

Forestway Shopping Centre – Development Application

Development Application Report

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1. Introduction

1.1 Project Description

ADP are the building services consultancy who have been engaged to prepare a Development Application Infrastructure Report for the Forestway Shopping Centre redevelopment – Warringah Road and Forest Way, Frenches Forest, NSW 2086.

The existing Forestway Shopping Centre comprises of multi buildings, ground level shopping mall, with commercial tenancy and back of house area on level 1. Site also consist of a multi-level above ground carpark along the Forest Way and a ground floor carpark along Grace Avenue.

The concept proposal for the redevelopment includes;

- Renewal and extension of the existing shopping centre including –
 - o New Mini-major and specialty stores on ground level;
 - o New eateries, health and lifestyle services on level 1;
 - o New sky park;
- Extension of existing supermarket;
- Carpark extension to cater for new capacity;
- Capacity for future expansion.

As part of the project due diligence process, ADP have identified the existing services infrastructure surrounding the re-development site. This process has been carried out through an initial Dial Before You Dig (DBYD) search, followed by discussions with the relevant authorities where available to clarify the anticipated connection requirements.

1.2 PURPOSE OF THE REPORT

This report provides an infrastructure due diligence of the existing authority infrastructure surrounding and serving the current site. This includes an overview of the following in-ground services:

Service	Authority
Power	Endeavour Energy (EE)
Telecommunications	Telstra/Optus
Water & Sewer	Sydney Water
Gas	Jemena
Stormwater	Council

1.3 INFORMATION SOURCES

The following information sources have been utilised to prepare this report:

- Dial before you dig (DBYD) information packages;
- Pre-DA Architectural drawings by Buchan dated 22/08/18.

2. Power Infrastructure

The local Distribution Network Service Provider (DNSP) / electrical utility is Ausgrid. Results from a recent Dial-Before-You-Dig (DBYD) search & information supplied from Ausgrid indicates Ausgrid owned assets located within the subject site.

The following existing Ausgrid distribution substations have been identified within the subject site and wider development area:

Item	Ausgrid ID	Location	Description
Substation 1	S15425	Grace Ave/Sorlie Place	Chamber/Indoor substation at the frontage of the Shopping Centre.
Substation 2	S16801	Forest Way	Pad mounted substation in outdoor carpark area. Dedicated Supply to Woolworths tenancy within the Shopping Centre.

Table 1 - Existing Substations in Development Area

Existing Ausgrid electrical substations & cabling routes are shown below.

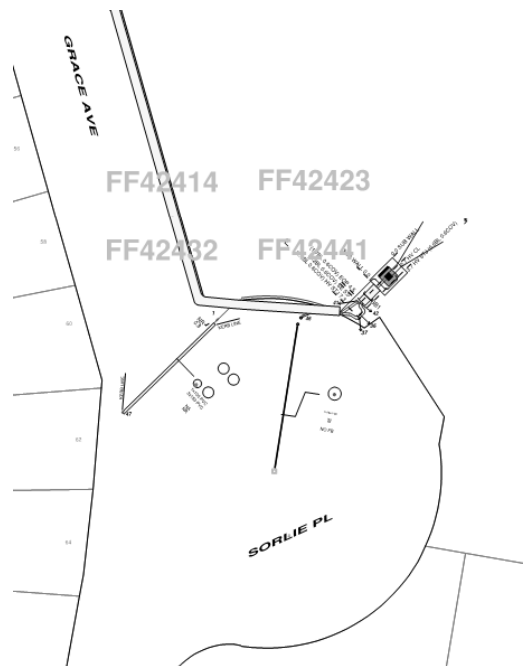


Figure 1 – Cable route of existing chamber/indoor substation S15425



Figure 2 – Cable route of existing pad mounted substation S16801

Proposed Electrical Supply Strategy

The existing pad mounted substation S16801 with the following installed transformer capacity is proposed to meet the existing and new electrical demand from Woolworths.

Existing chamber substation S15425 is proposed to be retained during the early stages of redevelopment works to allow normal trading for any tenancies within the centre.

Substations within the site are recommended, to reduce areas that will be burdened by electrical easements. Chamber/indoor type substations are being considered to as opposed to outdoor/'kiosk' type substations for the following reasons:

- Provides better streetscape outcome.
- Security. Unauthorised access is less likely, as indoor substations are more obscure. Increased security increases security of electrical supply.
- Less exposed to the weather. Operation of electrical switching can be safely carried out in bad weather.
- Acoustics. Transformer 'hum' noises are attenuated when installed indoors.

Current estimated electrical maximum demand for the development site (excluding Woolworths) is: 2964 kVA

Calculations of the maximum demand estimates are based on:

- Draft floor area yields & type of use, at time of writing

Based on preliminary load assumptions, it is anticipated that the existing pad mounted substation S16801 is to be maintained with three (3) new substations (2x1000kVA chamber substation and 1x1000kVA pad mounted substation) to be established for the new development.

It is proposed that the 2x1000kVA chamber substation are to be located at the frontage of the shopping centre on Grace Avenue nearing Russell Avenue with the 1x1000kVA pad mounted substation to be located nearing the new onramp into the carpark on Forest Way.

Once all new substations have been established, it is proposed that existing chamber substation S15425 to be decommissioned and removed to establish a new tenancy space.

With the discussions of further developments above the shopping centre, uprating existing substation S16801 and new pad mount substation could be explored to orientate the infrastructure works towards a long term vision for the development site.

3. Telecommunications Infrastructure

Results from a recent Dial-Before-You-Dig (DBYD) search & information investigations indicate that a variety of telecommunications assets present in the development area. ADP have attended site and identified the location of the existing telecommunications services. The existing incoming lead-in cables terminate into the Main Distribution Frame (MDF) located in the services room within the shopping centre.

Telstra

Existing Telstra telecommunications assets in the development area is presented in the figure below. The existing Telstra pits and conduits may not only house Telstra cables and fibre, but also those potentially of Optus and other providers. These existing underground assets may require upgrades, modifications, protection, re-direction and re-locations as part of the Development, and liaison would be required to enable this process.

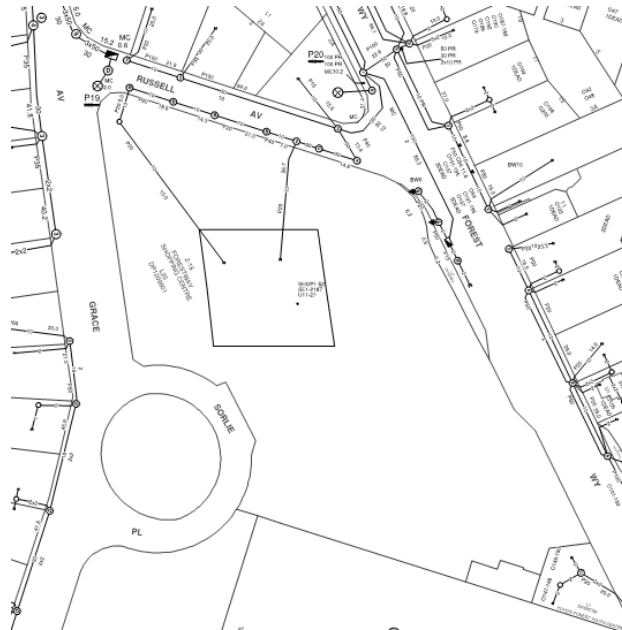


Figure 3 – Existing Telstra Cable/Duct/Trench from Russell Ave

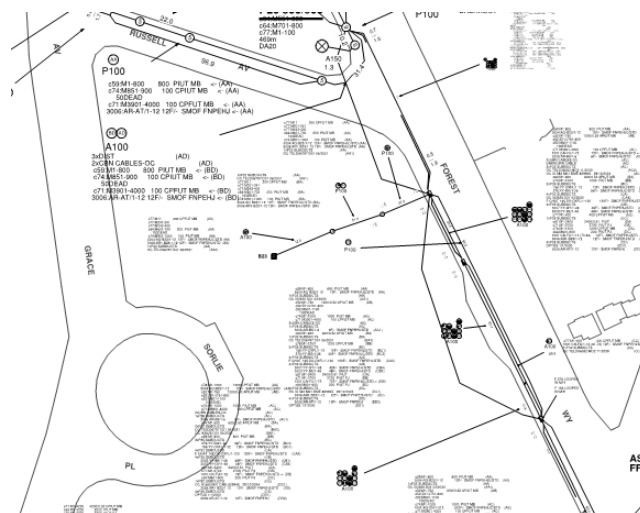


Figure 4 – Existing Telstra Cable/Duct/Trench from Forest Way

Optus

Optus also has existing telecommunications assets in the development area. The existing Optus pits, conduits and trench will likely be affected by the new development works which will require upgrades, re-direction and re-locations as part of the development, and liaison would be required to enable this process.



Figure 5 – Existing Optus Cable/Duct/Trench from Forest Way

NBNco.

ADP have liaised with NBNCo. to ascertain the location the location of the existing telecommunications network near the site. Plans of existing cabling in the development area is presented below. These existing underground assets will likely be affected by the new development works which will require upgrades, re-direction and re-locations as part of the development, and liaison would be required to enable this process.



Figure 6 – Existing NBN Cable/Duct/Trench from Forest Way

PIPE Networks

ADP have liaised with PIPE Networks to ascertain the location of the existing telecommunications network near the site. In response to the DBYD inquiry, they have identified the network cabling is contained within the Telstra duct network. Since Telstra provided PIPE Networks with the required duct space there are no other comments.

4. Water Infrastructure

ADP have liaised with Sydney Water to ascertain the location of the existing water network, and the requirements for the proposed development. Results from a recent Dial-Before-You-Dig (DBYD) search & information investigations indicate the following:

- an existing 300mm CICAL Water Main located on the Western Side of Forest Way
(we propose to make new connections to this main as part of the new works)
- A 500mm CICAL Water Main on the Northern Side of Forest Way
- A 100mm CICAL Water main along Russell Street
- A 100mm CICAL Water main along Grace Ave

The site is currently serviced via the 300mm CICAL Water Main located in Forest Way, there are multiple tap-ins which comprise;

- 100mm Fire Service which serves the Hydrant system for the Shopping centre
- 50mm Potable Water service which supplies the Shopping centre
- 150mm Fire Sprinkler Service

The Car wash and Liquorland are fed from an individual Metered supply from the 100mm CICAL Water Main located in Russell Avenue.

ADP have submitted a preliminary pressure and flow inquiry (PFI) to Sydney Water. The PFI results indicates the available pressure and flow from Sydney Water mains. In our opinion, these mains have sufficient Pressure and Flows to supply the existing and proposed development and amplification will be not be required (subject to Sydney Water confirmation).

5. Sewer Infrastructure

ADP have liaised with Sydney Water to ascertain the location of the existing sewer network, and the requirements for the proposed development. Results from a recent Dial-Before-You-Dig (DBYD) search & information investigations indicate

- 225mm VCP Sewer main from Grace Ave Adjacent Liquorland
 - The Existing Incoming Sewer and house drainage line impact the proposed Ramp works on Grace Ave. A Diversion/ Relocation of the Authority sewer will most likely be required to the opposite side of the proposed car park entry ramp prior to works commencing. Water Service Coordinator Advice will be required to advise steps on the above.

The DBYD also indicates:

- The 225 Authority Main extends through the site to the existing car wash lot.

This will most likely require a “Disuse of Use of Sewer” to the redundant section of Sewer as this line is currently impacting the proposed construction works- Water Service Coordinator Advice will be required to advise steps on the above.

The disuse of sewer will be required prior to works commencing- As this can be a lengthy process it is recommended undertaking the process as early as possible.

We anticipate the new development will connect to the existing sewer infrastructure within the site. Liase with authority application disuse of section of authority sewer sideline may be required

Sewer amplification may be required this will be subject to section 73 application and subsequent notice of requirements.

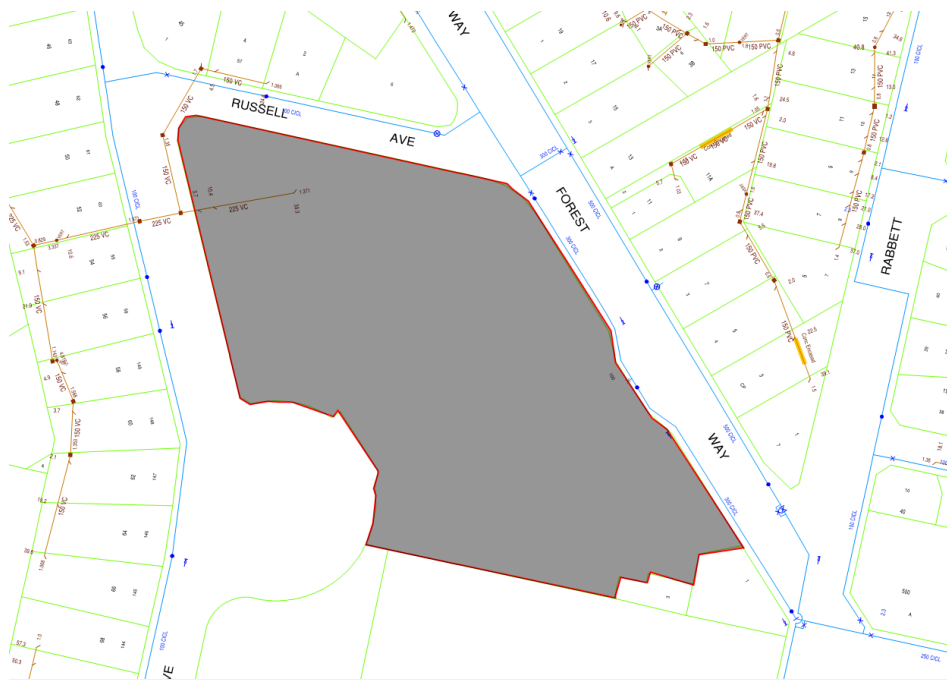


Figure 7 – Water and Sewer Dial Before You Dig

6. Gas Infrastructure

ADP have liaised with Jemena to ascertain the location of the existing gas network infrastructure. Results from a recent Dial-Before-You-Dig (DBYD) search & information investigations indicate the following:

- An existing 32mm Nylon network gas main (300kPa) on the Western Side of Russell Street
 - This currently impacts the proposed work site- This should be isolated and capped prior to works commencing
 - Pending Final Gas Loads- Make New connection and extend to new Boundary regulator Enclosure as part of New works

- An Existing 32mm Nylon Gas Main (210kPa) from Sorlie Place Carpark

We propose to use this incoming supply for the duration of the works

- The existing Boundary Regulator is located in an inground pit which is non compliant- Relocation of the Boundary regulator to a louvered cupboard or landscaped area will be required prior to works commencing
- Isolate and Cap this supply once new Connection and Boundary regulator commissioned and operational.

In our opinion, this existing authority main will be adequate to continue to service the site and the proposed new connections to the development. (Subject to final gas loads and Jemena advice)

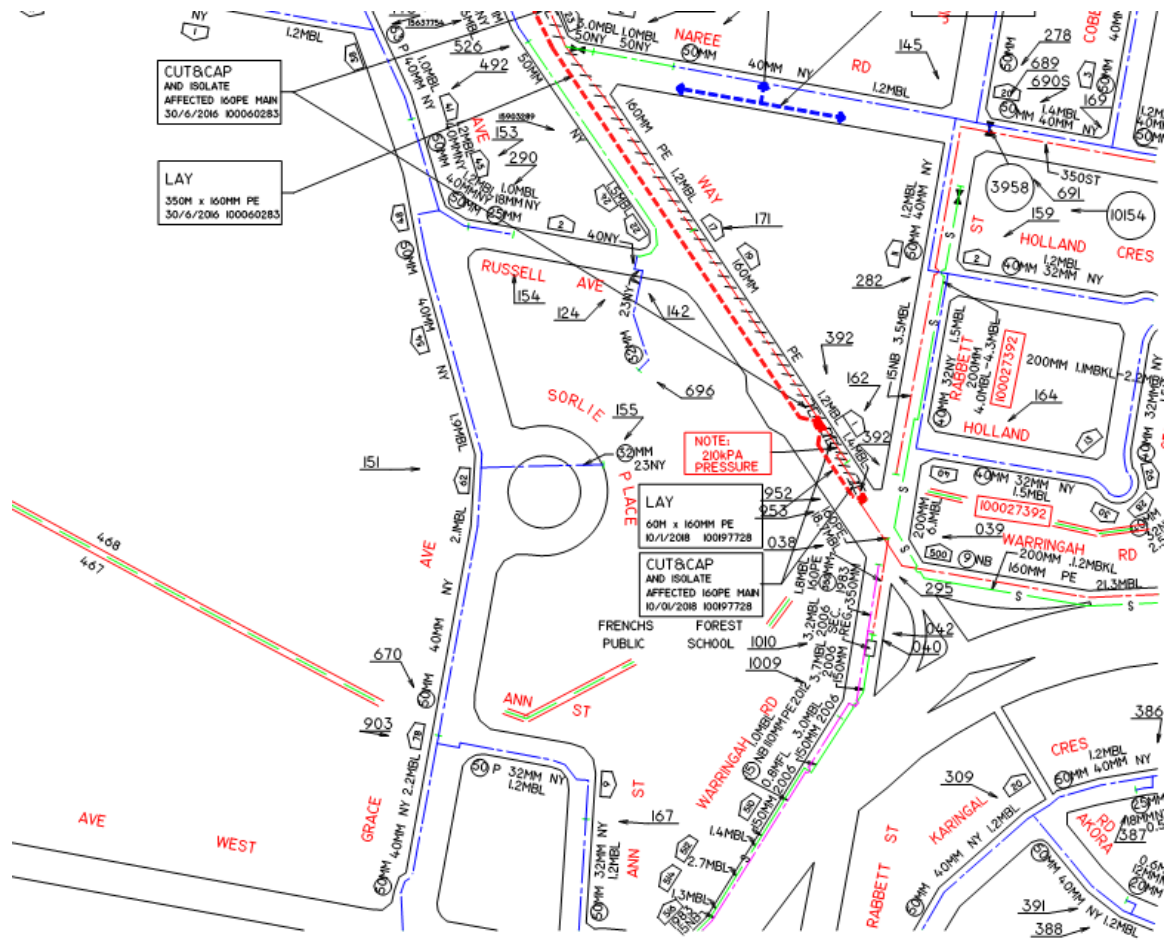


Figure 8 – Gas Dial Before You Dig

7. Mechanical Services

7.1 Description of existing mechanical services

7.1.1 Air Conditioning

Forestway Shopping Centre is currently air conditioned through a combination of multiple HVAC systems throughout the centre.

The mall areas and level 1 commercial suites are air conditioned via water cooled direct expansion air handling units located in the main rooftop plantroom. These systems use R22 refrigerant and are nearing the end of their economic life.

The specialty retail shops are air conditioned via ducted fan coil units located in multiple rooftop plantrooms distributed across the rooftop. A central chilled water system provides chilled water to each plantroom. The chilled water system consists of two air-cooled Powerpax chillers located on the roof, with chilled water pipework reticulated across the roof.

Major tenants Woolworths and ALDI each operate their own stand-alone HVAC systems. This includes multiple condenser units and packaged units located on the rooftop above each Major.

Multiple stand-alone split air conditioning systems have been installed throughout the shopping centre to serve individual tenants. These condenser units are located across the rooftop to accommodate the tenancies below them.

7.1.2 Ventilation

Eight rooftop smoke exhaust fans are provided throughout the mall area to provide smoke exhaust to the mall.

Multiple kitchen exhaust systems are located across the rooftop to serve food tenancies.

Toilet exhaust systems are located across the rooftop to serve each of the toilets throughout the shopping centre.

7.2 Description of Proposed Mechanical Services

7.2.1 Air Conditioning

A new central thermal plant will be provided to serve the shopping centre. This will include new water-cooled magnetic bearing centrifugal chillers, cooling towers, and high efficiency gas fired condensing boilers.

Chilled water pipework will reticulate throughout the site to new central air handling unit plantrooms distributed throughout the shopping centre. Air handling unit plantrooms will be situated in order to eliminate air conditioning ductwork crossing the mall areas. Each group of retail tenancies (i.e. pods) will be served by an individual air handling unit.

A new building management and control system (BMCS) will be provided to serve the building.

7.2.2 Ventilation

New mechanical ventilation systems will be provided to provided to serve the shopping centre.

The existing smoke exhaust fans will be replaced with new smoke exhaust fans to be suit the new floor layouts. The size and number of fans will be coordinated with the project fire engineer to achieve compliance with all fire engineering requirements applicable to the project.

New kitchen exhaust systems will be provided to serve the food tenancies.

New toilet exhaust systems will be provided to serve the amenities throughout the shopping centre.

A new mechanical carpark ventilation system will be provided to serve the new basement carpark. The carpark exhaust, and all other basement plantroom exhausts, will discharge above roof level away from all air intakes and property boundaries.