NORTHROP

ELECTRICAL SERVICING REPORT

North Rocks Planning Proposal

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PREPARED FOR
EG

Electrical Servicing Report

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
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Executive Summary

This report outlines the outcomes of site and desktop and site investigations to determine the existing electrical services and utilities available for the proposed residential and aged care development at 361-365 North Rocks Road, North Rocks (the site). It is intended to provide a guide and sufficient information to demonstrate electrical servicing can be provided to support the proposed development.

In summary, the proposed development will need to consider:

- Electrical: 8,642A/Ph demand is anticipated for the site based on its preliminary concept layout. This supply demand will require multiple (up to eight kiosks) HV points of connection. Should the current available loads be deemed incapable of servicing the site, it is possible that there will be a requirement for a zone level substation.
- Communications: Optus and NBN infrastructure is present. NBN is expected to be approved given the site exceeds the required 100 sole-occupancy unit minimum standard. With regards to nearby developments and previous experience, it is likely that the site will be serviced by a HFC (Hybrid Fibre Coaxial) topology. This means that the site will be fed to a node from the exchange for NBN approved fibre cabling, and via a coaxial feed from the node to each property connection point.

We conclude that the site's redevelopment can be serviced. Applications to authorities early in the next stages of development will confirm the servicing details.

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1. Introduction

This Electrical Servicing Strategy has been prepared to support a Planning Proposal to City of Parramatta Council for land at 361-365 North Rocks Road, North Rocks (the site).

The planning proposal seeks to create North Rocks Village Green, a Housing Diversity Precinct (HDP) as expressed in Council's Local Strategic Planning Statement (LSPS). It will deliver a genuine mix of housing opportunities within a garden village setting that complements existing neighbourhood character and has the potential to revitalise North Rocks Local Centre. Key elements will comprise:

- Approximate 795 new residential dwellings (including apartments, townhouses, and detached dwellings);
- Approximately 130 independent living units and aged care (seniors housing);
- Approximately 4,400m2 new community facilities;
- Approximately 2,800m2 retail/commercial floor space;
- Associated landscaping, road network, public open space improvements and increased tree canopy;

This report outlines the outcomes of initial Authority consultation, to determine the existing electrical services and utilities available for the proposed development. This document is intended to provide sufficient information to demonstrate electrical servicing can be provided to support the proposed development. In general, it should be noted that formal Applications to relevant authorities for site servicing/supply can only be made after Development Consent has been granted.

2. Site Description

2.1 Existing Site Description

The address of the subject site is 361-365 North Rocks Road, North Rocks. The site is located within 'R2 Low Density Residential' area within the City of Parramatta Local Government Area. Refer to **Figure 1** for the site location.

Figure 1 - Locality Plan

The site is described as Lot 3001 in Deposited Plan 1115866. The site is enclosed by North Rocks Road on its southern boundary, Baden Powell Place and Duncan Place on its western boundary, and remaining boundaries shared with neighbouring private property.

The existing site condition consists of multi-building faculties owned by 'RIDBC', with accompanying infrastructure including parking and access roads, in addition to green open space.

2.2 Proposed Master Plan Concept

The proposed concept would involve the demolition of the existing buildings and associated infrastructure within the subject site and the construction of the precinct. The potential dwelling yield

arising from a need to ensure housing diversity, the conceptual masterplan in addition to the proposed FSR and built form control framework could be approximately:

- Approximate 795 Apartments, townhouses and detached
- 130 independent living
- 100 bed aged care

Therefore, there is a total of circa 795 dwellings plus seniors housing comprising approximately 130 independent living units, plus 100 aged care facility. The dwelling mix ranges in height from 2-6 storeys.

The proposed development is shown in Figure 2.

Figure 2 – Re-developed Site Layout

3. Existing services

3.1 Electrical Infrastructure

3.1.1 Transmission Line Structure

An existing 132kV transmission line, owned by Endeavour Energy, traverses across the North East (picture North) and over the existing M2 Motorway. The easement allows for overhead reticulation of the transmission cables and is considered a no-build zone in accordance with the Endeavour Energy Standards.

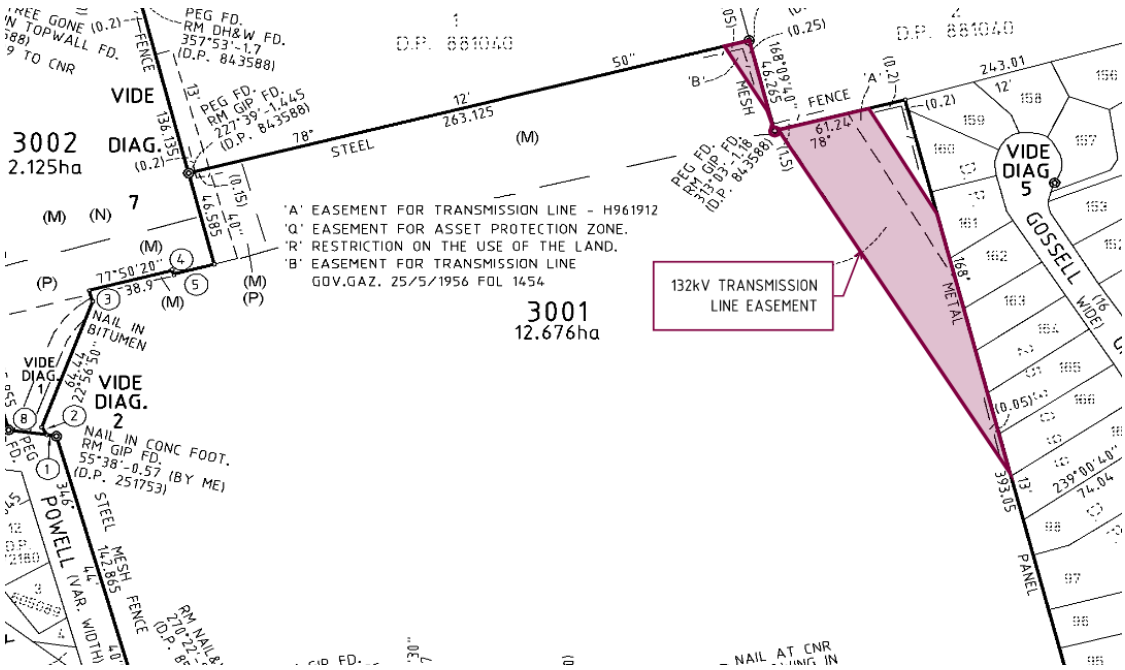

Figure 3 – Existing 132kV Easement Line

A Technical Enquiry with Endeavour Energy, made by a Level 3 Accredited Services Provider (ASP), may further determine the required clearance within and beyond the easement line for buildings and height limitations. Some guidance on clearances is provided in Figure 4 (extracted from Endeavour Standard MDI 0044). We note that this does not include the WorkCover required clearance of 6m when working near transmission lines.

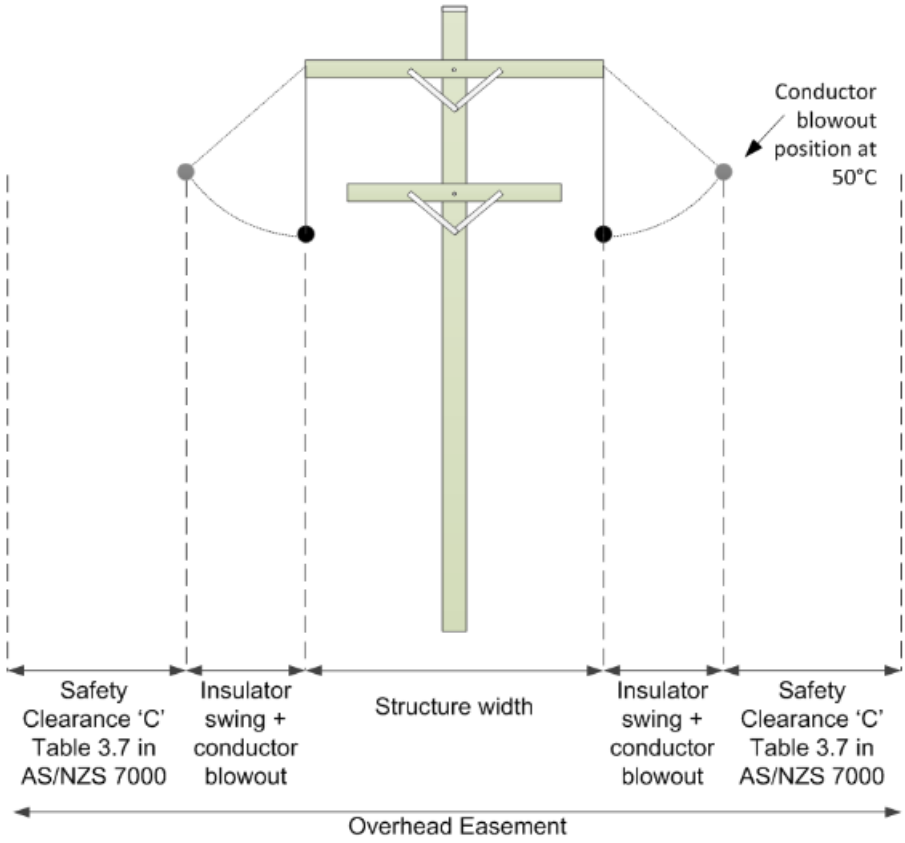

Figure 4 – Minimum Overhead Easement – Extracted from MDI 0044

3.1.2 Underground/Overhead Infrastructure

The existing facility is fed *via* two (2) existing substations;

1. Kiosk Substation S.27429
2. Kiosk Substation S.7798

We observed a Private Pole (837236) near the sports field.

We understand as part of the proposed Master Plan that these services will be removed and new substations will be strategically located in accordance with the demand expectations and energy authority standards.

Figure 5 – Existing HV Infrastructure Locations

3.1.3 S.27429

S.27429 is located within the facility and is accessible *via* the North Rocks Road entry points. Without submitting a formal enquiry to energy authorities to detail the composition in its entirety, we expect the substation to be a 1,000kVA rated connection.

The substation provides a single dedicated LV connection from the energy grid to the facility *via* a 1,250A rated supply feed.

3.1.4 S.7798

S.7798 is accessible *via* the private access roads of the current facility. The existing substation appears to be providing services to everything due North (photo) of the site and is rated at 1,000kVA. Given its composition and geographical location, we expect the services from the substation are dedicated to the site and will be decommissioned to suit the new master plan layout.

3.1.5 Pole 837236

Information on this pole was unavailable without formal inquiry. However, we expect this supply is small in capacity and would only be providing services to the adjacent sports field. The pole is connected to a nearby authority pole junction on Baden Powell Place.

3.2 Communications Infrastructure

The site is currently fed by a private Optus coaxial connection point within the main entry reception building from North Rocks Road. The cable access pit is near the entry of the facility closest to the reception building.

We expected NBN will be the benchmark option for the proposed site and the existing Optus connection will be decommissioned and removed.

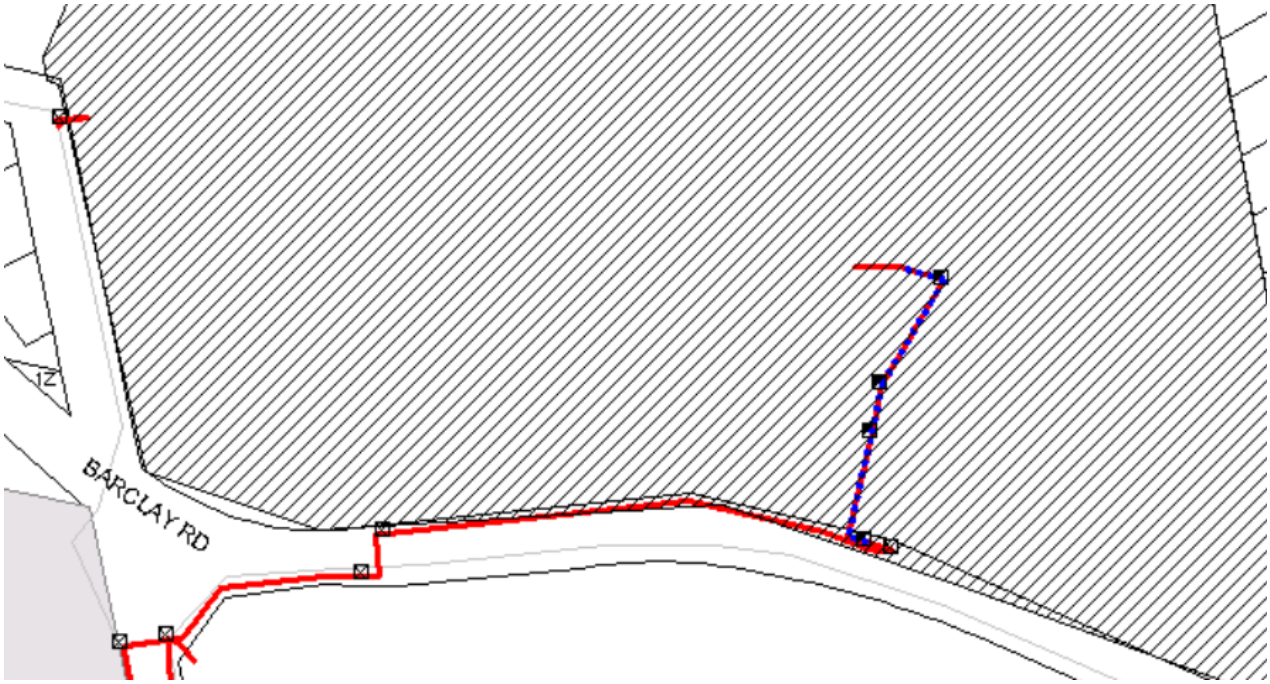

Figure 6 – Existing Underground Optus Network

NBN investigations have been conducted and confirmed as available for the site (figure 7).

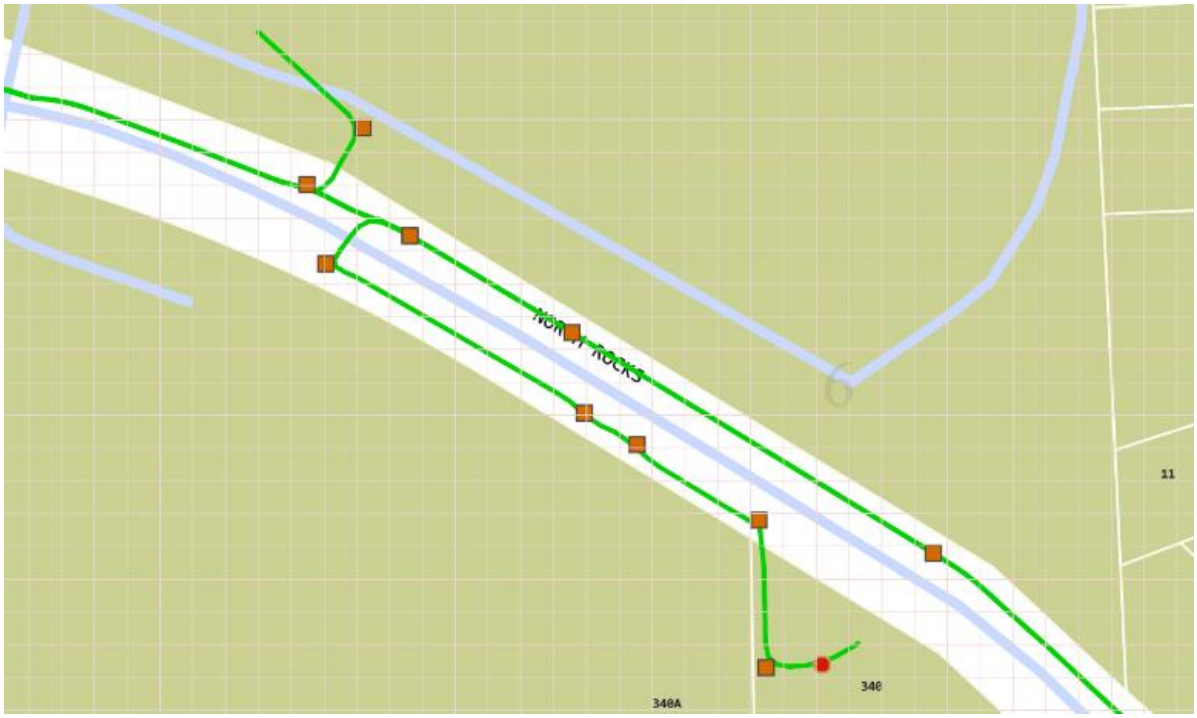

Figure 7 – Existing NBN Infrastructure

4. Proposed Servicing

4.1 Electrical Infrastructure

The potential dwelling yield arising from a need to ensure housing diversity, the conceptual masterplan in addition to the proposed FSR and built form control framework could be approximately:

- 7 dwellings, comprising 690 apartments and 235 townhouses style products and detached dwellings
- Seniors housing – 130 Independent Living Units plus 100 aged care facility

Therefore there is a total of circa 795 dwellings plus seniors housing comprising approximately 130 independent living units.

4.1.1 Apartments

Domestic maximum load calculations are in the table that follows.

Total Number of Units	**690**
Number of Units / Phase:	**230**

Load Group	Description	Quantity / Load	Units (kW,A)	Load (A / Phase)
A. (i)	Internal Lighting			115.00
(ii)	External Lighting			
B. (i)	10A GPOs			487.00
(ii)	15A GPOs		GPOs	
(iii)	20A GPOs		GPOs	
C.	Cooking Appliance			644.00
D.	Air Conditioning Cooling Equipment		kW	
	Air Conditioning Heating Equipment	2.4	kW	1725.00
E.	Instantaneous Water Heaters			284.00
	Total AS3000 Maximum Demand for all Apartments (Amps/Phase)			**3255.00**

4.1.2 Townhouses and Detached Dwellings

Domestic maximum load calculations are in the table that follows.

Total Number of Units	**235**
Number of Units / Phase:	**82**

Load Group	Description	Quantity / Load	Units (kW,A)	Load (A / Phase)
A. (i)	Internal Lighting			41.00
(ii)	External Lighting			
B. (i)	10A GPOs			205.80
(ii)	15A GPOs		GPOs	
(iii)	20A GPOs		GPOs	
C.	Cooking Appliance			229.60
D.	Air Conditioning Cooling Equipment		kW	
	Air Conditioning Heating Equipment	2.6	kW	666.25
E.	Instantaneous Water Heaters			165.60
	Total AS3000 Maximum Demand for all Living Units (Amps/Phase)			**1308.25**

4.1.3 Seniors Housing (Mixed ILUs)

Domestic maximum load calculations are in the table that follows.

Total Number of Units	**130**
Number of Units / Phase:	**49**

Load Group	Description	Quantity / Load	Units (kW,A)	Load (A / Phase)
A. (i)	Internal Lighting			24.50
(ii)	External Lighting			
B. (i)	10A GPOs			143.10
(ii)	15A GPOs		GPOs	
(iii)	20A GPOs		GPOs	
C.	Cooking Appliance			137.20
D.	Air Conditioning Cooling Equipment		kW	
	Air Conditioning Heating Equipment	2	kW	306.25
	Total AS3000 Maximum Demand for all Living Units (Amps/Phase)			**611.05**

In summary, it is determined that the dwelling portion of the site would require a minimum of 5,174A/Ph of electrical supply. We note that this calculation refers strictly to the apartment living area and excludes any information other than the information provided from date of this submission.

Areas expected for public/ common living use such as retail, commercial, green spaces, public domain and streetscape, our considerations for calculations have been listed below and summarised further;

- We have nominated a fixed supply demand on the basis that each common corridor and back of house space will be somewhat equal in area and composition
- The calculations drawn are from previous projects of a similar nature and do not necessary determine the final demand of the site
- We have proposed for cafés/restaurants with medium-level cooking equipment

4.1.4 Substations & HV Infrastructure

We understand Endeavour Energy has jurisdiction in this area and have access to a few solutions to better distribution and maintain authority assets in terms of electrical infrastructure. Given the preliminary proposed demand of the site was determined at 8,642A/Ph, the following options for services reticulation are strategic to managing cost impact on site and mitigate spatial impact in accordance with the required standards.

We note that the site will likely have a larger impact on the HV network and Endeavour Energy may require the provision of a Zone Substation solution to supply the site. This determination can be made once a master plan is finalised and an application is made to the authority.

4.1.4.1 Kiosk Substations

Should this option be pursued, up to eight (8) multiple kiosk substations could be located around the site to service the facilities. This is based on the understanding that each substation will be sized to accommodate an approximate 1,200A/Ph of supply (we have allowed for spare capacities to service the public domain lighting areas as well as the residential portions where separate low voltage supplies would be required at each kiosk).

4.1.4.2 Surface Chamber Substations

Should this option be pursued, consolidated chamber substations may be considered to enable a higher capacity load to be fed from a more centralised location on site. Endeavour Energy may allow up to 2,400A/Ph of supply for each nominated chamber, totalling four (4) locations. Given the likely spatial impact of surface chambers and clearance requirements for each of the enclosures, this is likely to be a less favourable option.

4.2 Communications Infrastructure

Typically, in developments greater than 100 sole-occupancy units, NBN is highly likely to approve and provide service to the site. Without formal application and approval by NBN, a site infrastructure methodology cannot be advised. With regards to nearby developments and previous experience, it is likely that the site will be serviced by a HFC (Hybrid Fibre Coaxial) topology. This means that the site will be fed to a node from the exchange for NBN approved fibre cabling, and via a coaxial feed from the node to each property connection point.