Report

Infrastructure Management Plan

NEW PRIMARY SCHOOL IN MULGOA RISE

School Infrastructure NSW

CONFIDENTIAL

Revision: B - Review
Issued: 29 July 2021

Norman Disney & Young
A TETRA TECH COMPANY

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1 EXECUTIVE SUMMARY

NDY have been engaged by NSW School Infrastructure to complete the Infrastructure Management Plan associated with the new Primary School in Mulgoa Rise.

This report has been prepared for submission as part of the Environmental Impact Statement (EIS) for the SEARs application SSD-11070211.

This report outlines the outcomes of initial Authority consultation, to determine the capacities of existing services and utilities available for the proposed development. This document is intended to provide sufficient information to demonstrate 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 will only be approved after Development Consent has been granted.

2 INTRODUCTION

2.1 Project Background

The Penrith region is experiencing rapid growth in development which is driven by State investments in infrastructure such as Western Sydney Airport and Aerotropolis, a developing technology industry and housing estate. Students who are currently living in the Mulgoa Rise area travel long distances to reach schools within the catchment area.

A Government election commitment in 2012 to build 190 new schools across the state, was implemented with the aim to address the issues of overcrowding and ensuring all students are given equal access to quality educational opportunities. School Infrastructure NSW has committed to building a new primary school in Mulgoa Rise/ Glenmore Park, one of 4 new schools in the Glenmore Park Primary School Community Group (SCG).

The new primary school in Mulgoa Rise /Glenmore Park is to be designed and built to significantly improve educational outcomes and address the capacity shortfall across the area for an approximate 414 students initially, with the potential expansion to 1000 as demand grows.

SINSW aims to "… make schools the centre of local communities through initiatives designed to bring people together and create opportunities for learning, work and play." (SINSW, 2021). The new Primary School in Mulgoa Rise will offer facilities that can be made available for community use such as a brand-new Community Hall, Sporting Facilities and a Library. At completion, the new primary school, will fill the gap for a centralise community hub.

2.2 The Site

Located on No 1-23 Forestwood Drive, Glenmore Park, the site is a cleared rectilinear brownfield site in a relatively new Mulgoa Rise residential subdivision. The site is surrounded by a vacant site (to be the future mixed-use commercial and residential precinct) to the north, Council playing fields to the east, and low-density residential dwellings to the south & west. The site sits on substantial fill above what was previously a quarry.

Detailed site investigation has been carried out to confirm its suitability for a primary school facility. This 3 Ha site is adequate for a SINSW Core 21 primary school, outdoor play area and sufficient area for future expansion.

3 SEARS ITEMS ADDRESSED

This report addresses how the proposed project design and investigations address the SEARs and outlines strategies relating to Utilities. These requirements are outlined below alongside where the response to each can be found within this report;

Item	Action to Address the Requirement
A site plan showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process).	
14. Utilities In consultation with relevant service providers: • assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. • identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. • provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.	This IMP report details the hydraulic and electrical services infrastructure available to service the proposed development. This report also includes details regarding augmentation / amplifications required to service the proposed development. Refer to the relevant discipline engineering section of this document.

4 INFRASTRUCTURE DEMANDS

The maximum demand for the site is as follows:

Sl No.	Service	Unit	Maximum Demand	Remarks
1.	Electricity	KVA	454	Based on AS3000
2.	Potable Water	kL/day	12.0 17.2	Average Peak
3.	Sewer Drainage	kL/day	9.6	Average
4.	Fire Hydrant	l/s	20	AS2419.1-2005
5.	Fire Sprinklers	No sprinklers required		
6.	Fire Drenchers	No drenchers required		
7.	Natural Gas	MJ/h	800	F&B, Domestic Hot Water Plant

5 INFRASTRUCTURE OVERVIEW

5.1 Potable Water Services

The following information has been provided and sourced to inform this report and our assessment of the Potable Water Service.

- Dial Before You Dig
- Discussions with the Water Servicing Coordinator
- Pressure & Flow Enquiry (Appendix B)

Sydney Water own and operate the potable water infrastructure that is available for connection.

5.1.1 Existing Potable Water Services

The site has frontage to the following Sydney Water water mains:

- DN150 uPVC main within Deerubbin Drive;

Refer to figure H1 for details.

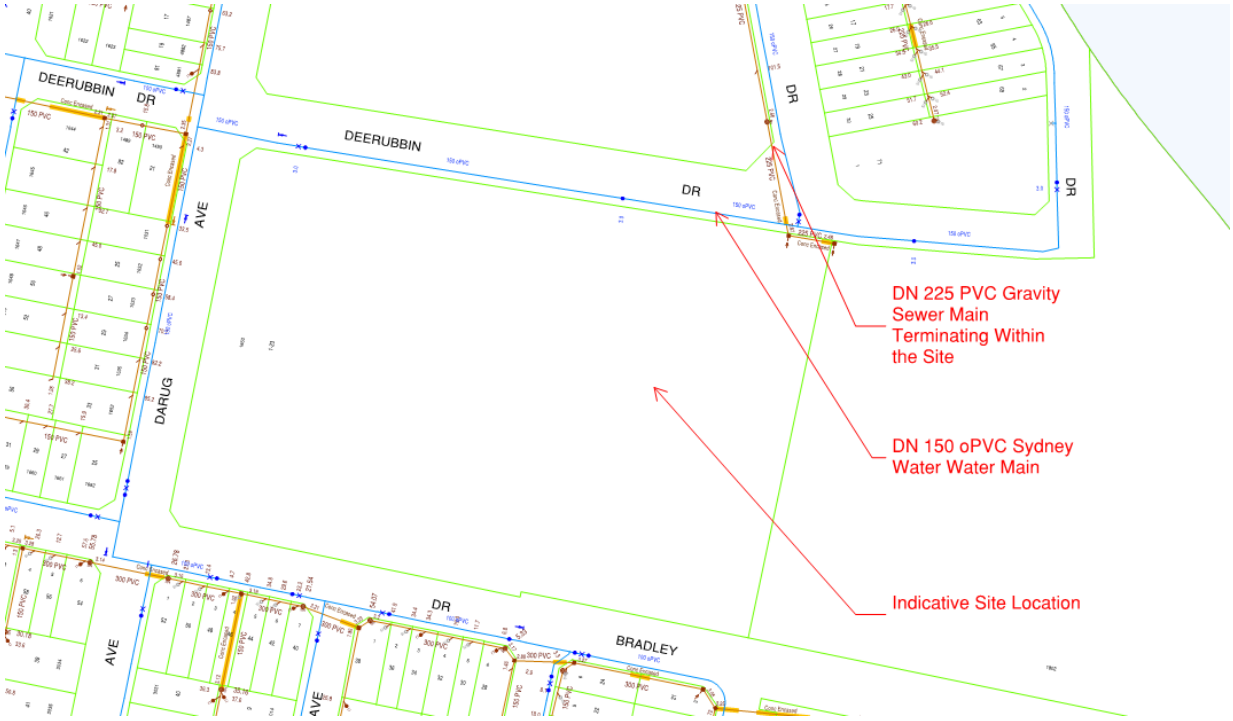


Figure H1 Sydney Water Infrastructure

5.1.2 Proposed Potable Water Supply

A new potable water connection shall be made to the existing Sydney Water potable water main located within Deerubbin Drive with new authority meter and backflow prevention device.

A pressure and flow application has been received (Appendix B) which indicated insufficient pressure and flow for fire fighting services and a fire booster pump will be required.

5.2 Sewer Drainage Services

5.2.1 Existing Sewer Drainage

The site has frontage to the following sewer main (see Figure H1):

- DN225 private sewer main terminating at the north east of the site;

5.2.2 Proposed Sewer Drainage

The sewer drainage from the is to be connected to the existing sewer main in Deerubin Drive. The 225mm authority sewer mains appears to have sufficient capacity to service the proposed buildings.

5.2.2.1 Proposed Trade Waste Drainage

A separate sanitary plumbing and drainage system will be provided to connect all fittings and fixtures in canteen into the Trade Waste system (subject to technical selections of kitchen equipment).

If required, all wastewater from canteen will be conveyed to a 2000L grease arrestor and the treated effluent will discharge into the adjacent private gravity sewer line.

A trade waste agreement will need to be agreed with Sydney Water in that event.

5.3 Natural Gas Services

5.3.1 Existing Gas Supply

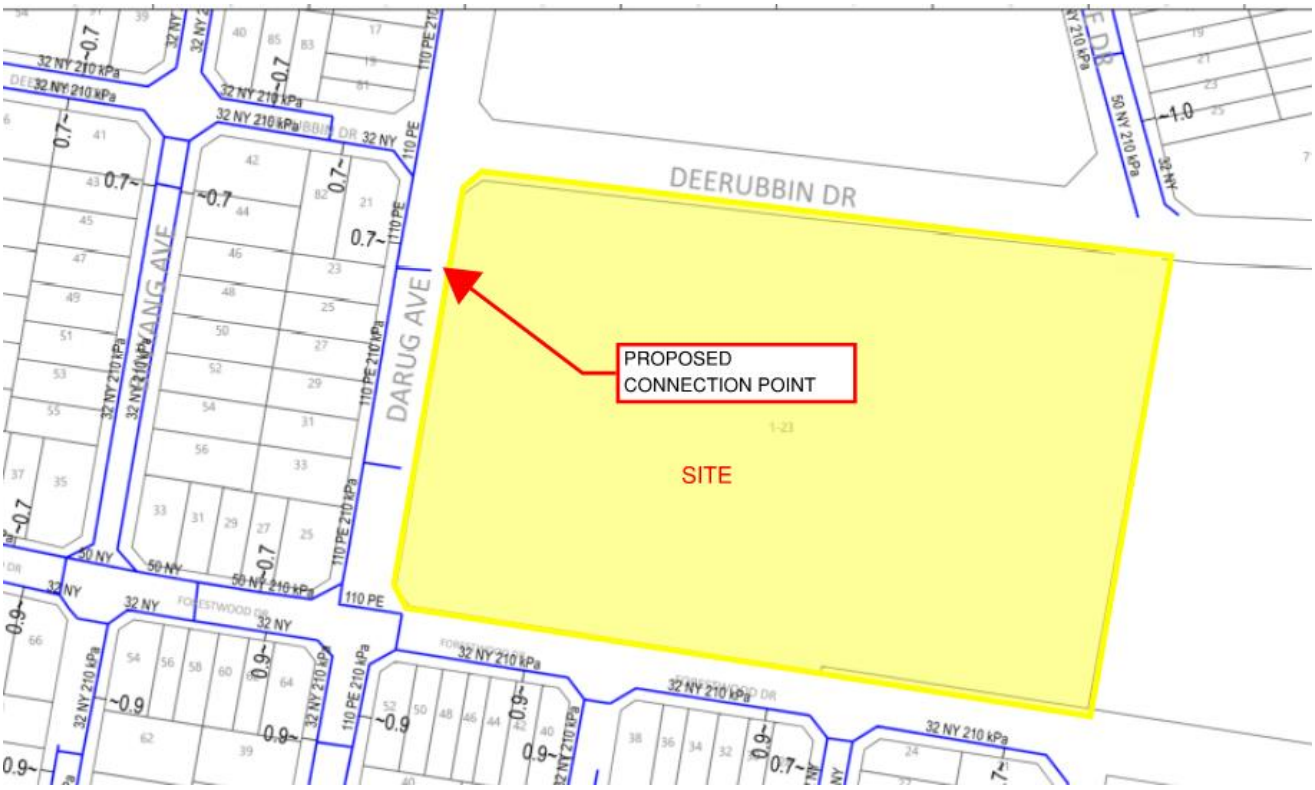
Gas is available to the school along two boundaries:

- Darug Avenue (110PE 210kPa); and
- Forestwood Drive (32NY 210kPa)

5.3.2 Proposed Gas Supply

Gas will be connected to the supply in Darug Avenue and extended to a new boundary meter and regulator.

An application can be lodged with Jemena for connection once the development application is approved.



5.4 Electrical High Voltage Services

5.4.1 Existing High Voltage Supply

The site has an existing Endeavour Energy substation (29097) located off Darug Avenue which currently supplies residential street load. The substation has a capacity of 315kVA with an estimated current connected load of 188.5kVA. The substation has insufficient capacity to service the school site and it is proposed to replace this substation with a larger substation capable or servicing both the current connected load plus the school load.

5.4.2 Proposed High Voltage Supply

The existing substation will be replaced with a new 1000kVA substation which will service both the existing 188.5kVA load as well as the additional 545kVA school load.

The supply offer from Endeavour Energy is included in Appendix A of this document.

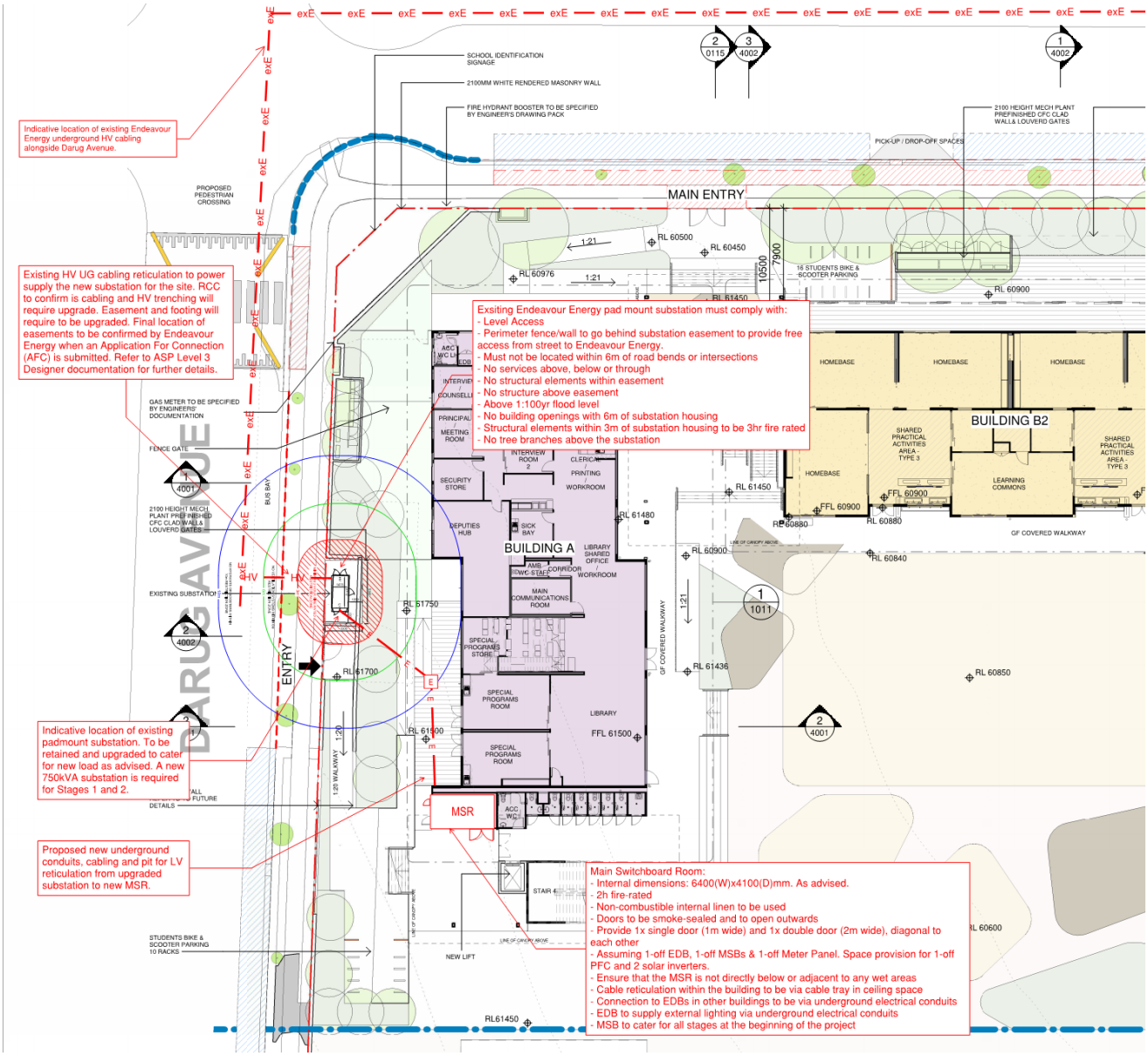


Figure E1: Electrical Infrastructure Site Plan

5.1 Photovoltaic Solar Power (PV system)

A 40kW photovoltaic (PV) solar power grid-connect rooftop system shall be provided to offset power consumption costs at the school. The array will be installed on Building A, with inverters installed in the Main Switch Room (also on Building A).

The PV system will require approval from Endeavour Energy, an application to connect the PV system will be required detailing the installed system.

5.2 Communication Services

Based on DBYD documentation, there is an existing Telstra/NBN pit at the front of Building A on Darug Avenue. It is proposed to use this existing pit as the connection point to the NBN network.

New NBN/Telstra pits and lead-in conduits will be terminated in a new main communications room located in Building A. New NBN/Telstra pits and associated underground NBN/Telstra conduits are proposed to be installed as per Figure E2 below for NBN/Telstra Lead-in optic fibre reticulation.

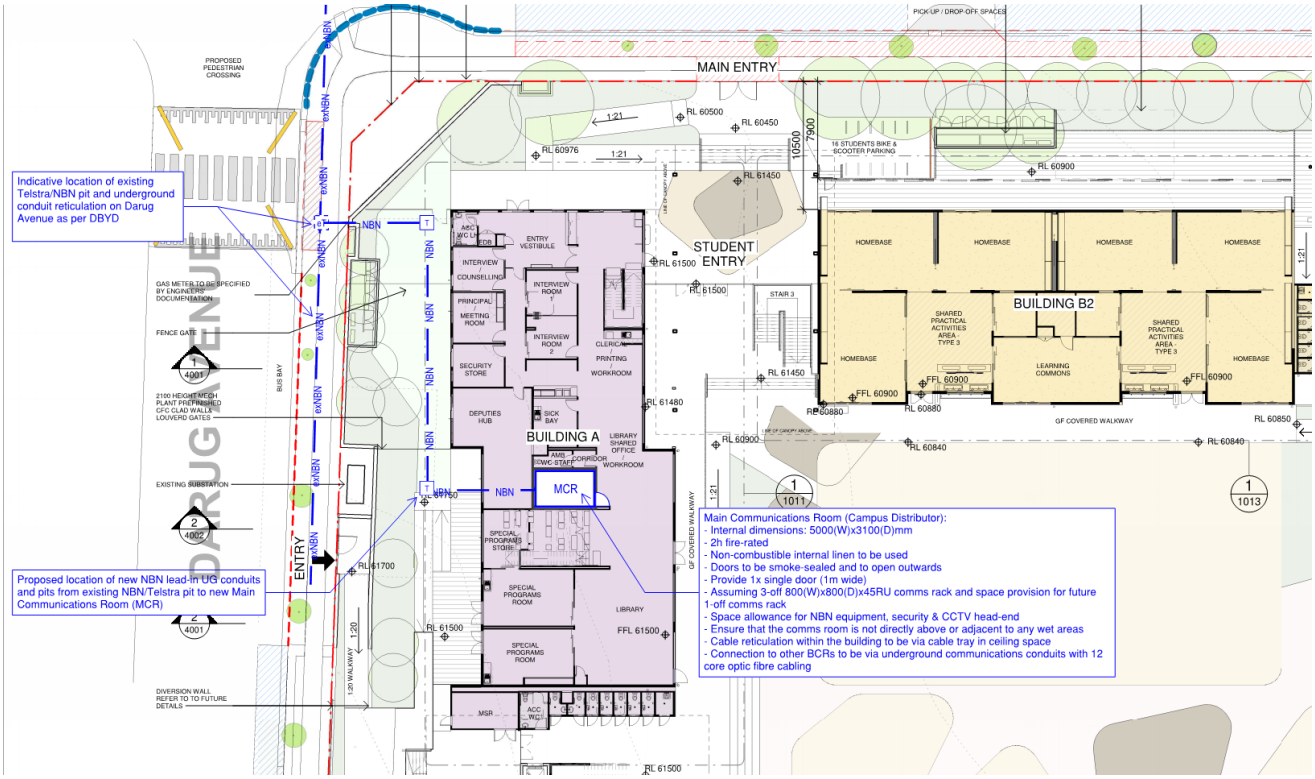


Figure E2: Communications Infrastructure Site Plan

6 INFRASTRUCTURE DELIVERY AND STAGING

As there are no existing buildings on the site, there are no particular staging requirements for the infrastructure works.

The below table outlines the approval pathways, time lines and funding responsibilities of the different authority approvals required for the Project.

Service	Authority	Process	Funding Responsibility
Power	Endeavour Energy	– Engage Level 3 Designer – Submit application for connection – Receive Design Brief – ASP Design and 40 day notice – Submit Design – Authority review – Resubmit design – Authority approval – Construction	Project / Builder
Communications	NBN	– Submit application – 15 days for offer – Client accepts offer – NBN Design, appointed builder engages accredited installer.	Project / Builder
Communications	Telstra	– Submit application – 15 days for offer – Client accepts offer – Telstra Design and Construct	NSW Department of Education
Water & Sewer	Sydney Water	– Engage Sydney Water accredited Water Services Coordinator (WSC) and lodge section 73 application – Water connection application via tap in – Authority review and approval – Sydney Water meter procurement by contractor and inline pumping application via tap in – Builder to manage construction	Project / Builder
Natural Gas	Jemena	– Submit application – Receive offer – Builder to manage install and completion with Jemena	Project / Builder although no development contribution expected

7 CONCLUSION

The project can be adequately serviced by power, telecommunications, water, sewer and gas services.

APPENDIX A ELECTRICAL SUPPLY OFFER

8 April 2021

Endeavour Energy Ref: ULL3280
Customer Ref:

Richard Crookes Constructions
Level 3, 4 Broadcast Way
ARTARMON NSW

Attention: ~~**Alex Hovy**~~ Tom Hamnett

CONNECTION OFFER – STANDARD CONNECTION SERVICE

ULL3280 – LOT 1663, DP 1166869, Connection of Load Application: 1-23 Forestwood Drive, GLENMORE PARK

Thank you for your application providing information of the proposed development at the above location. Your application has been registered under the above reference number. Please quote this reference number on all future correspondence.

This connection offer is made in accordance with the Terms and Conditions of the Model Standing Offer for a Standard Connection Service available on our website. To accept this offer, please complete the enclosed Notice of Advice form and obtain your Level 3 Accredited Service Provider (ASP) signature on the form prior to returning it to Endeavour Energy.

Endeavour Energy has completed a preliminary desk top assessment of the information provided in your application and issued an enclosed Supply Offer. Your next step is to obtain the services of a Level 3 ASP to prepare and provide an electrical design to Endeavour Energy in the form of a Proposed Method of Supply. This activity is customer funded contestable work and you will need to pay for it. An estimate of fees related to review of your design is attached.

A list of the Accredited Service Providers is available at the NSW Trade and Investment website: *https://energysaver.nsw.gov.au/households/you-and-energy-providers/installing-or-altering-your-electricity-service* or can be obtained via phone 13 77 88.

Please note under the National Electricity Rules (NER) customer may choose to enter into a negotiated agreement. A negotiation framework describing this process is available on our website.

Should you have any enquiries regarding your application please contact the undersigned.

Yours faithfully,

Ali Siddiqui
Contestable Works Officer/Engineer
Ph: 0298534612
Fax: 9853 7925
Email: cwtech@endeavourenergy.com.au

8 April 2021

Endeavour Energy Ref: ULL3280

Endeavour Energy
PO Box 811
Seven Hills NSW 1730
cwadmin@endeavourenergy.com.au

Attention: Contestable Works Administrator

NOTICE OF ADVICE

APPOINTMENT OF ACCREDITED DESIGNER FOR THE PROPOSED DEVELOPMENT AT:
LOT 1663, DP 1166869, 1-23 FORESTWOOD DRIVE, GLENMORE PARK

**** Please complete and return when a Level 3 Service Provider has been nominated****

Please accept this letter as notification that I intend to proceed with the development described above. I own or am developing the land and works on the land, (and/or where relevant on public land). I intend to supply this development to Endeavour Energy requirements.

By signing this Notice of Advice I am accepting the Terms and Conditions of Endeavour Energy's Model Standing Offer for a Standard Connection Service.

- Electricity Supply to Developments.

The Level 3 Service Provider appointed is: Traca Group Pty Ltd

The Fees will be Paid to Endeavour Energy by: Richard Cookes Constructions

Signature of Level 3 ASP	Richard Saliba Name of Level 3 ASP
Signature of Applicant/ Applicant's Representative	Tom Hemmett Name of Applicant/ Applicant's Representative
8/4/21 Date	Richard Cookes Constructions Company Name

The signatory warrants that they are authorised to execute this Application.

APPLICATION NO: ULL3280
DATE: 8 April 2021

SUBJECT: SUPPLY OFFER FOR
1-23 Forestwood Drive, GLENMORE PARK

Endeavour Energy has carried out a desk top assessment and has prepared the attached Supply Offer for this development.

The supply offer will assist your Level 3 ASP to develop the most efficient solution to meet your needs whilst complying with Endeavour Energy's standards and with the Terms and Conditions of the Model Standing Offer for a Standard Connection Service. Please find below a list of some requirements that will need to be addressed by your nominated Level 3 ASP.

- Field visit to verify physical details
- Trench length
- Cable length
- Length of cable using existing ducts
- Length of new ducts required to be installed
- Substation location shown on a preliminary sketch and HV switchgear numbers
- Types and number of poles to be replaced or installed
- Complexity of trenching (ie rock, under-bore, commercial area etc)
- Earthing requirements and complexity
- Overhead construction and isolation point requirements
- Asset Valuation form must be completed including any extraordinary costing requirements
- Environmental issues addressed in a fully documented Environmental Assessment
- Generation requirements
- Rail Crossing requirements

A sketch of the proposed design utilising the GIS as a base must be returned with the above information.

This Supply Offer is part of the Connection Offer for a Standard Connection Service and is valid for three (3) months from the date of issue.

Where this Connection Offer has lapsed, you or your Level 3 ASP must contact Endeavour Energy with the request to extend the Connection Offer. Endeavour Energy will assess your request and will inform you of the outcome. It must be recognised that the network is being constantly extended/augmented as new customers get connected. This means that for your Connection Offer to be extended, your Supply Offer may require alteration. If this is the case, additional fees to cover administrative costs may apply.

The fees applicable to this phase of the project will need to be paid prior to design certification and are outlined in the Network Price List available on the Endeavour Energy website.

8 April 2021

Endeavour Energy Ref: ULL3280

SUPPLY OFFER

(Based on a desktop assessment)

Development Details & Applicant's Assessed Load:
Application made for connection of load for Mulgoa Rise Public School, Proposed development is located at 1-23 Forestwood Drive, Glenmore Park.

As per submitted application, this project is split into two stages, stage 1 currently under construction with a max demand of 629A 3Phase and stage 2 to be constructed in the future with an estimated max demand of 383A 3 Phase, total requested load is 1012Amps/Phase.

Development & Site Plans received/not received:
Please provide development & Site Plans.

HV/LV Connection Point & Connection Asset Requirements:
There is an existing 11kV, 315kVA PM Sub (29097) on site, which is connected to 11kV Feeder S765 of Glenmore Park ZS. This sub currently supplies residential street load, as per load estimator this sub has an average load reading of 100kVA (144Amps/Phase).
There are 29 Lots connected to this sub, if we use 6.5kVA ADMD for these 29 lots then 188.5kVA (271.44Amps/Phase) load is connected onto this sub.

Possible Connection Option:
Remove the existing 315kVA sub 29097 completely. Install a new 11kV, 1000kVA Sub, HV switchgear to be CFCC, LV switchgear to be (1 x 2500A LVCB + 2 x Cat 2 Fuse strips with 3 x 400A Fuse cartridges). Existing 2 LV feeders can be connected to proposed new fuse strips to maintain existing supply to 29 Lots (271.44Amps/Phase) leave a spare capacity of 1168.56Amps/Phase. This spare capacity can be utilised to service proposed school site via proposed LV CB. Reconnect existing HV cables to new HV switchgear.

Provide maximum demand calculations for requested load.

Developer to engage the services of a Level 3 ASP, Level 3 ASP is required to investigate and provide proposed method of supply (PMOS). PMOS shall comply with Endeavour Energy standards and Connection Policy.

The scope of works shall be undertaken in accordance with all Endeavour Energy relevant policies, regulations and network standards. All service works shall comply with the NSW Service and Installation Rules.

8 April 2021

Endeavour Energy Ref: ULL3280

Initial Funding Arrangements

Endeavour Energy Supplied Materials:
Nil

Endeavour Energy Funded and Constructed:
Nil

Endeavour Energy Funded and Level1 ASP Constructed – Reimbursement Paid by Endeavour Energy
TBA

Reimbursement to be paid to Endeavour Energy by Customer:
TBA

Customer Funded Monopoly Services:
Network switching, commissioning, contractor inspection, ancillary fees, etc.

Customer Funded Contestable Works:
All other works required

ANCILLARY FEE ESTIMATE

(for assessment of the Proposed Method of Supply and approval of the Design)

Endeavour Energy

CAP No. : ULL3280

Proposed Location: Lot 1663, DP 1166869, 1-23 Forestwood Drive GLENMORE PARK

Detailed below is the **estimate** of the proportion of applicable Ancillary Network Services Fees (GST Inclusive) related to design assessment for your information only. The final fees for this phase of the project will be sent to you with a Design Brief. Ancillary Network Services Fees will also apply for the construction and connection phase of the project (e.g., site establishment fee). These fees will be conveyed to you after the receipt of a signed Letter of Intent indicating that you will proceed with the construction phase of the project.

Standard Connection Offer Fee	08-04-2021	$266.18
Design Information Fee	08-04-2021	$3549.26
Design Certification Fee	08-04-2021	$2661.94
Administration Fee	08-04-2021	$352.07
Estimate Total (inc GST)		$6829.45

Where Endeavour Energy assets may need to be placed on private property, property easements will be required. Urgent action should be taken to create easements so that timely acquisition and registration with the Land and Property Information (NSW) can be completed.

Endeavour Energy will accept a property tenure bond while the property owner is in the process of creating the easement. The property tenure bond will be returned after the easement has been registered.

Please do not make any fee payment at this time.

Once the design fee amount has been finalised Endeavour Energy will send a request for the fees and property tenure bond payment (if required) to your nominated Level 3 Accredited Service Provider.

APPENDIX B PRESSURE & FLOW

Statement of Available Pressure and Flow

Sydney WATER

Chau Lam
60 Miller
North Sydney, 2060

Attention: Chau Lam Date: 29/01/2021

Pressure & Flow Application Number: 1046042
Your Pressure Inquiry Dated: 2021-01-21
Property Address: 1-23 Forestwood Drive, Mulgoa 2745

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Deerubbin Drive	Side of Street: South
Distance & Direction from Nearest Cross Street	90 metres East from Darug Avenue
Approximate Ground Level (AHD):	68 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	42 metre head
Minimum Pressure	31 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	31
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	32 32 32 31 31 31 30 29
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main) Maximum Permissible Flow	5 10 15 20 26 30 40 50 59	31 31 31 30 30 30 29 28 27

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

General Notes

This report is provided on the understanding that (i) the applicant has fully and correctly supplied the information necessary to produce and deliver the report and (ii) the following information is to be read and understood in conjunction with the results provided.

1. Under its Act and Operating Licence, Sydney Water is not required to design the water supply specifically for fire fighting. The applicant is therefore required to ensure that the actual performance of a fire fighting system, drawing water from the supply, satisfies the fire fighting requirements.

2. Due to short-term unavoidable operational incidents, such as main breaks, the regular supply and pressure may not be available all of the time.

3. To improve supply and/or water quality in the water supply system, limited areas are occasionally removed from the primary water supply zone and put onto another zone for short periods or even indefinitely. This could affect the supply pressures and flows given in this letter. This ongoing possibility of supply zone changes etc, means that the validity of this report is limited to one (1) year from the date of issue. It is the property owner's responsibility to periodically reassess the capability of the hydraulic systems of the building to determine whether they continue to meet their original design requirements.

4. Sydney Water will provide a pressure report to applicants regardless of whether there is or will be an approved connection. Apparent suitable pressures are not in any way an indication that a connection would be approved without developer funded improvements to the water supply system. These improvements are implemented under the Sydney Water 'Urban Development Process'.

5. Pumps that are to be directly connected to the water supply require approval of both the pump and the connection. Applications are to be lodged online via Sydney Water Tap in™ system -
Sydney Water Website – www.sydneywater.com.au/tapin/index.htm. Where possible, on-site recycling tanks are recommended for pump testing to reduce water waste and allow higher pump test rates.

6. Periodic testing of boosted fire fighting installations is a requirement of the Australian Standards. To avoid the risk of a possible 'breach' of the Operating Licence, flows generated during testing of fire fighting installations are to be limited so that the pressure in Sydney Water's System is not reduced below 15 metres. Pumps that can cause a breach of the Operating Licence anywhere in the supply zone during testing will not be approved. This requirement should be carefully considered for installed pumps that can be tested to 150% of rated flow.

Notes on Models

1. Calibrated computer models are used to simulate maximum demand conditions experienced in each supply zone. Results have not been determined by customised field measurement and testing at the particular location of the application.

2. Regular updates of the models are conducted to account for issues such a urban consolidation, demand management or zone change.

3. Demand factors are selected to suit the type of fire-fighting installation. Factor 1 indicates pressures due to system demands as required under Australian Standards for fire hydrant installations. Factor 2 indicates pressures due to peak system demands.

4. When fire-fighting flows are included in the report, they are added to the applicable demand factor at the nominated location during a customised model run for a single fire. If adjacent properties become involved with a coincident fire, the pressures quoted may be substantially reduced.

5. Modelling of the requested fire fighting flows may indicate that local system capacity is exceeded and that negative pressures may occur in the supply system. Due to the risk of water contamination and the endangering of public health, Sydney Water reserves the right to refuse or limit the amount of flow requested in the report and, as a consequence, limit the size of connection and/or pump.

6. The pressures indicated by the modelling, at the specified location, are provided without consideration of pressure losses due to the connection method to Sydney Water's mains.

NORMAN DISNEY & YOUNG

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NDY QA SYSTEM

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Revision Date:	29 July 2021
Reason Description:	Review
File Location:	\\tt.local\NDY\syd\w\S388xx\S38835\001\00\24_Reports
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Client Contact:	n/a
Project Leader:	Ryan Hahn
Editor:	CL, KF

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