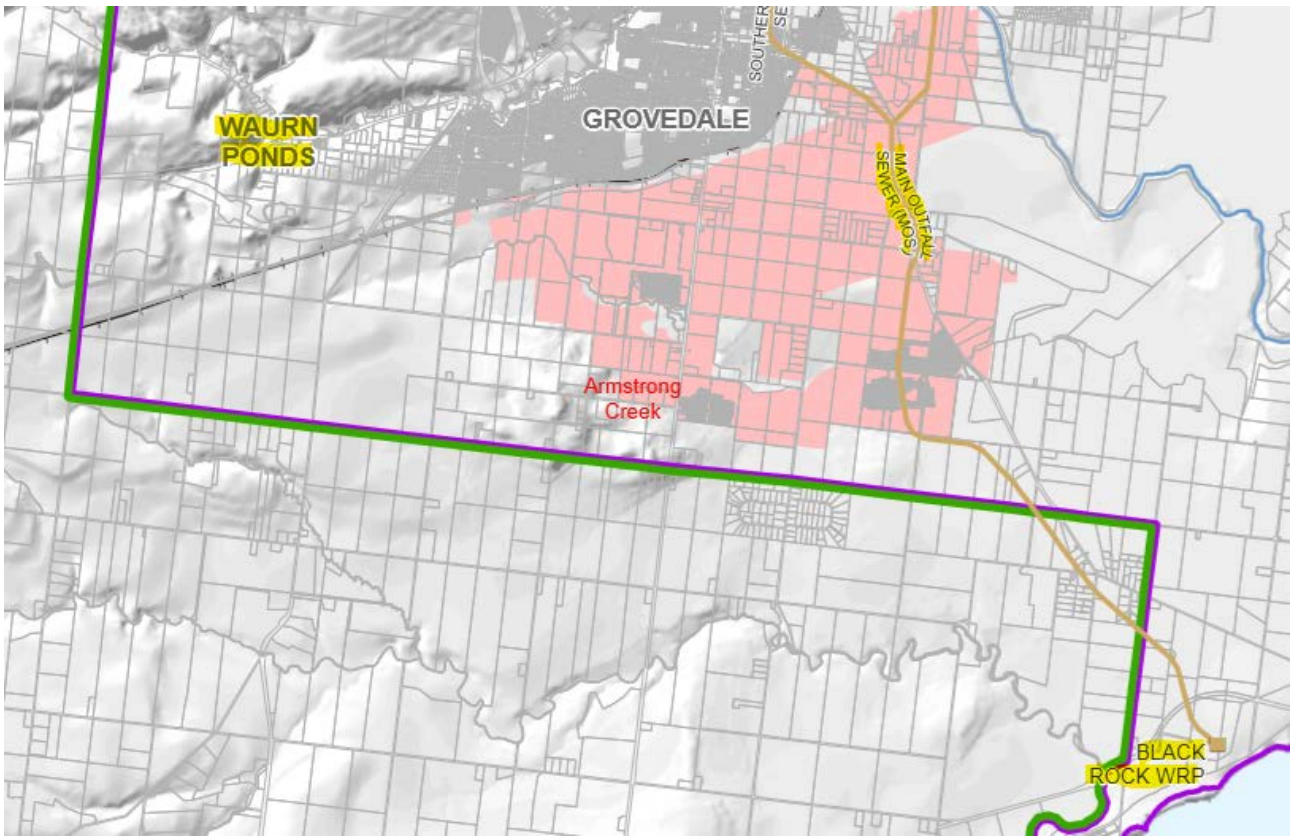

Figure 5-1 Trunk Sewer Infrastructure – Extract from Barwon Water's G21 Regional Growth Plan Further Investigation Areas Servicing Strategy May 2016

There is no existing sewerage reticulation infrastructure in the immediate vicinity of the site, with the closest sewers being located in the existing urban development areas of Waurn Ponds to the east of the Princes Freeway. These are typically local reticulation sewers with limited capacity to cater for new development.

As Armstrong Creek develops, trunk sewers are being extended west from the MOS towards Waurn Ponds. These sewers have not been sized to accommodate flows from the development of the Waurn Ponds site.

5.2 Initial Development

Reticulated sewer for initial development of the northern portion of the site can be extended from existing sewers within Waurn Ponds north east of the site. Barwon Water has advised that the closest existing sewerage asset with capacity to cater for sewage flows from initial development is a 300 mm dia sewer located near the corner of Ghazeepore Road and Burgundy Drive approximately 1.7 km north east of the site, as noted in the figure below.

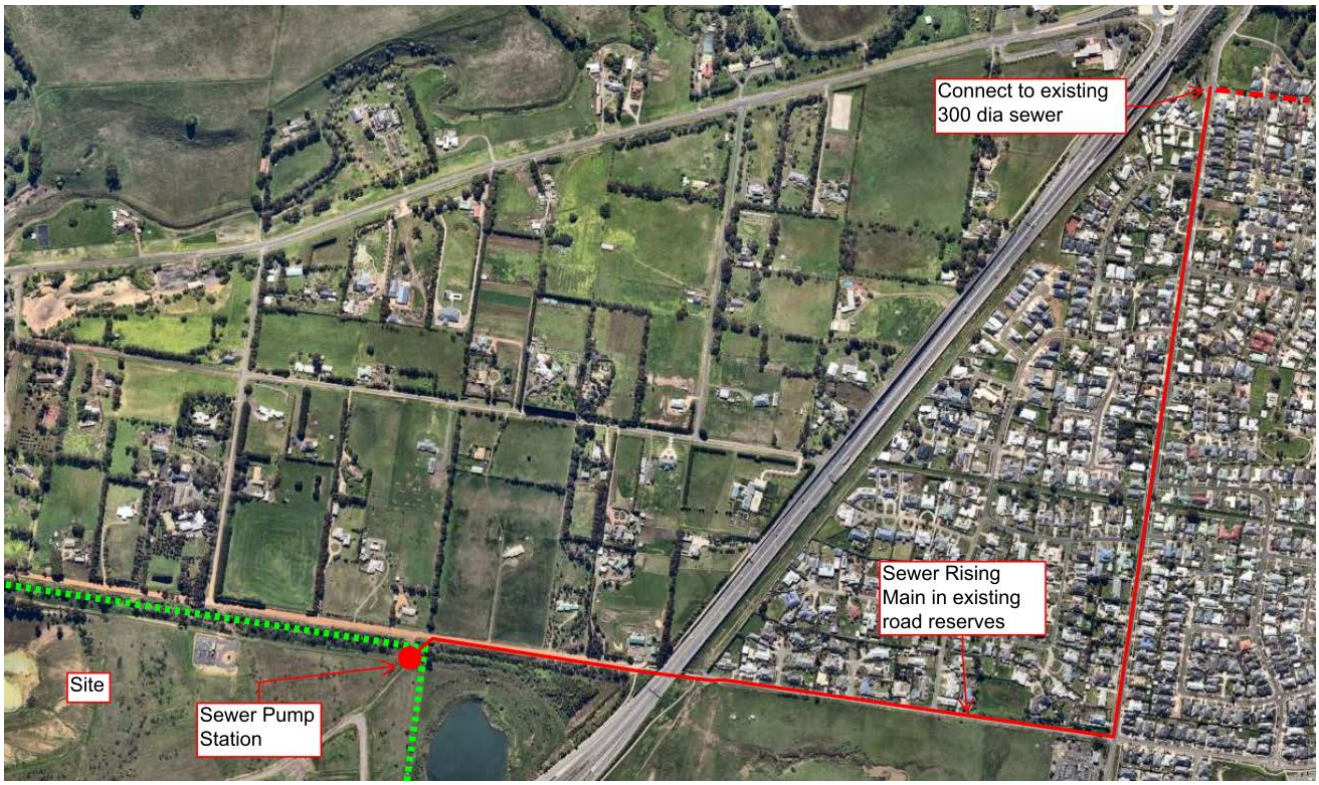

Figure 5-2 Sewerage Strategy – Initial Development

Initial development could be sewered to the north east corner of the site to a new sewage pump station. This facility would pump sewage flows to the nominated point of outfall in Barwon Water's existing system via a new sewer rising main across the Freeway and through the existing development as shown in red above.

The sewerage network within the land north of the freeway would typically be gravity sewerage, however localised pump station and rising main outfalls may be required to service lots in localised low areas, for example the land fronting Waurn Ponds Drive.

The extent of initial development that could be serviced to the existing sewer in Waurn Ponds is subject to further analysis of the development proposal, flows and the capacity of the existing sewerage network. Sewage detention storage could be utilised to reduce peak flows and maximise the extents of development using this initial sewerage outfall.

5.3 Balance Development

The following schematic figure provided by Barwon Water outlines the proposed sewer strategy for the development of the Waurn Ponds site.

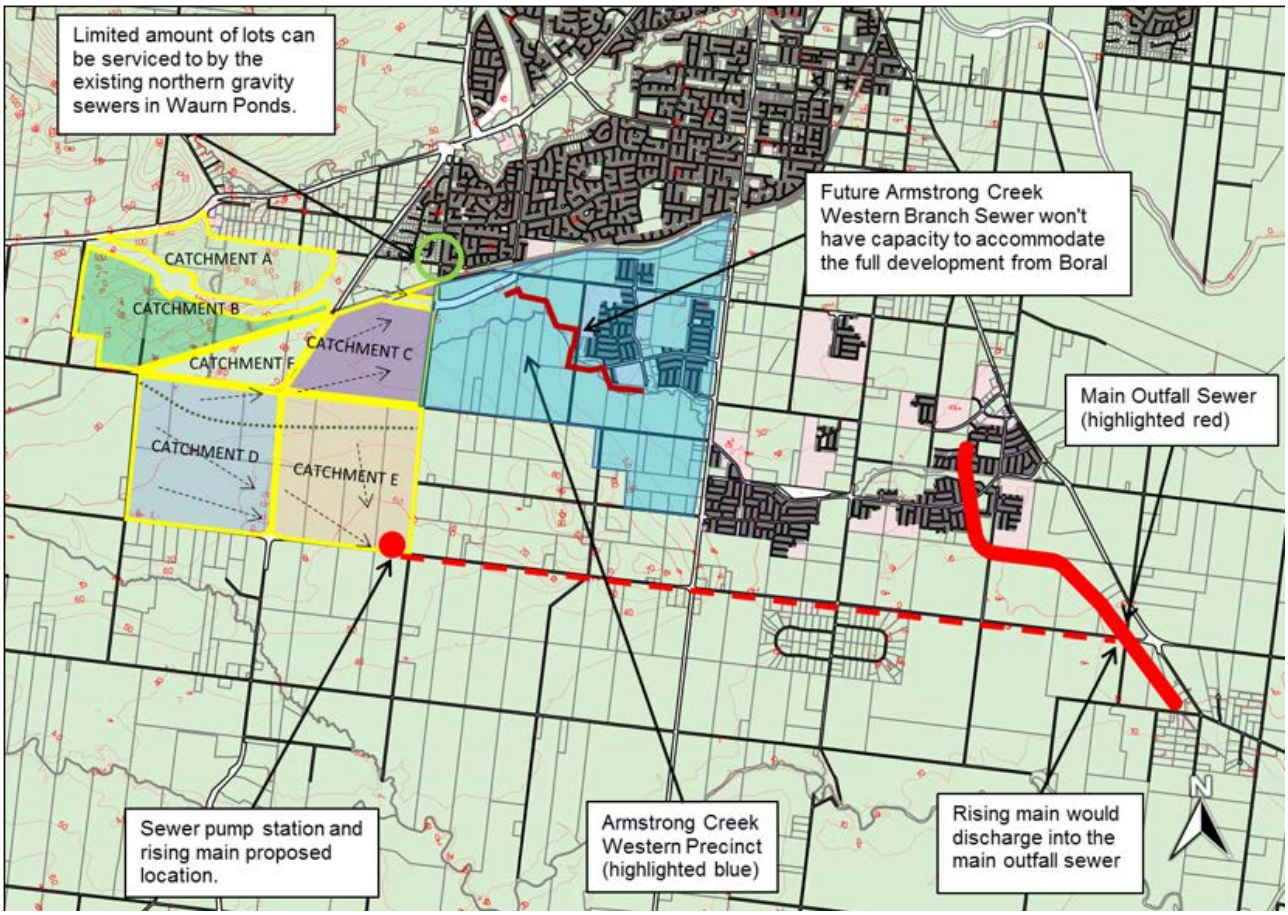

Figure 5-3 Ultimate Sewer Strategy

There is potential to direct a portion of the sewage flows from development of the area shown as Catchment C to the Armstrong Creek Western Branch Sewer that will extend towards the eastern boundary of the site. The spare capacity of this sewer will be limited as it has not been planned to accommodate the development of this area. The provision of sewage detention storage may assist in reducing peak flows.

The majority of the balance land falls to the south east and the vast majority of development flows would be directed to this point. Outfall to the MOS would be provided by a major sewage pump station with associated sewage storage and rising main as indicated in the figure above.

Staged upgrades of the MOS and the Black Rock WRP will be required as development of this site and other growth areas in Geelong progress.

6 Potable Water Supply

6.1 Existing Infrastructure

Barwon Water is the authority responsible authority for the provision of water supply reticulation facilities for the region.

The primary source of potable water supply to the Geelong system is the Wurdee Boluc Reservoir and Water Treatment Plant (WTP) located approximately 19 km south west of the Waurn Ponds site. The Wurdee Boluc transfer main supplies bulk water to the Pettavel Basin located on the western boundary of the Waurn Ponds site for treatment and storage, prior to release to the broader Geelong water supply system.

Three existing water transfer mains extend east from the Pettavel Basin along Reservoir Road and then north east towards Geelong within the railway reserve. The following figure shows this trunk potable water infrastructure.

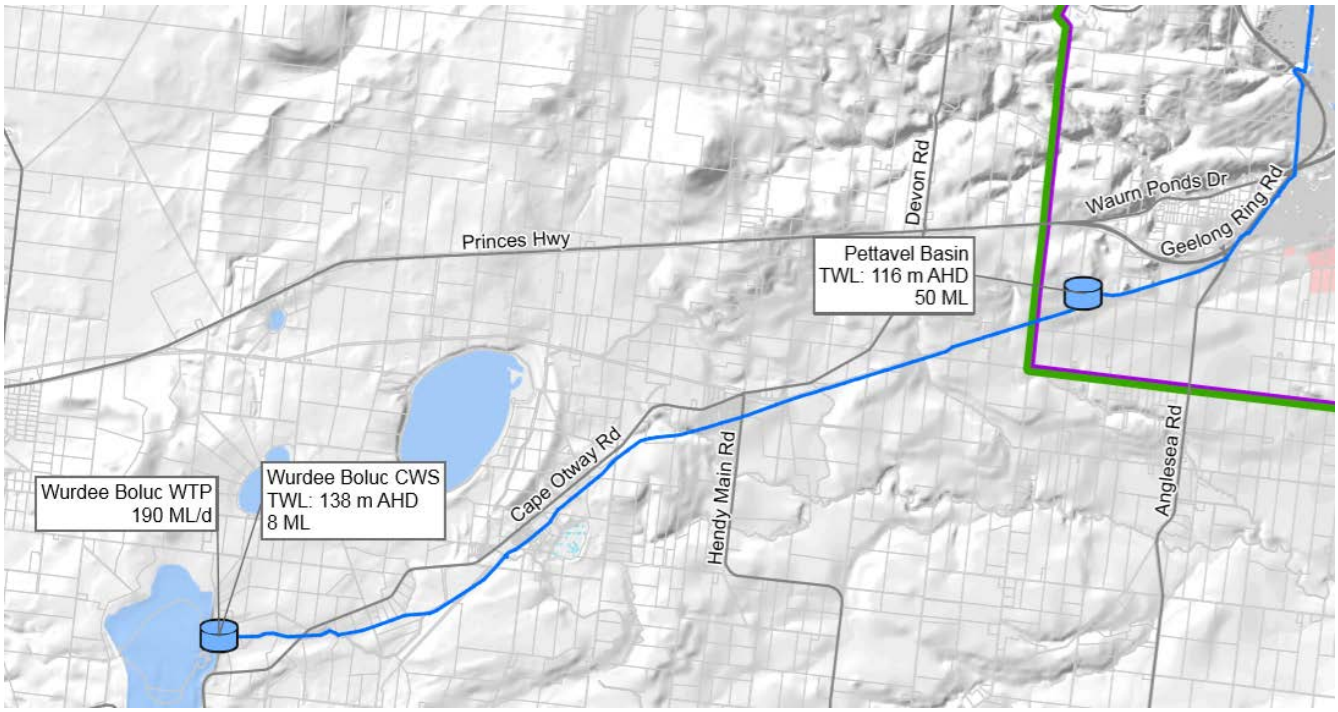

Figure 6-1 Trunk Potable Water Infrastructure – Extract from Barwon Water's G21 Regional Growth Plan Further Investigation Areas Servicing Strategy May 2016

The figure below shows the proximity of the Pettavel Basin and the water transfer mains to the site.

Figure 6-2 Existing Potable Water Infrastructure

An existing 150 mm dia potable water main fronts the sites northern boundary in McPherson Road however this main has no spare capacity to service additional development.

6.2 Initial Development

Barwon Water has advised that the Pettavell basin and the existing downstream transfer mains have capacity to service additional development. However this infrastructure is only capable of providing sufficient supply head under gravity reticulation to land below the RL 80m contour.

The northern and central precincts are all above the RL 80m contour (refer figure 2-11 for existing surface contours). There is limited opportunity to establish a new water storage tank nearby at a height sufficient to service the land via gravity reticulation. Accordingly, Barwon Water has advised that potable water supply to the development of the northern and central precincts is best provided by a pumped reticulation system extending directly from the Pettavel Basin site.

The following figure supplied by Barwon Water shows this proposal conceptually, with the red star representing the proposed booster pump at the Pettavel Basin and the dark blue line a pump boosted feeder loop main. The alignment of the loop main would follow internal roads and connect via the Freeway underpass.

Figure 6-3 Potable Water Supply Concept – Initial Development

6.3 Balance Development

Barwon Water has advised that development of the land below the 80 m contour which is the majority of the balance land could be gravity supplied from the Pettavel Basin via a direct connection to the 1200 mm dia Bellarine transfer main that runs along the railway corridor within the site.

The pump boosted feeder loop main outlined above for initial development could be extended to supply the remaining balance land that is above the 80 m contour.

The development of this site would require staged upgrades to the Pettavel Basin and the Wurdee Buloc WTP.

7 Recycled Water Supply

7.1 Existing Infrastructure

The Black Rock WRP produces Class A recycled water which is supplied to new development in Armstrong Creek. A pumped transfer main supplies recycled water from the WRP to a high level tank at Mt Duneed approximately 1.6 km east of the site's boundary. Reticulation mains extend from the tank to development in Armstrong Creek providing gravity supply.

There is currently no recycled water reticulation within or immediately adjacent to the Waurn Ponds site. As the development of Armstrong Creek extends westwards new recycled water mains will extend closer to the site. The figure below shows the recycled water infrastructure outlined above.

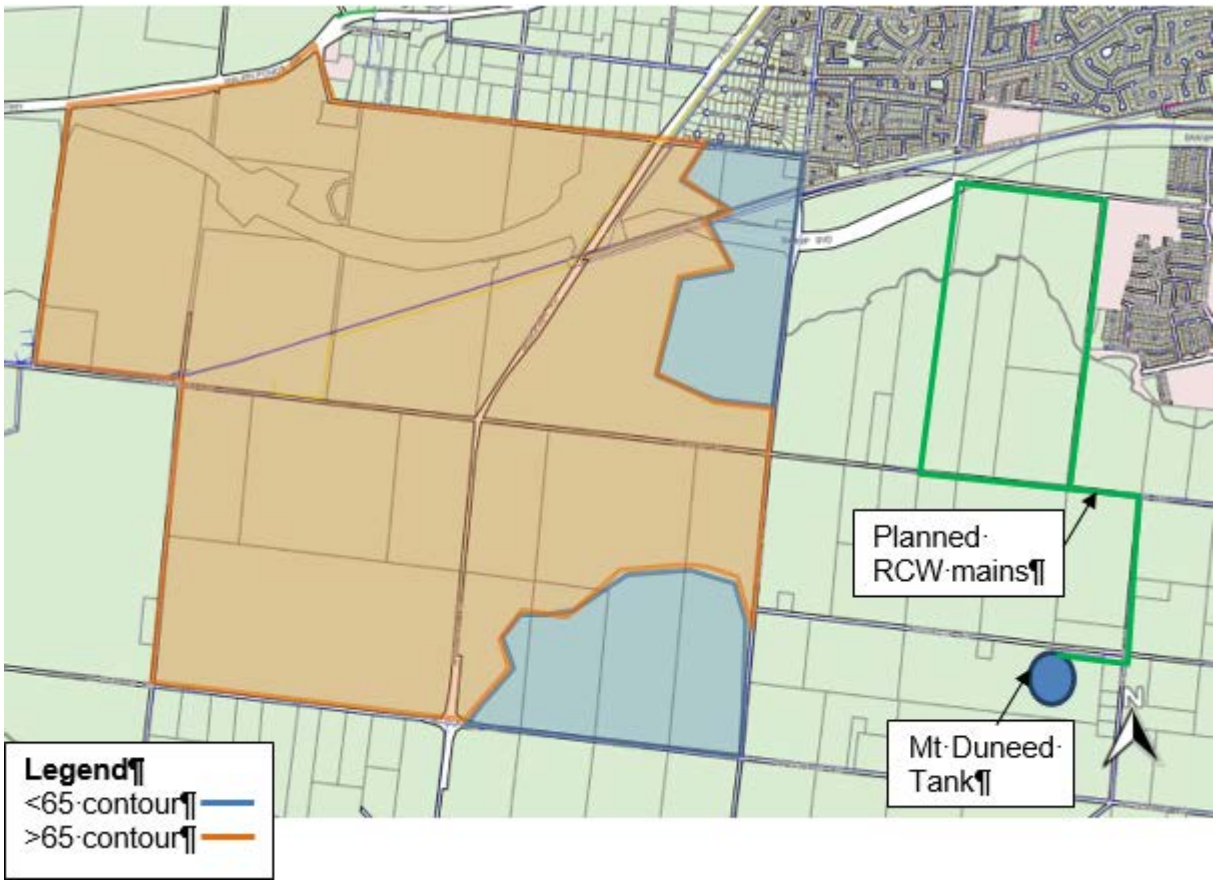

Figure 7-1 Recycled Water Infrastructure

7.2 Development Infrastructure

Barwon Water has advised that there is currently no mandate to provide recycled water to this area. Presumably this is because of the current zoning of the land, and this may change in the future should the land be rezoned.

Recycled water could be supplied to the development of the site by extending and augmenting the existing trunk recycled water system supplying Armstrong Creek. There is capacity in this system to service the development of the site however it is only currently capable of providing sufficient supply head to land below RL 65m (shown in blue above). These areas could be supplied by the extension of existing recycled water mains from Armstrong Creek.

The provision of recycled water supply to the majority of the development would require the construction of a new recycled water storage tank on Mt Duneed adjacent to the existing storage tank. A trunk water main would need to be extended from this location to the site, fed by a new booster pump station constructed adjacent to the tanks to provide the required supply head in the system.

8 Electricity Supply

8.1 Existing Infrastructure

Powercor is the authority responsible for the provision of electricity supply facilities for the region.

Existing overhead 66kV sub-transmission lines are located along part of the sites northern frontage to McPhersons Road and within the site along the Waurn Ponds Drive frontage, as shown in purple in the figure below.

Figure 8-1 Existing 66kV Electricity Assets

The McPhersons Road sub-transmission lines connect to an existing zone substation within the site opposite Luggs Road (highlighted in yellow above), which has provided electricity supply to Borals operations on the site. Powercor has advised that Boral are the owners of this asset and it is their prerogative as to what is done with this asset in the future.

Existing overhead 22kV feeder lines in the vicinity of the site are shown coloured in the following figure.

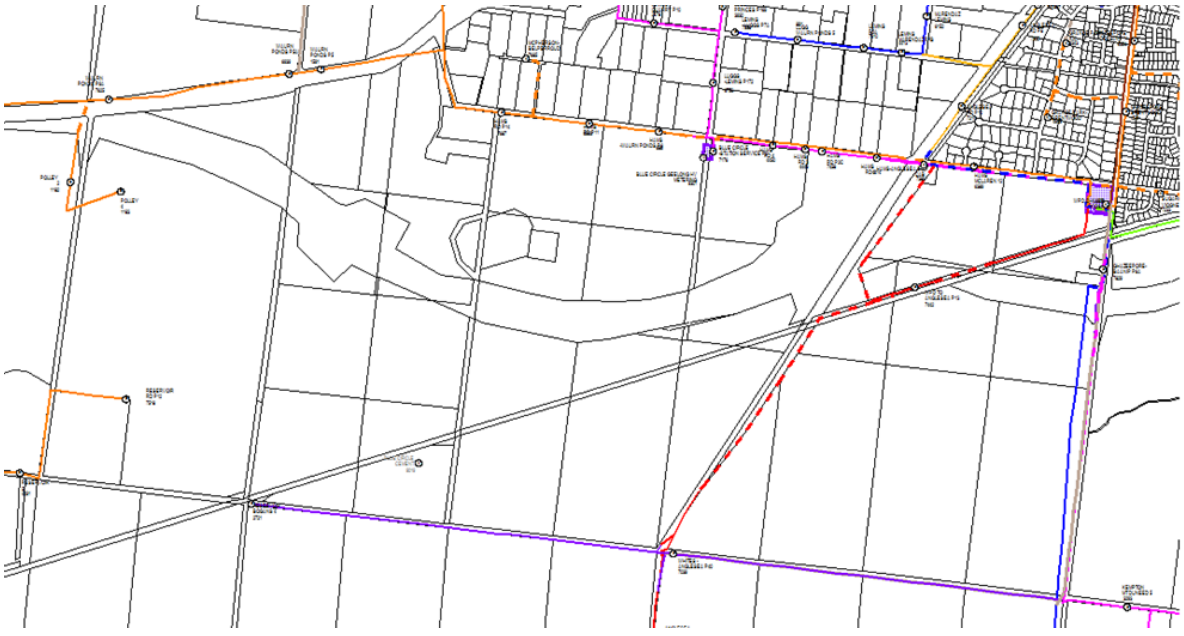

Figure 8-2 Existing 22 kV Electricity Assets

8.2 Development Infrastructure

Powercor has advised that there is minimal spare supply capacity currently available from their existing Waurn Ponds zone substation to service new development. Powercor are planning a new zone substation at Torquay in 2021 to reduce the load on the Waurn Ponds zone substation. A new zone substation is also planned in Charlemont in the longer term to supply the Armstrong Creek growth area. These works may provide spare capacity in the system that could be utilised to service initial development of the site, particularly given the removal of supply demand for Boral's operations.

Powercor has advised that full development of the Waurn Ponds property would require substantial augmentation of their existing network. No further details have been made available however it is envisaged that this may include the establishment of a new authority zone substation within the site fed from the existing / augmented 66 kV sub-transmission line along the sites northern boundary extended as required.

There is potential for Boral's existing zone substation to be reconfigured as a Powercor asset however this is subject to further investigation. Alternatively a new zone substation or other external upgrades may be required to service the development, with the timing, staging and funding all subject to further investigation and Powercor advice.

The existing overhead 66kV feeder lines within the site along the Waurn Ponds Drive frontage would be retained with associated easements and restriction on adjacent development.

9 Gas Supply

9.1 Existing Infrastructure

Ausnet Services are the authority responsible for the provision of gas supply facilities to the region.

Gas is supplied to Boral's existing operations on site via a 180 mm dia high pressure gas transmission main which runs along the southern side of the railway to the plant as shown in red below. This main operates at a pressure that is not suitable for connection for gas reticulation. The installation of a field regulator on this transmission main would enable it to supply gas reticulation.

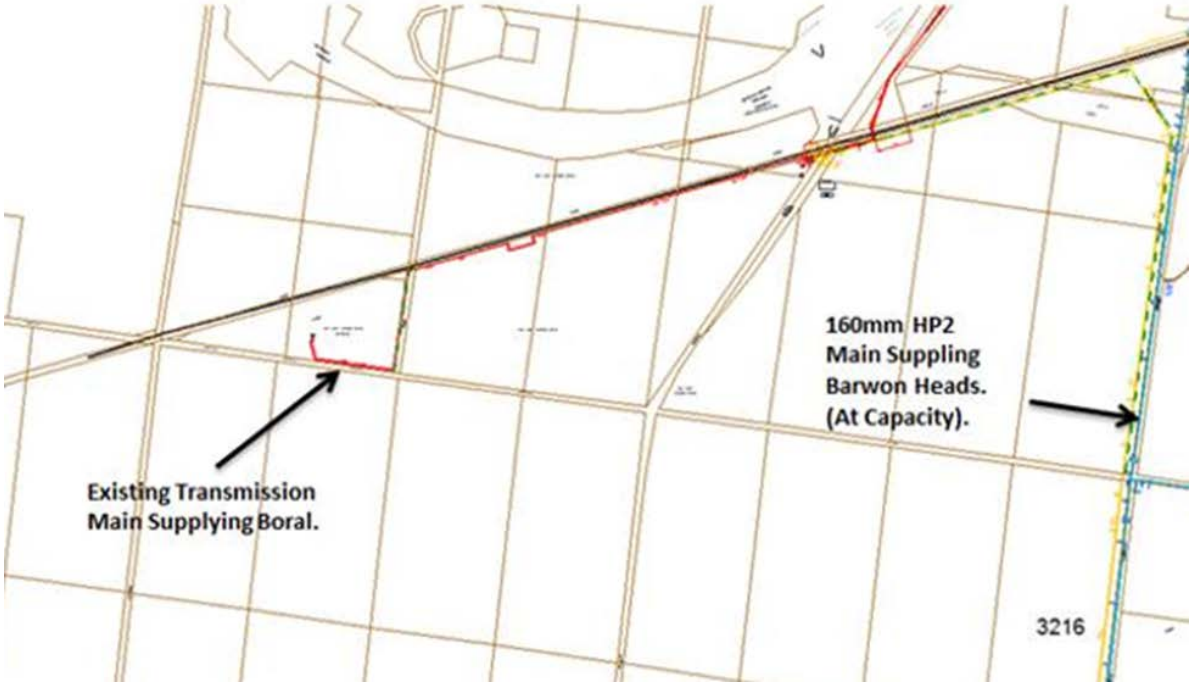

Figure 9-1 Existing Gas Transmission Main

The existing domestic gas reticulation supply network in Waurn Ponds north and east of the site is shown in blue in the figure below.

Figure 9-2 Existing Gas Reticulation Network

9.2 Initial Development

Ausnet Services has advised gas supply could be provided to the initial development of the northern precinct from the existing 150 mm dia high pressure main located at the intersection of Princes Hwy and Ghazepoore Road as circled in red in the figure above. The extension of a new gas supply main west along Waurn Ponds Drive to the site would be required to service this precinct. The extents of development that could be serviced from this source is subject to further load analysis.

9.3 Balance Development

Ausnet Services have advised that the installation of a field regulator on the existing transmission main currently servicing Boral would regulate gas from transmission pressures to reticulation pressures, which would be suitable to supply further development of the site.

10 Telecommunications

10.1 Existing Infrastructure

Existing Telstra fixed line infrastructure is located within the site servicing the existing development within the area. There is no existing NBN infrastructure within the area.

10.2 Development Infrastructure

Fibre optic based telecommunication facilities would be provided to the development of the site. NBNCo is the provider of last choice for telecommunications to new developments, however developers have the option of obtaining this service from other licensed telecommunications providers. Typically the developer will install pit and pipe infrastructure, with the telecommunication provider subsequently installing fibre optic cable in this infrastructure and undertaking any external backhaul works required to service the site.

The precinct is not currently within NBNCo's fibre footprint. It is expected that if rezoned the development can be readily provided with telecommunications services, either by NBNCo or another licensed provider.