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Arne Jacobsen

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Lighting Design
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ELECTRICAL SERVICES

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Santa Sophia Catholic College

State Significant Development Application

Infrastructure Management Plan

Electrical and Communications



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Document Revision and Status

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Sydney April 10, 2019
Michael Harrold
187153 REP E01
Associate Director

michael.harrold@steensenvarming.com

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1.0 Introduction

1.1 Overview

This report has been prepared by Steensen Varming on behalf of the Catholic Education Diocese of Parramatta c/TSA Management Pty Ltd (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD 18_9772) for the new Santa Sophia Catholic College on the corner of Fontana Drive and the future road 'B', between Red Gables Road and Fontana Drive, in Box Hill North (the site).

The new school will cater for approximately 1,920 primary and secondary school students, inclusive of a 60 student Catholic Early Learning Centre. The school will have 130 full-time equivalent staff.

The proposal seeks consent for approximately 15,000sqm of floor space across a part five and part six storey building. The building will present as three main hubs connected by terraced courtyards and garden spaces.

The school will include:

- Catholic Early learning centre for 60 students;
- General Learning Spaces for years Kindergarten to 12;
- Community Hub – knowledge centre and cafe;
- Creative Hub – art and applied science;
- Performance Hub – multipurpose hall and music, dance and drama spaces;
- Professional Hub – administrative space;
- Research Hub – science and fitness;
- Associated site landscaping and open space including a fence and sporting facilities;
- Bus drop off from Fontana Drive;
- Pick-up and drop-off zone from future road 'B';
- Pedestrian access points from Red Gables Road north, Fontana Drive and future road 'B';
- Staff parking for 110 vehicles provided off site in an adjacent location;
- Short term parking for pick up and drop off for Catholic Early Learning Centre from Red Gables Road; and
- Digital and non-digital signage to the school.

The purpose of this report is to provide a response to the Infrastructure Management Plan requirements specifically in respect to Electrical Power Supply and Telecommunications criteria stated in the project Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development (SSD 18_9772).

1.2 Response to SEARs

The Santa Sophia SEARs Report is required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD 18_9772. This table identifies the relevant SEARs requirement/s and corresponding reference/s within this report.

Table 1 – SEARs and Relevant Reference

SEARs Items	Project Response
Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.	In response to relevant sections of SEARS item on Infrastructure the proposed electrical and communications works will include a new chamber electrical power substation and a new communications room both located within the new building. These will be wired from the planned underground power supply authority (Endeavour Energy) and the planned underground telecommunications network, The National Broadband Network (NBN).

2.0 Proposed Infrastructure & Augmentation

2.1 Building Services

The following provides details of the electrical and telecommunications infrastructure proposed to service the development and demonstrates that the site can be suitably serviced from the power supply authority and the National Broadband Network (NBN).

Refer to the separate Infrastructure Management Plan for remaining building services such as water and sewerage prepared by others.

2.2 Electrical Power

The new school is to be serviced by an 11,000/400V service that will terminate into a chamber substation.

It is understood that the incoming high voltage service is being designed and coordinated by Celestino with the Utility Providers as part of the Precinct E - town centre masterplan works.

An internal on-grade chamber substation as per the local Supply Authority, Endeavour Energy, requirements is proposed, a 7.6m wide x 6m deep x 2.7m high space is required and will be complete with the supply authority high voltage (HV) and low voltage (LV) equipment, per the following image. The capacity of the substation will consist of 2 off 1500kVA transformers. An easement for the substation will be arranged with the supply authority.

The LV side of the transformer shall supply a main switchboard, which will be located within a dedicated room at grade level adjacent the substation.

Refer to the Appendix Section 3.1 for details of the application send to the supply authority.

Refer to the Appendix Section 3.3 for details on the survey request on existing services infrastructure to 'dial before you dig'.

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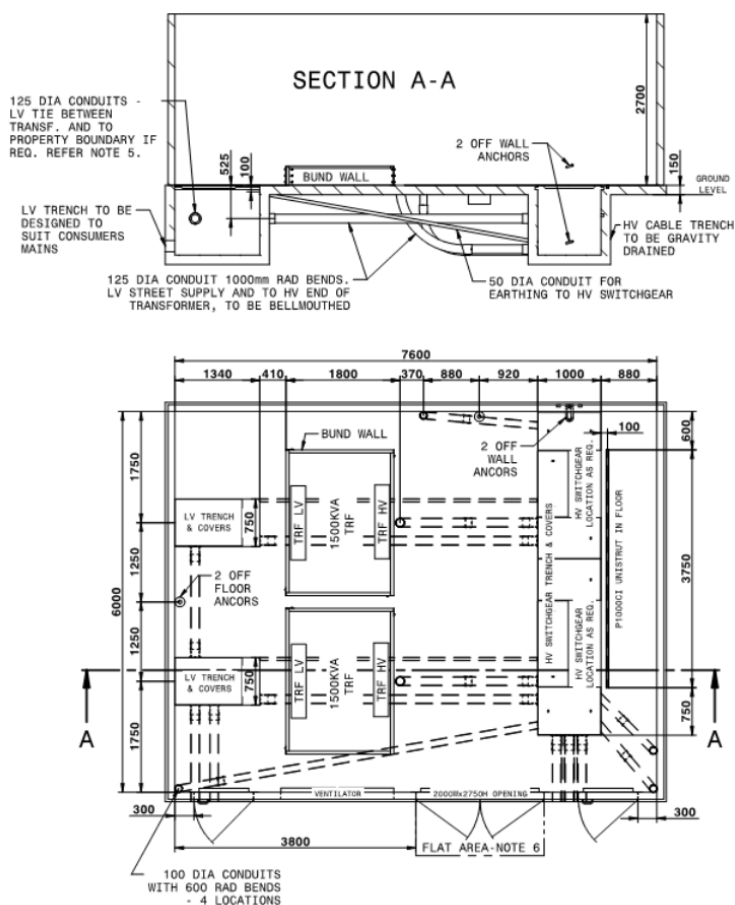


Image: Endeavour Energy Standard Layout for a Two Transformer Indoor Distribution Substation to Suit up to 1500kVA Dry or Oil Filled Transformers

The location and reticulation of the services have taken the impact of EMF. As recommended by endeavour energy the EMF the distance separation is 3m from the substation and habitual spaces.



07 December 2018

EMF INFORMATION - PADMOUNT SUBSTATIONS - SANTA SOPHIA SCHOOL

Padmount substations, like all electrical devices and appliances, produce magnetic fields (EMF). The EMF levels from substations vary as the community's use of electricity varies during each day (when more electricity is being used, the EMF level is higher). The strength of a magnetic field decays rapidly as you move further from an electrical device or power line.

Electromagnetic field limits: The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) who is responsible for the guidelines and standards for EMF states the general exposure limit at 2,000 milligauss (mG). The Agency has more EMF information in a fact sheet on their website:

<https://www.arpana.gov.au/understanding-radiation/what-is-radiation/non-ionising-radiation/low-frequency-electric-magnetic-fields>

The magnetic fields from padmount substations are usually significantly lower than 2,000mG (i.e. the limit specified by ARPANSA), even very close to the padmount substation and as you move away from a substation, the levels drop off further still. Typically, the magnetic field strength near padmount substations could be up to 10 - 20mG next to the substation and up to 4mG approximately 3 metres away.

Image: Part correspondence from Endeavour Energy regarding EMF

2.3 Telecommunications

It is understood that the incoming telecommunications lead in service is being designed and coordinated by Celestino with the utility providers as part of the Precinct E - town centre masterplan works.

A new Lead-in / NBN connection will be provided to the site.

A new Central distributor shall be located in the Main Communication room. The Central distributor shall be served via a fibre lead-in cable from the local telecom authority, Telstra NBN in this case

Communications services will support the passive IT equipment to permit the connectivity of various systems such as local networks, telephones, WiFi, audio visual, fire, security and telephones.

No Mobile phone tower or system is planned for the school.

Refer to the Appendix Section 3.2 for details of the extent of the NBN.

Refer to the Appendix Section 3.3 for details on the survey request on existing services infrastructure to 'dial before you dig'.

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3.0 Appendix

3.1 Power Supply Application

Application for Connection of Permanent Load including all Strata Developments



Please return completed form along with all attachments to: Endeavour Energy, PO Box 811 Seven Hills NSW 1730
Email: cwadmin@endeavourenergy.com.au | Fax: 02 9853 7925 | For connection enquiries, please contact 133 718

This form is to be used where connection of load or increase in load applications are required for all multi occupant developments, commercial premises, urban loads greater than 100 amps single phase or 63 amps three phase, rural connections and upgrades, and high voltage connections. (For urban connections less than 100 amps single phase or 63 amps three phase please complete an online application visit: www.endeavourenergy.com.au).

Note: For Temporary Builders Supply (TBS) use FPJ 6011 – Application for Temporary Builder Supply (TBS).

All information requested should be provided. Where not applicable please insert N/A.
Applications submitted with inadequate information will not be accepted.

Retail Customer Details

In order for your application to be accepted, you must have a Retail Electricity account with the Retailer of your choice for your site and a National Meter Identifier (NMI). Please indicate below.

Retail Company UNKNOWN NMI NEW CONNECTION

Customer Name CELESTINO

Further information regarding establishing a Retail account and choosing a Retailer can be found at http://www.ipart.nsw.gov.au/Home/For_Consumers/Choosing_an_energy_supplier

Site Details

Lot & DP No. 2339/1217663 Street No. 121 Street Name OLD PITT TOWN ROAD

Cross Street _____ Suburb / Town BOX HILL Post Code 2765

Local Council / Shire BOX HILL UBD Map & Reference No. _____/_____

Nearest Substation No. UNKNOWN Adjacent Pole No. _____ Pillar No. _____

☒ New Connection ☐ Existing Service Upgrade (3 phase)

☐ Additional Load

Please list any related Endeavour Energy CAP reference: _____

Date permanent supply is required 07 / 07 / 2019

Specify Land Zoning (For land zoning, refer to local Council, Development Application or Rates Notice) _____

Development Type: ☐ Domestic ☒ Commercial ☐ Shop ☐ Industrial

☐ Government ☐ Utilities ☐ Other Specify _____

☐ Units, No. of Units _____ (Please provide NMI's for each unit as an attachment to this application)

Gas reticulation on site ☐ Yes ☐ No

Footpaths/driveways to be constructed on site ☐ Yes ☐ No

Load Details

Calculated Maximum Demand Summary			
	A	B	C
Removed Load			Amps
Existing Load			Amps
Additional Load			Amps
Total Load	2600	2600	2600 Amps

Number of phases required: ☐ Single Phase
☒ Three Phase

* Maximum demand assessment based on AS3000 must be attached
* For multi-residential developments please provide details of floor area, in squares, for each unit on a separate attachment.
* For industrial/commercial developments with uniform load, provide building area and VA/m² showing kVA and amps.
* For larger developments supporting load details must be provided on a separate attachment.

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Load Details (Continued)

Load details need to be completed by an electrical qualified person. For multiple occupancy residential premises, villas, units, townhouses, etc, calculate the maximum demand using AS/NZS 3000. The final load assessment will be carried out by Endeavour Energy and the assessed load may be lower or higher than the applied load.

Note:

Please provide detailed information describing your development with site plans and a copy of the Development Agreement (DA) as attachments to support your request including harmonic loads, excessive motor starting or other types of load that may cause quality of supply issues on the network.

Applicant Contact Details

Name / Company CELESTINO PTY LIMITED Contact Person _____
Street No. 642 Street Name GREAT WESTERN HIGHWAY
PO Box _____ Suburb / Town PENDLE HILL Post Code 2145
Phone _____ Mobile _____ Fax _____
Email _____

Applicant's Representatives Contact Details

Name / Company STEENSEN VARMING Contact Person BENJAMIN DAVIDSON
Street No. 9 Street Name CASTLEREAGH STREET
PO Box _____ Suburb / Town SYDNEY Post Code 2000
Phone 02 99672200 Mobile 04 78544531 Fax _____
Email BEN.DAVIDSON@STEENSENVARMING.COM

All correspondence to be sent to (select ONE only): ☐ Applicant ☒ Applicant's Representative

Applicant's Acknowledgement and Agreement

I acknowledge and agree that:

1. in signing and submitting this application I am requesting an expedited connection;
2. I have read and understood the terms of Endeavour Energy's Model Standard Offers for a LV Basic Connection Service and Standard Connection Service (as published on its website at www.endeavourenergy.com.au) and a connection offer by Endeavour Energy for a LV Basic Connection Service or Standard Connection Service on the terms of the relevant Model Standing Offer is acceptable to me; and
3. if Endeavour Energy is satisfied that the service requested by me falls within the terms of Endeavour Energy's Model Standing Offer for either a LV Basic Connection Service or Standard Connection Service, then I will have taken to have accepted a connection offer by Endeavour Energy on the terms of the relevant Model Standing Offer on the date that Endeavour Energy receives this application.

Applicant's/Applicant's Representative Signature:

BENJAMIN DAVIDSON

Date: 03 / 04 / 2019

* Do you consent to the release of your contact details to other customers with similar works in progress nearby to facilitate co-operation in design and construction activities. ☒ Yes ☐ No

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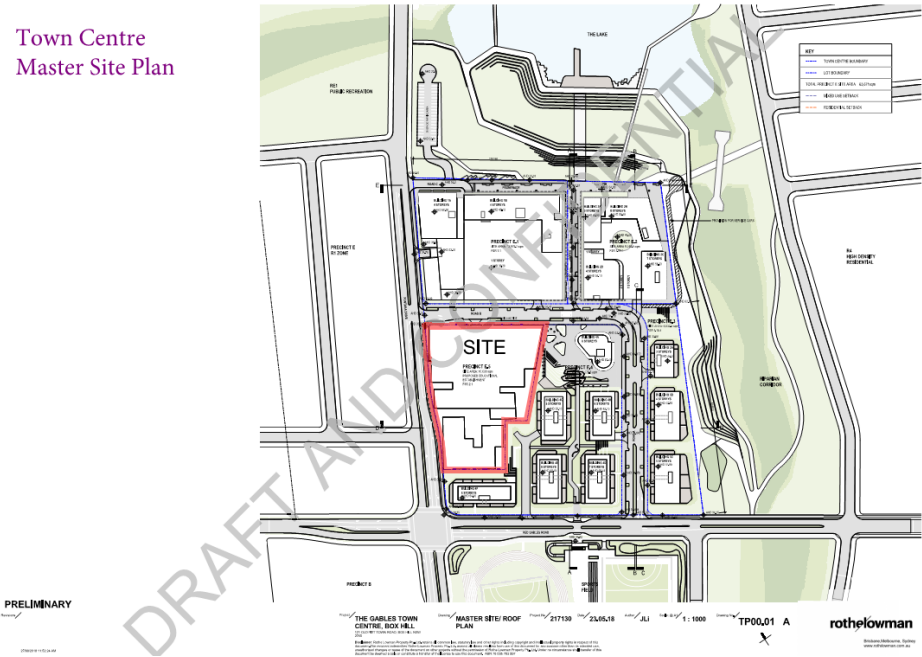
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Preliminary Electrical Maximum Demand			
Project Name: Santa Sophia Catholic College			
Instructions 1. Enter room name and VA/m ² estimate according to AS3000 according to the rooms function 2. Enter the area for each room and the spread sheet will do the rest 3. To enter more rooms simply add more lines within the table and copy down the formula		Job Number	187153
		Date	29/11/2018
		Revision	1
		Author	BD
		Checked	MH
Floor	VA/m ²	Area (m ²)	Total Load (kVA)
Ground Level		6200.9	299.2965
Level-1		4882.2	336.473
Level-2		4166	328.884
Level-3		5050.8	280.159
Level-4		5124.7	401.187
Level-5		2431.5	192.414
TOTALS		27856.1	1838.4135
Current Per Phase (A)			2611

Avg VA/Sqm 65.99680142

Town Centre
Master Site Plan



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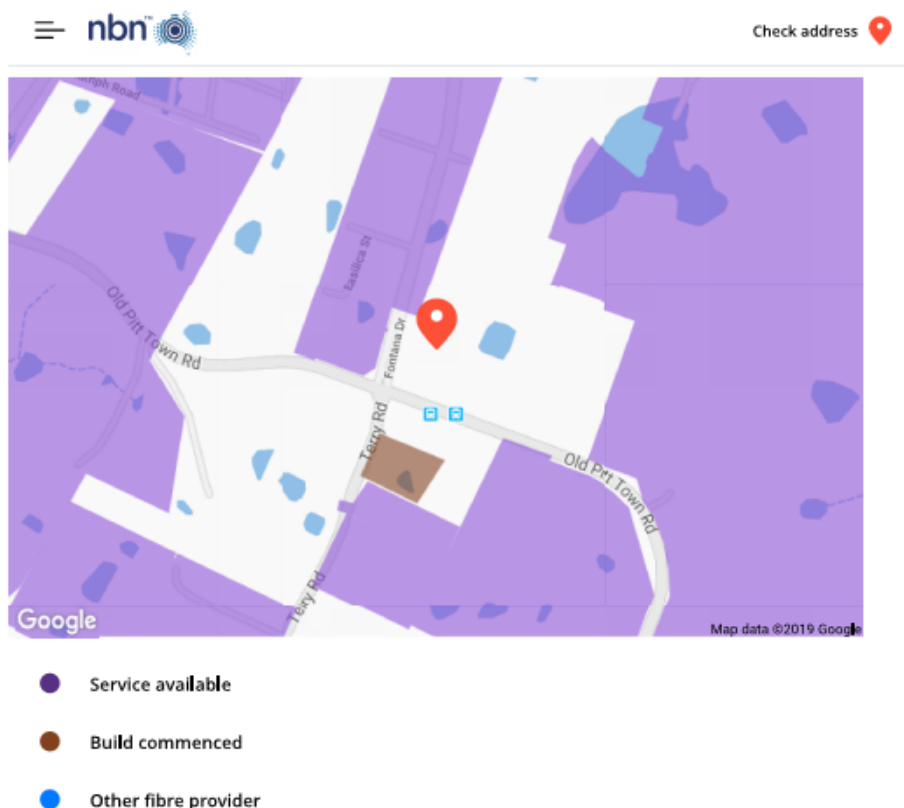
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3.2 Telecommunications – NBN



No address matched

Disclaimer

*This date and technology is based on nbn's current deployment plans and is subject to change. Network rollout information is accurate as at 3/4/2019 and is updated weekly. Rollout areas and boundaries are subject to change as construction planning is finalised.

Services provided over the nbn™ broadband access network will be replacing phone and internet services provided over most of the existing landline networks, including copper and the majority of HFC networks within the fixed line footprint. Services provided over existing fibre networks (including in-building, health and education networks) and some special and business services may not be affected. To find out if your services will be affected, please contact your current phone or internet provider. For more information, visit www.nbnco.com.au/switchoff or call 1800 687 626.

<https://www.nbnco.com.au/residential/team/rollout-map?lat=-33.6369855&lng=150.8988125&addressString=Old Pitt Town Road, Box Hill NSW, A...> 1/2

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3.3 Existing Services - Dial Before You Dig

Enquiry Summary Manual Print

Your request has been submitted

Your Responsibilities and Duty of Care

- If plans are not received within two working days, contact the asset owners directly and quotes the their sequence number
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly.
- Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any state legislative requirements regarding Duty of Care and Safe Digging Requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to the privacy policy and terms and disclaimers set out at [the 1100 website](#)
- For more information on safe excavation practices, visit [the 1100 website](#)

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.
^^ **Permit Request Sent.** Some DBYD Local Government are now using the Permit Manager system to run their permit application process. If your enquiry is in the area of one of those councils, the council takes the enquiry you have lodged with DBYD and converts it to a permit application. In such cases, a status of "Permit Request Sent" will be shown in the table below.

Enquiry Lodging Details	
Job No	16052199
Job lodged on	03/04/2019 - 03:51:02 pm
Priority	Normal
Job was lodged by	Web
Delivery Method	Email - ben.davidson@steensenvarming.com
Enquiry Details	
Address	121 Old Pitt Town Road Box Hill NSW 2765
Job Purpose	Excavation
Activity	Mechanical Excavation
Job Start	01/07/2019
Job Completion	31/12/2019
User Reference	Santa Sophia

https://onecall.1100.com.au/AU-B4-EN/WorkBench

1/2

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Working on Behalf of Private
Location of Workplace Private Property

Notes/Description of Works

Santa Sophia College

Utility List

The following authorities are affected by this enquiry

Type	Sequence No	Authority	Phone	Status
Electricity	81948843	Endeavour Energy	0298534161	Notification Sent
Water	81948848	Flow Systems Pty Ltd	1300803803	Notification Sent
Gas & Petroleum	81948845	Jemena Gas West	1300880906	Notification Sent
Communications	81948847	NBN Co, NswAct	1800626762	Notification Sent
Water	81948846	Sydney Water	132092	Notification Sent
Communications	81948844	Telstra NSW, Central	1800653935	Notification Sent
Council/Shire	81948842	The Hills Shire Council #	0298430555	Notification Sent