



1020 Melia Court, Castle Hill

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Multidiscipline Report

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Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

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1. Introduction

Northrop has been engaged as the hydraulic and ASP3 services engineering consultant to provide high level due diligence reporting services for the proposed development site at 1020 Melia Court, Castle Hill.

The purpose of this report is to provide the following information:

• high level advice on the existing and the proposed hydraulic services and utility infrastructure

Site Information & Location

Site Name:	Rogans Hill Park- Planning Proposal
Site Address:	1020 Melia Court, Castle Hill 2154
Northrop Project Number:	SY230499

Subject Site

The subject site is located at 1020 Melia Court, Castle Hill encompasses Lot 1021 DP 876671 Melia Court, and Lot 2 DP 576773 and Lot 1021 DP 876671 Glen Rd. Located in The Hills Shire Council Local Government Area (LGA). The site is 2.69 ha in size and zoned C4 Environmental living currently.

A subject site locality plan is presented below in figure below.



Project Overview

The project involves the re-development of 1020 Melia Court in Castle Hill for Planning Proposal Application to the Hills Shire Council. The site is to be developed for a mix of low and medium density residential buildings including a new public park, series of open spaces and public domain upgrades.



The project includes:

- A Publicly Accessible Park "Rogans Hill Park" that is designed to provide a natural play area and outdoor fitness opportunities.
- Six (6) residential flat buildings, with heights ranging from three to six storeys, containing 147 apartment units.
- 38 terraces, each spanning between two and three stories.
- A series of connected biodiversity corridors connecting the existing Blue Gum High Forest and WSUD infrastructure that provide new opportunities for habitat for local flora and fauna.
- A central loop road to enhance accessibility and circulation to each public and communal space.

Proposed Development

The proposed development entails a community including up to 9,000sqm of residential (147 units and 38 terraces) and up to 2,000sqm of community open space.

Vehicular access is proposed to be off Glen Road.



2. Executive Summary

2.1 Hydraulic

From the early assessments and desktop reviews, we believe the existing water main infrastructure for the surrounding area shall be adequate to service the proposed development. However, a new sewer main deviation and new gas extension are required from the existing surrounding infrastructure main.

It's important to highlight that our findings are derived from our preliminary examination of Sydney Water's water and sewer diagrams as well as the Jemena gas diagram. Sydney Water and Jemena Gas will validate all utility connections and their capacities upon submission of the official application.

2.2 ASP3- Existing Electrical Infrastructure

2.2.1 Substation No. 4368

The Existing pole top substation 4368 is located at Castle Hill Road. The size of the substation in terms of apparent power (KVA) was found to be 400KVA & with a maximum draw permissible of 550 amps. Currently it is running at 70%. It does not have spare capacity to supply the site.



Figure 2 – Existing Substation No. 4368 on Castle Hill Road

2.2.2 Existing High Voltage (HV) Network Infrastructure

Existing 11KV overhead cables are running along castle hill road. Currently it is supplying to existing pole top substation 4368. The existing 11KV network might have enough spare capacity to supply the proposed development site. 11KV connection point is approx. 250m from proposed development site.



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Figure 3. – HV Connection at Castle Hill road

2.2.3 Existing Low Voltage (LV) Network Infrastructure

LV supply is coming from existing pole top substation 4368. LV nearest connection point is located at pole PL742420. It does not have enough spare capacity to supply the site.



Figure 4 – LV Connections at Substation No. 4368

2.2.4 Street Lighting (SL) Network Infrastructure

Existing street lightings are located at Glen Road as per Endeavour Energy GIS map.







2.3 Communication

The Telstra map below indicates that there are existing communication conduits, pits and associated hardware owned by Telstra on this site. Telstra has existing hardware infrastructure on Glen road.



Telstra Map

The NBN drawings also show infrastructure similar to the Telstra Map. This indicates that Telstra own the conduits and pits and NBN own the infrastructure running through them.





3. Hydraulic and Fire Infrastructure Report

3.1 General

Northrop has performed non-invasive investigations in regard to the existing site on top of the drawings provided.

Our assessment has been based on the site inspection conducted and information provided by the relevant water and sewer utility authorities, and information provided by the project representatives including but not limited to:

- Sydney Water Sewer and Water Diagram.
- Jemena Gas Diagrams
- Survey Plan prepared by Chadwick Cheng Consulting Surveyors, dated 30/05/2023.
- Architectural drawings prepared by DKO Architecture, dated 24/10/2023.

3.2 Existing Sewer Infrastructure

The development has access to the following Sydney Water mains:

- 1. DN 150mm VC sewer main from Glen Road and extend into the site runs along with the western boundary.
- 2. DN 150mm VC sewer main extends from the northeast corner of the site and crosses the site from east to west.





Currently there is no sewer connection on site. As part of the Sydney Water section 73 application and process Sydney Water will request for existing sewer connections to be adjusted to suit the current Sydney Water upgrade to comply with current requirements.

3.3 Proposed Sewer Service Strategy

From our initial review and assessment, the sewer discharge is approximately 10.3L/s. The existing sewer main's locations are not adequate to service the proposed new development. As part of the proposal we recommend to disuse the existing sewer main on the northern side and reticulate a new sewer main through out the development as per sketch below.



Refer to the markup below for the sewer strategy:

Remove the existing DN150 VC sewer main which traverses from east to west (shown in red). Install a new sewer deviation through the site and run alone with the new path on site (shown in purple), allowing collection of the sewer discharge from the proposed multiple buildings.

Final assessment for the sewer main will be undertaken by Sydney Water as part of the section 73 application submission, once a DA number has been provided for the proposed development.

3.4 Existing Water Infrastructure

The subject site is surrounded by a number of water mains. Size and locations of the Sydney Water water mains are noted as follows:

- DN 100mm CICL water main in Glen Road;
- DN 500mm CICL water trunk crossing the site.





3.5 Proposed Water Service Strategy

From our initial review and assessment, approximately 11.4L/s of cold water are required for domestic usage, the existing 100mm water main in Glen Road shall be adequate to service the proposed new buildings for both potable water and fire protection water. A final assessment of this main will be made with the impending statement of available pressure and flow provided by Sydney Water.

As part of Sydney Water requirements, a section 73 application shall be submitted with Sydney Water once DA number has been provided to obtain final assessment by Sydney Water.

There is no existing potable connection in Glen Road. Final approval for new connections would be subject to the final Sydney Water assessment and approval.

3.6 Existing Natural Gas Infrastructure

The development has access to the following Jemena gas main:

• 32 NY 210kPa gas main within Glen Road.





From our initial review and assessment, the existing natural gas main in Glen Road is approximately 55m away from development, new extension from this main is needed. Final size and approval to be obtained from Jemena.

4. (ASP3) Electrical High Voltage Power Infrastructure Report

4.1 Proposed High Voltage Network

A new twin Padmount Substation is required to meet the demand of the development site. A 2x1000KVA padmount substation can supply a maximum of 2700 amps to fulfil the load demand. 11KV connection point is located at Castle Hill Road which is situated approx. 250m from the development site. Castle hill road is transport of NSW road. Currently we do not have enough spare ducts in Glen Road therefore approx. 250m of new trenches & conduits are required to supply the new substations.

4.2 Proposed Low Voltage Network

New low voltage interconnection from new substation to existing substation is required as part of new substation design work.

4.3 Proposed Development Site Maximum Demand

We have conducted a high-level Maximum demand calculation, the estimated maximum demand for the site is 1750 Amps.

Based on Endeavour Energy Underground Distribution Network Design Standard - MDI0028 sec 6.8, Northrop suggest using 2 x 1000kVA Padmount Substation to supply the load.

The proposed substation can provide approximately 2700 Amps, which will service the site and have spare capacity.

Development Detail	Number	ADMD in KVA	Area in m sq	VA/M sq	Sub Total in KVA
Units	185	3.5			648
Car Parking Space	265		9641	15	145
Communal Area			2396	50	120
Lift	8	15			120
EV Charger	TBC		TBC	20	
10% extra					105
Total					1138

4.4 Typical Substation Layout and General Spatial Arrangement

The following requirements associated with the use of padmount substation must be met for electrical safety, maintenance and compliance with relevant Australian standards and energy provider requirements:

• Substation is to be located in an area that provides direct access for maintenance trucks typically on the boundary, accessible from the street.



- If not located on the boundary, a right of way easement will need to be created to provide access to the substation location.
- Preferably sited on grade; suspended slabs with dispensation is acceptable;
- Free to air; i.e. no encroachments from above
- Must not be located within 5m of Telecommunications pits, 10m of fire hydrants, and 3m of non-fire rated buildings
- Easement must be level of the size of the easement
- Easement dimensions are 2.75m x 5.5m refer below spatial figures
- In addition to the above, the exclusion zone around the proposed padmount substation must be maintained as indicated by the following spatial specific to Endeavour Energy's

requirements.



- SUBSTATION TO BE POSITIONED WHEREVER POSSIBLE ON LOW SIDE OF STREET. IF SUBSTATION MUST BE POSITIONED ON HIGH SIDE, DIM 5500 MUST BE INCREASED TO 6500 TO CLEAR WATER BOARD SEWERS.
- SUBSTATION TO BE POSITIONED PREFERABLY WITH HY TO FOOTPATH

SIDE (AS SHOWN).







Endeavour Energy Padmount Substation Long section Elevation



Endeavour Energy Padmount Substation Short section Elevation

4.5 Proposed HV Connection and Substation Arrangement

Subject to endeavour energy's approval we anticipate that the new twin substation will be fed from the existing HV network located on Glen road. It is anticipated that Underground from Overhead (UGOH) connections will be made in order to make this possible.

The new substation is preferred to be located along the Glen road at the site front boundary, otherwise a 4.5m wide right of way to be created from boundary to substation, and a 3m wide cable easement is to be required along the cable route within the development side boundary.

The new substation site needs to comply with Endeavour Energy design standards, also to satisfy the 3m fire restriction zone requirement, as per Endeavour Energy substation design standards.





5 Summary & Recommendation

- Northrop has been engaged as the hydraulic and utility infrastructure services engineering consultant to provide high level due diligence reporting services for the proposed development site at 2 Glen Road, Castle Hill.
- The proposal would include 185 dwellings (consisting of 147 apartments and 38 terraces) as well as community open space.
- The high-level investigation is visual by nature and based on DBYG and other documentation provided to date. Any comments in relation to BCA compliance issues throughout the entire site can be dealt with at detail design stages
- From Hydraulic and utility infrastructure services we support the proposed development and confirm the masterplan can be designed to support the increase in density for the subject site.
- As per Preliminary Maximum demand, proposed development site required 2x1000KVA new padmount Substation. Existing 11KV connection point is located at Castle Hill Road which is situated approx. 250m from development site. Existing 11KV network might have enough spare capacity to supply the site.

During the gateway determination stages, it is advisable that:

- The applicant submits a load connection application promptly to assess the available spare capacity within the existing 11KV network.
- The applicant collaborates with the council and Endeavour Energy to:
- Investigate the feasibility of undergrounding overhead cables and converting existing wooden street poles.
- Furnish a preliminary design for trenching along Glen Road's footpath.
- Provide an initial substation design for approval, taking into account any potential impact on the existing trees along Glen Road's footpath.

Contact Us

BOWRAL

02 4861 2042 bowral@northrop.com.au Shop 9a, 310-312 Bong Bong Street Bowral NSW 2576

BRISBANE

07 3365 0400 brisbane@northrop.com.au Level 25, 12 Creek Street Brisbane QLD 4000

CANBERRA

02 6285 1822 canberra@northrop.com.au Level 6, 224 Bunda Street Canberra ACT 2608

CENTRAL COAST

02 4365 1668 centralcoast@northrop.com.au Level 1, Suite 4 257-259 Central Coast Highway Erina NSW 2250

COFFS HARBOUR

02 5603 3053 coffsharbour@northrop.com.au Suite 6, 27 Orlando Street Coffs Harbour NSW 2450

MELBOURNE

03 9600 2645 melbourne@northrop.com.au Level 3, 520 Collins Street Melbourne VIC 3000

NEWCASTLE

02 4943 1777 newcastle@northrop.com.au Level 1, 215 Pacific Highway Charlestown NSW 2290

PARRAMATTA

02 9241 4188 sydney@northrop.com.au Lvl 15, 6 Hassall Street Parramatta NSW 2150

SYDNEY

02 9241 4188 sydney@northrop.com.au Level 11, 345 George Street Sydney NSW 2000

WOLLONGONG

02 4226 3333 southcoast@northrop.com.au Level 1, 57 Kembla Street Wollongong NSW 2500

