

The General Manager
Wollongong City Council


22 September 2021

ATTENTION: Kathy Nicolis

Dear Sir or Madam

I refer to the referral of 17 August 2021 from NSW Planning, Industry & Environment regarding NSW Government concurrence and referral request CNR-27646 for Wollongong City Council Development Application DA-2021/957 at the street block bound by Crown, Keira, Burelli and Atchison Streets WOLLONGONG for 'Demolition of existing structures, retention of heritage facades, tree removal, excavation for basement car parking and construction of a mixed-use development, comprising three (3) residential towers (shop top housing), one (1) commercial building, retail shops, entertainment facilities (cinema, exhibition/performance space) and a wellness centre (pool, gym, and health services)'. Submissions need to be made to Council by 22 September 2021.

As shown in the below site plan from Endeavour Energy's G/Net master facility model (and extracts from Google Maps Street View) there are:

- Three indoor substations (indicted by the symbol ) with indoor substation no. 42155 held under an easement benefitting Endeavour Energy (indicated by red hatching) with indoor substations no.s 40502 and 40556 being expired leases.
- Low voltage underground cables traversing the site which are not held under easement.
- Low voltage and 11,000 volt / 11 kilovolt (kV) high voltage underground cables to the road verges / roadways.

Although not held under easement or being expired leases, these are protected assets and deemed to be lawful for all purposes under Section 53 'Protection of certain electricity works' of the *Electricity Supply Act 1995* (NSW). Essentially this means the owner or occupier of the land cannot take any action in relation to the presence in, on or over the land of electricity works ie. the electricity infrastructure cannot be removed to rectify the encroachment. These protected assets are managed as if an easement (or in this instance the expired leases) are in place – please refer to the below point 'Easement Management / Network Access'.

In accordance with the attached copy of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', and as shown in the following extract of Table 1 – 'Minimum easement widths', the low voltage underground cables (assumed to have no concrete protection unless proven otherwise) requires a 3 metre minimum easement width ie. 1.5 metres to both sides of the centre line of the cable ducts.

Table 1 - Minimum easement widths

	Voltage	Asset Type	Construction	Minimum Easement (m)
Underground Assets	400V - 22kV		Underbore / Ducted / Direct buried	3
		Cables	Ducted $\leq 100\text{m}$ and with concrete protection <i>(min 50 mm concrete cover at standard burial depth)</i>	1

For the indoor substations, as shown in the following Clause 5.3.5 'Indoor substations', from Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', indoor substations require the following:

5.3.5 Indoor substations

The boundaries of an easement for indoor substation must be defined by the internal face of the walls, ceiling, floor, and cable trenches of the substation room.

An easement for the cables that enter and exit the substation room will also be required if they are not installed within public roads and/or existing Endeavour Energy easements.

A right of access may also be required to give Endeavour Energy employees, vehicles, and equipment unrestricted access to the indoor substation at all times.

As part of the application for connection of load for the proposed development, Endeavour Energy will require the developer to create all necessary easements, restrictions, right of access, and positive requirements for all the existing electricity infrastructure on the site which are protected assets and are to be retained to supply the proposed development. The creation of property tenure is not required for any network assets located within a public road (unless it is a temporary road).

Endeavour Energy has noted the following in the Statement of Environmental Effects.

4.6. UTILITIES AND INFRASTRUCTURE

The site has access to existing services, with the following augmentation and additional services proposed:

- Replacement of two existing substations and the introduction of switch rooms to manage the electrical supply and distribution within the site.

The Services Infrastructure Preliminary Design indicates the following.

2.2 Power Supply

2.2.1 Supply Authority

It is envisaged that the 2 off existing Chamber Substations will be decommissioned and removed and existing chamber substation 40556 retained within the future development. The HV cable traversing the site to be relocated.

In regard to the proposed retention of indoor substation no. 40556, Endeavour Energy's Asset Planning & Performance Branch has provided the following advice.

A project was issued in 2015 (and has since been completed) to replace the transformer and the high voltage switchgear and other access and lighting works to address the significant safety issues associated with indoor substation no. 40556 which does not fully comply with current codes and standards. The preferred option was to have the substation completely replaced in a new location but at the time there was no alternative suitable site available.

Endeavour Energy's Field Operations have advised the current access is limited and not really acceptable, either being through the basement which requires internal building access if open, or via a ladder entry in one of the footpath hatches / pits in the footpath in Crown Street. There are some larger pits in the footpath which allow the installation and removal of equipment. The basement is also susceptible to water ingress sometimes creating flooding. The developer should also be aware the mapping of the electricity infrastructure in this area is significantly lacking in detail and accuracy, with issues in the footpath areas with cable depths varying greatly from at required depth to extremely shallow and unknown cable routes or duct locations.

As the building above is now being redeveloped as part of the redevelopment of the entire block, every effort should be made to have the development provide for substation no. 40556 to be removed and replaced with a compliant substation and associated underground cabling.

The Construction Management Plan provides additional information but there is no further detail provided of the 'Endeavour Energy supply offers' – please refer to the below point 'Network Capacity / Connection'.

18.0 PROJECT CONSTRUCTION METHODOLOGY

18.1 Enabling Works

The Endeavour Energy supply offers supplied with the DA submission nominates the installation of 2 no. padmounts to the south of the site that will provide HV power to the adjoining properties while we demolish the existing substations and energise the permanent substations.

The application for an asset relocation / removal should be made to Endeavour Energy's Network Connections Branch who can be contacted via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666) by completing either of the following attached forms:

- FPJ7006 Technical Review Request where the asset relocation is proposed as part of an application for connection of load to a proposed development.
- FPJ4015 Application for the Relocation / Removal of Electrical Network Assets.

As indicated in Form FPJ4015 'The developer is encouraged to approach a Level 3 ASP to obtain preliminary details of the assets and discuss possible solutions to the developer's requirements. The developer must provide as much detail as possible concerning the Endeavour Energy assets that the developer wishes to relocate / remove'. For details of the Accredited Service Provider (ASP) scheme please refer to the below point 'Network Capacity / Connection'.

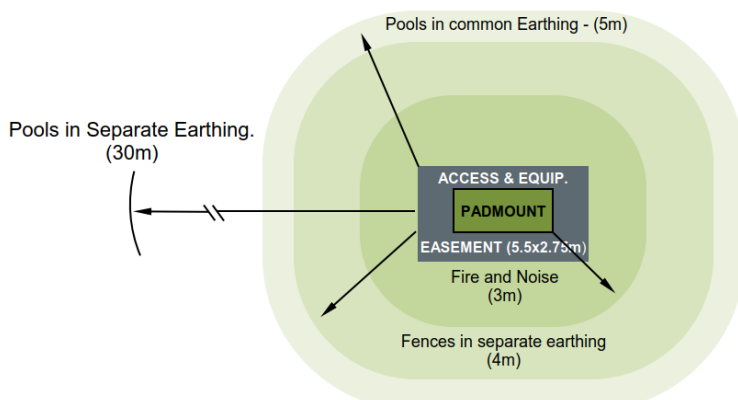
Endeavour Energy's Network Connections Branch will make the applicant aware of the requirements for the release of easement associated with the asset relocation. In some circumstances the release of easement may be for nil compensation eg. the affected land is subject to dedication as public road or as part of an asset relocation / capital works project where the alternative network arrangements occur at the same voltage and level of easement affectation. In this instances easements will be required for the temporary padmount substations, the new indoor substations and the indoor substation proposed to be retained. Otherwise the release will be subject to monetary compensation paid by the applicant having regard to the potential increase in value of the land as a result of the easement release / reduction in the extent of easement affectation (with appropriate consideration given to the applicant's alternative network arrangements).

In regard to the two temporary padmount substations, Endeavour Energy's general requirements is for a padmount substation to be at ground level and have direct access from a public street (unless provided with appropriate easements for the associated underground cables and right of access).

As shown in the following extract of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', Figure A4.3 'Padmount easements and clearances', padmount substations require:

- Easement with a minimum size of 2.75 x 5.5 metres (single transformer).
- Restriction for fire rating which usually extends 3 metres horizontally from the base of the substation footing / plinth and 6 metres vertically from the same point.
- Restriction for swimming pools which extends 5 metres from the easement (which may not be required for non-residential use).

A4.3 - Padmount easements and clearances



The easement should not cross property boundaries but the restriction/s may affect any adjoining property provided they are able to be registered on the title to that property.

In addition the following matters also need to be considered in regard to the fire restriction:

- Personnel access doors and fire exit doors to a building are not permitted within the fire restriction area.
- Gas mains/pipes shall not pass through the fire restriction area.
- A 10 metre clearance distance shall be maintained between substation and fire hydrants, booster valves, and the like in accordance with AS2419.1 'Fire hydrant installations System design, installation and commissioning' as updated from time to time.
- Any landscaping that potentially could transfer / provide connectivity for flame or radiant heat from a fire in the substation to a dwelling or building should be avoided.
- The storage of and / or use of flammable, combustible, corrosive or explosive material within the fire restriction should be avoided.

Please find attached for the applicant's information copies of Endeavour Energy's:

- Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.
- Guide to Fencing, Retaining Walls and Maintenance Around Padmount Substations.

Subject to the satisfactory resolution of the foregoing and the following recommendations and comments Endeavour Energy has no objection to the Development Application.

- Network Capacity / Connection

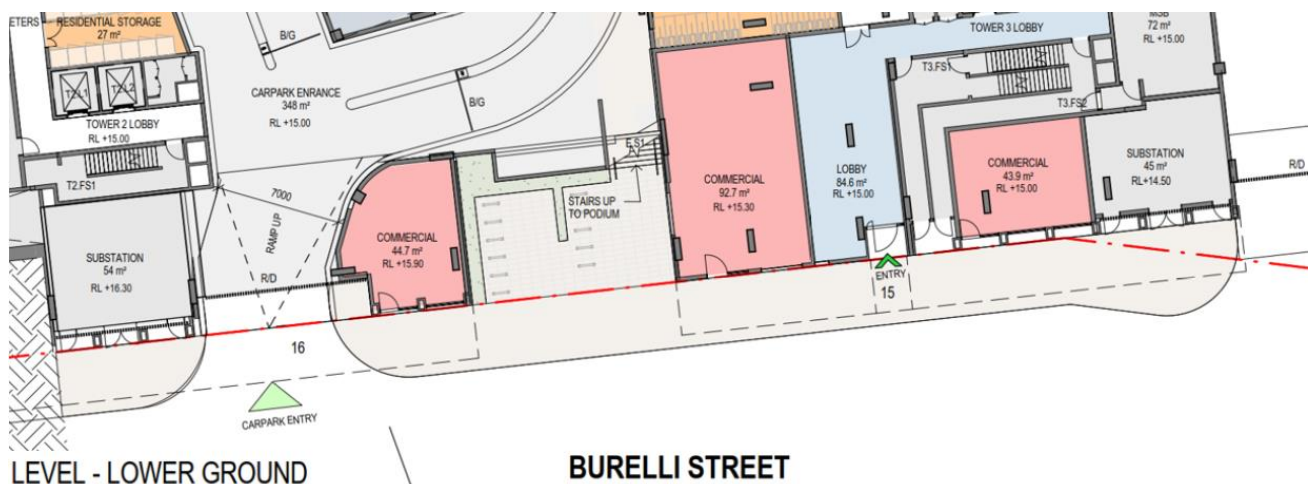
Endeavour Energy has noted the following in the Services Infrastructure Preliminary Design addressing the suitability of the site for the development in regard to whether electricity services are available and adequate for the development.

2.3 Maximum Demand

The calculated maximum demand based on AS3000 Table C1 and Table C3 is **3,754MVA (5,425A)**

Based on the above assessment the site will require 2 off new 2 x 1500kVa chamber substations. These will be approx. 7.6m x 6m each meeting the requirements below.

The proposed new indoor substations are shown in the following extract of the Architectural Plans.



From Endeavour Energy's perspective the fact that provision is being made for an indoor substation is a positive. Endeavour Energy's general requirements is for an indoor substation to be at ground level and have direct access from a public street.

Generally it is the Level 3 Accredited Service Provider's (ASP) responsibility (engaged by the developer) to make sure that the substation location and design complies with Endeavour Energy's standards the suitability of access, safety clearances, fire ratings, flooding etc. As a condition of the Development Application consent Council should request the submission of documentary evidence from Endeavour Energy confirming that satisfactory arrangements have been made for the connection of electricity and the design requirements for the substation, prior to the release of the Subdivision Certificate / commencement of works.

As well as the provision / capacity of distribution substations, other factors such as the size and rating / load on the conductors and voltage drop (which can affect the quality of supply particularly with long conductor runs) etc. need to be assessed.

Accordingly an extension and / or augmentation of the existing local network may be required. However the extent of the works will not be determined until the final load assessment is completed. Endeavour Energy's preference is to alert proponents / applicants (and Council) of the potential matters that may arise as further development of areas continues to occur.

In due course the applicant for the proposed development of the site will need to submit an appropriate application based on the maximum demand for electricity for connection of load via Endeavour Energy's Network Connections Branch to carry out the final load assessment and the method of supply will be determined. Straightforward applications can be completed online and permission to connect may be provided immediately if submitting a complying application.

Depending on the outcome of the assessment, any required padmount substation will need to be located within the property (in a suitable and accessible location) and be protected (including any associated cabling) by an easement and associated restrictions benefiting and gifted to Endeavour Energy. Please refer to Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

Further details of the entire range of connection services including temporary builder's supply; asset relocation and removal; subdivisions; meeting the requirements of development approval etc; are available by contacting Endeavour Energy's Network Connections Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or on Endeavour Energy's website under 'Home > Residential and business > Connecting to our network' via the following link:

<http://www.endeavourenergy.com.au/> .

For more complex connections, advice on the electricity infrastructure required to facilitate the proposed development (including asset relocations) can be obtained by submitting a Technical Review Request to Endeavour Energy's Network Connections Branch, the form for which FPJ6007 is attached. The response to these enquiries is based upon a desktop review of corporate information systems, and as such does not involve the engagement of various internal stakeholders in order to develop a 'Connection Offer'. It does provide details of preliminary connection requirements which can be considered by the applicant prior to lodging a formal application for connection of load.

Alternatively the applicant will need to engage an Accredited Service Provider (ASP) (as they have already done in this instance in the advice provided in the Infrastructure Report) of an appropriate level and class of accreditation to assess the electricity load and the proposed method of supply for the development. The ASP scheme is administered by Energy NSW and details are available on their website via the following link or telephone 13 77 88:

<https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/asp-scheme-and-contestable-works> .

Endeavour Energy is urging applicants /customers to engage with an Electrical Consultant / ASP prior to finalising plans in order to assess and incorporate any required electricity infrastructure. In so doing the consideration can also be given to its impact on the other aspects of the proposed development. This can assist in avoiding the making of amendments to the plan or possibly the need to later seek modification of an approved development application.

Endeavour Energy's Asset Planning & Performance Branch have advised they are aware of this development through assessment of customer applications DBL2568 (temporary building supply) and UML9849 (permanent supply). They have advised Endeavour Energy's Network Connections Branch who are responsible for managing the conditions of supply with the applicant and their ASP, of the need to address the significant safety issues associated with indoor substation no. 40556. Accordingly the applicant will need to continue to complete the application for connection of load process with Endeavour Energy's Network Connections Branch.

- Network Asset Design

Endeavour Energy's Company Policy 9.2.5 'Network Asset Design' includes the following requirements for electricity connections to new urban subdivision / development.

5.11 Reticulation policy

5.11.1 Distribution reticulation

In order to improve the reliability performance of and to reduce the operating expenditure on the network over the long term the company has adopted the strategy of requiring new lines to be either underground cables or where overhead is permitted, to be predominantly of covered or insulated construction. Notwithstanding this strategy, bare wire overhead construction is appropriate and permitted in some situations as detailed below.

In areas with the potential for significant overhanging foliage, CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown branches and debris than bare conductors. CCT must only be used in treed² areas as the probability of a direct lightning strike is low. In open areas where the line is not shielded from a direct lightning strike, bare conductors must generally be used for 11kV and 22kV reticulation.

Non-metallic Screened High Voltage Aerial Bundled Cable (NMSHVABC) must be used in areas which are heavily treed and where it is not practicable to maintain a tree clearing envelope around the conductors.

² A "treed" area is one with a substantial number of trees adjacent to the line, in each span. In these situations CCT is used to provide increased reliability as it is less susceptible to outages from wind-blown

5.11.1.1 Urban areas

Reticulation of new residential subdivisions will be underground. In **areas of low bushfire consequence**, new lines within existing overhead areas can be overhead, unless underground lines are cost justified or required by either **environmental** or local council requirements.

Where underground reticulation is required on a feeder that supplies a mixture of industrial, commercial and/or residential loads, the standard of underground construction will apply to all types of load within that development.

Where ducting is used, adequate spare ducts and easements must be provided at the outset to cover the final load requirements of the entire development plan.

Extensions to the existing overhead 11kV/22kV network must generally be underground. Bare wire will be used for conductor replacements and augmentations except in treed areas where CCT or NMSHVABC must be used.

Extensions to the existing overhead LV network and augmentations must either be underground or ABC. Conductor replacements greater than 100m in route length must utilise aerial bundled cable.

- Streetlighting

With the increase in both vehicular and pedestrian traffic resulting from the overall development occurring in the area, although the existing streetlighting is designed for an urban environment, the streetlighting may need to be reviewed and if necessary upgraded to comply with the series of standards applying to the lighting of roads and public spaces set out in with Australian/New Zealand Standard AS/NZS 1158: 2010 'Lighting for roads and public spaces' as updated from time to time.

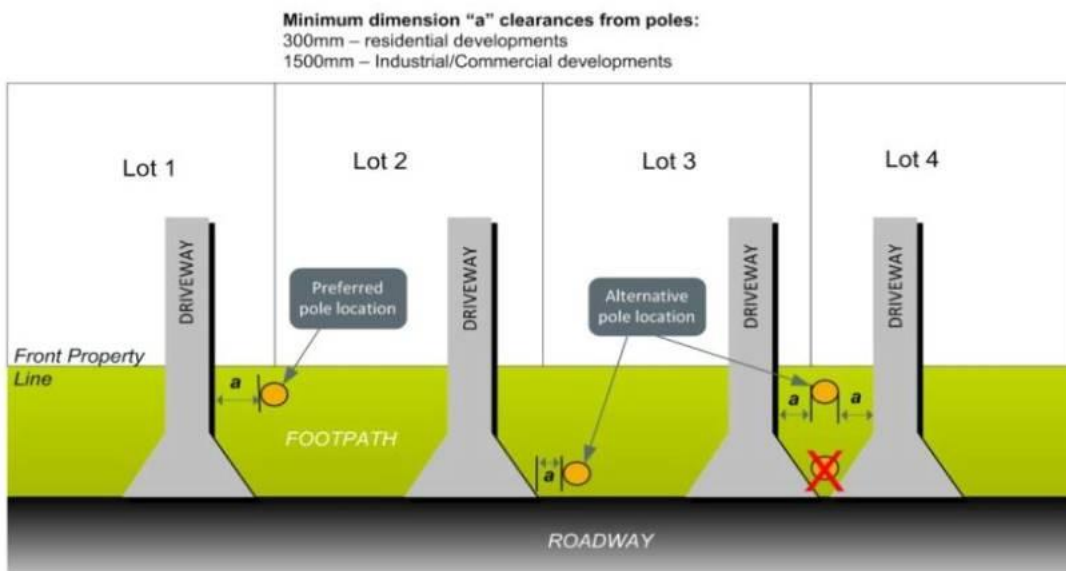
Whilst the determination of the appropriate lighting rests with the road controlling authority, Endeavour Energy as a Public Lighting Service Provider is responsible for operating and maintaining the streetlights on behalf of local councils, Roads and Maritime Services and other utilities in accordance with the NSW Public Lighting Code 2019 (Code) as updated from time to time. Endeavour Energy recognises that well designed, maintained and managed Public Lighting offers a safe, secure and attractive visual environment for pedestrians and drivers during times of inadequate natural light.

For any Code implementation and administration / technical matters please contact Endeavour Energy's Substation Mains Assets Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or email mainsenquiry@endeavourenergy.com.au.

- Separation of Driveways to Electricity Infrastructure

For public / road safety and to reduce the likelihood / protect electricity infrastructure from vehicle impact, Endeavour Energy's recommendation is to have the maximum reasonably possible separation distances from driveways and its electricity infrastructure.

NSW Streets Opening Coordination Council 'Guide to Codes and Practices for Streets Opening' which in Section 5.10. 'Vehicular Footpath Crossing' includes the following diagram. This indicates the minimum separation of 1500 millimetres from a pole to the skirting of an industrial / commercial driveway.



This is also in keeping with Endeavour Energy's Lighting Design Instruction LDI 0001 'Public lighting design' indicates that for new lighting installations 'The minimum clearance to any driveway shall be 1500 mm'. (For low voltage pillars 500 mm separation is required).

In regard to the relevant parts of Australian Standard 2890 'Parking Facilities' as updated from time to time, whilst there is no direct reference in the Standard to power poles or streetlight columns as a 'permanent sight obstruction', provision needs to be made to allow for turning movements, reversing, safety aspects such as sight distances to both pedestrians and other vehicles should not be compromised. Also, as a 'fixed object', if adequate separation cannot be provided, protective devices to protect the power pole or streetlight column from vehicle impact may be required.

Also the applicant should note that under the provision of the Electricity Supply Act 1995 (NSW), a driveway constructed too close to electricity infrastructure may under Section 49 'Obstruction of electricity works' be regarded as interfering with electricity works eg. in the event that a pole needs to be replaced and excavation of the surrounding ground is required part of the driveway would need to be removed.

- Flooding and Drainage

Endeavour Energy has noted the following in the Statement of Environmental Effects.

3.14 Stormwater

The site is not identified as being affected by flood, although overland runoff will occur during rainfall events.

Endeavour Energy requires the electricity network needed to service an area / development to be fit for purpose and meet the technical specifications, design, construction and commissioning standards based on Endeavour Energy’s risk assessment associated with the implementation and use of the network connection / infrastructure for a flood prone site. Risk control has focused typically on avoiding the threat, but where this is not possible, reducing the negative effect or probability of flood damage to assets by implementing good design and maintenance practices.

Distribution substations should not be subject to flood inundation or stormwater runoff ie. the padmount substation cubicles are weatherproof not flood proof and the cable pits whilst designed to be self-draining should not be subject to excessive ingress of water. Section 7 ‘Substation and switching stations’ of Endeavour Energy’s Mains Construction Instruction MCI 0006 ‘Underground distribution construction standards manual’ provides the following details of the requirements for flooding and drainage in new padmount substation locations.

7.1.6 Flooding and drainage

Substations are to be located such that the risk of flooding or stormwater damage is minimal.

As a minimum the level at the top of the transformer footing, HV and LV switchgear, shall not be lower than the 1:100 year flood level.

All drains within the substation site area or in the vicinity shall be properly maintained to avoid the possibility of water damage to Endeavour Energy’s equipment.

In areas where, as determined by the Network Substation Manager, there is a high water table or a heightened risk of flooding, indoor substations will not be permitted.

All materials used in the construction below the substation (ground level) shall be capable of withstanding prolonged immersion in water without swelling or deterioration.



Figure 51 - Example substation raised above 1:100 flood level

Endeavour Energy has noted the following in the Flood Management Report.

Floor Level

Residential & Commercial	Habitable flood level to be a minimum of 300mm above finished adjacent ground level.
Critical Utilities (Substation)	All Floor Levels to be equal to or greater than the PMF flood level plus freeboard.

Building Components

Critical Utilities (Substation)	All structures to have flood compatible building components below or at the PMF level plus freeboard.
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- Earthing

The construction of any building or structure (including fencing, signage, flag poles, hoardings etc.) whether temporary or permanent that is connected to or in close proximity to Endeavour Energy's electrical network is required to comply with Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' as updated from time to time. This Standard sets out requirements for the design, construction and verification of electrical installations, including ensuring there is adequate connection to the earth. It applies to all electrical installations including temporary builder's supply / connections.

Inadequate connection to the earth to allow a leaking / fault current to flow into the grounding system and be properly dissipated places persons, equipment connected to the network and the electricity network itself at risk from electric shock, fire and physical injury.

The earthing system is usually in the form of an earth electrode consisting of earth rods or mats buried in the ground. It should be designed by a suitably qualified electrical engineer / ASP following a site-specific risk assessment having regard to the potential number of people could be simultaneously exposed, ground resistivity etc. For details of the ASP scheme please refer to the above point 'Network Capacity / Connection'.

- Construction Management Plan

Although Endeavour Energy's electricity infrastructure is not a 'sensitive receptor' in the traditional sense of being a habitable / residential use, the electrical equipment / operation of the site would be affected by construction activities.

As part of the construction management plan the applicant must satisfactorily address any impacts of the proposed works on the electricity infrastructure on and adjoining the site . In this regard the following issues should be considered and addressed by the applicant:

- Maintenance of the structural integrity / weather tightness of the substation building / chamber.
- Access to the substation must be available 24/7/365 ie. all day, every day of the year and must not be impeded by temporary fencing, hoardings, the storage of materials etc.
- The electricity infrastructure may be impacted by vehicle / plant operation, excessive loads, vibration, dust or moisture penetration.

- Easement Management / Network Access

The following is a summary of the usual / main terms of Endeavour Energy's electrical easements requiring that the landowner:

- Not install or permit to be installed any buildings, structures or services within the easement site.
- Not alter the surface level of the easement site.
- Not do or permit to be done anything that restricts access to the easement site without the prior written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose.

Endeavour Energy's preference is for no activities or encroachments to occur within its easements. However, if any proposed works or activities (other than those approved / certified by Endeavour Energy's Network Connections Branch as part of an enquiry / application for load or asset relocation project) will encroach / affect Endeavour Energy's easements or protected assets, contact must first be made with the Endeavour Energy's Easements Officer, Jennie Saban, on business days on mobile 0417484402 or alternately via email Jennie.Saban@endeavourenergy.com.au or Easements@endeavourenergy.com.au . Please note Endeavour Energy's Easement Officers do not have access to the NSW Planning Portal. To resolve the easement management matters direct contact with the Easement Officer should be made.

Please find attached for the applicant's reference copies of Endeavour Energy's:

- Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' which deals with activities / encroachments within easements.
- General Restrictions for Underground Cables.

It is imperative that the access to the existing electrical infrastructure on and in proximity of the site be maintained at all times. To ensure that supply electricity is available to the community, access to the electricity infrastructure may be required at any time. Restricted access to electricity infrastructure by electricity workers causes delays in power restoration and may have severe consequences in the event of an emergency.

- Prudent Avoidance

The electricity industry has adopted a policy of prudent avoidance by doing what can be done without undue inconvenience and at modest expense to avert the possible risk to health from exposure to emissions from electricity infrastructure such as electric and magnetic fields (EMF) and noise which generally increase the higher the voltage ie. Endeavour Energy's network ranges from low voltage (normally not exceeding 1,000 volts) to high voltage (normally exceeding 1,000 volts but not exceeding 132,000 volts / 132 kV).

In practical terms this means that when designing new transmission and distribution facilities, consideration is given to reducing exposure and increasing separation distances to more sensitive uses such as residential or schools, pre-schools, day care centres or where potentially a greater number of people are regularly exposed for extended periods of time.

These emissions are usually not an issue but with Council's permitting or encouraging development with higher density, reduced setbacks and increased building heights, but as the electricity network operates 24/7/365 (all day, every day of the year), the level of exposure can increase.

Endeavour Energy believes that irrespective of the zoning or land use, applicants (and Council) should also adopt a policy of prudent avoidance by the siting of more sensitive uses eg. the office component of an industrial building, away from and less susceptible uses such as garages, non-habitable or rooms not regularly occupied eg. storage areas in a commercial building, towards any electricity infrastructure – including any possible future electricity infrastructure required to facilitate the proposed development.

Where development is proposed near electricity infrastructure, Endeavour Energy is not responsible for any amelioration measures for such emissions that may impact on the nearby proposed development.

Please find attached a copy of Energy Networks Association's 'Electric & Magnetic Fields – What We Know' which can also be accessed via their website at <https://www.energynetworks.com.au/electric-and-magnetic-fields> and provides the following advice:

Electric fields are strongest closest to their source, and their strength diminishes rapidly as we move away from the source.

The level of a magnetic field depends on the amount of the current (measured in amps), and decreases rapidly once we move away from the source.

Typical magnetic field measurements associated with Endeavour Energy's activities and assets given the required easement widths, safety clearances etc. and having a maximum voltage of 132,000 volt / 132 kV, will with the observance of these separation distances not exceed the recommended magnetic field public exposure limits.

As part of the further acoustic assessment consideration should also be provided to the indoor substations required to facilitate the proposed development. The transformers in substations may emit a hum – especially when under heavy load say in the summer peak when use of air conditioning is at its highest. The noise is usually not perceptible enough to be regarded as disruptive and/or to the point where amelioration measures are required. As noise levels, frequency and timing can vary and people perceive sounds differently, to minimise any potential exposure to intrusive noise, the siting towards the electricity infrastructure of less sensitive uses or parts of the building not regularly occupied is recommended.

- Vegetation Management

The planting of large trees in the vicinity of electricity infrastructure is not supported by Endeavour Energy. Suitable planting needs to be undertaken in proximity of electricity infrastructure (including any new electricity infrastructure required to facilitate the proposed development). Ground covers and smaller shrubs, with non-invasive root systems (less than 400 millimetres below ground level) are the best plants to use. Larger trees should be planted well away from electricity infrastructure and even with underground cables, be installed with a root barrier around the root ball of the plant. The landscape designer may need to reconsider if the proposed plantings achieve the foregoing requirements.

Landscaping that interferes with electricity infrastructure could become a potential safety risk, restrict access, reduce light levels from streetlights or result in the interruption of supply may become subject to Endeavour Energy's Vegetation Management program and/or the provisions of the *Electricity Supply Act 1995* (NSW) Section 48 'Interference with electricity works by trees' by which under certain circumstances the cost of carrying out such work may be recovered.

- Dial Before You Dig

Before commencing any underground activity the applicant is required to obtain advice from the **Dial Before You Dig 1100** service in accordance with the requirements of the *Electricity Supply Act 1995* (NSW) and associated Regulations. This should be obtained by the applicant not only to identify the location of any underground electrical and other utility infrastructure across the site, but also to identify them as a hazard and to properly assess the risk.

- Removal of Electricity Supply

Approval for the permanent disconnection and removal of supply must be obtained from Endeavour Energy's Network Connections Branch (contact via Head Office enquiries on business days from 9am - 4:30pm on telephone 133 718 or (02) 9853 6666) by Accredited Service Providers (ASP) with the relevant class of Authorisation for the type of work being carried out. The work could involve:

- The disconnection and removal of an underground service cable or overhead service line,
- Removal of metering equipment.

The written request must be submitted to Endeavour Energy using Form FPJ4603 'Permission to Remove Service / Metering by Authorised Level 2 Accredited Service Provider' which must be accompanied by Notification of Service Works (NOSW) forms provided as a result of service work activity performed by a Level 2 ASP. The retailer must also provide written agreement for the permanent removal of supply. For details of the ASP scheme please refer to the above point 'Network Capacity / Connection'.

- Demolition

Demolition work is to be carried out in accordance with Australian Standard AS 2601—2001: 'The demolition of structures' as updated from time to time. All electric cables or apparatus which are liable to be a source of danger, other than a cable or apparatus used for the demolition works shall be disconnected ie. all electrical apparatus shall be regarded as live until isolated and proved de-energised by approved means.

Depending on the extent of the demolition works, the low voltage service conductor and customer connection may need to be isolated and/or removed during demolition. Please refer to the above point 'Removal of Electricity Supply' for further information.

Appropriate care must be taken to not otherwise interfere with any electrical infrastructure on or in the vicinity of the site eg. streetlight columns, power poles, overhead power lines and underground cables etc.

- Excavation

The applicant should be aware of the following object of Section 49A 'Excavation work affecting electricity works' of the of Electricity Supply Act 1995 (NSW) covering the carrying out or proposed carrying out of excavation work in, on or near Endeavour Energy's electrical infrastructure.

Electricity Supply Act 1995 No 94

Current version for 1 July 2019 to date (accessed 24 October 2019 at 14:19)

Part 5 > Division 2 > Section 49A



49A Excavation work affecting electricity works

- (1) This section applies if a network operator has reasonable cause to believe that the carrying out or proposed carrying out of excavation work in, on or near its electricity works:
 - (a) could destroy, damage or interfere with those works, or
 - (b) could make those works become a potential cause of bush fire or a potential risk to public safety.
- (2) In those circumstances, a network operator may serve a written notice on the person carrying out or proposing to carry out the excavation work requiring the person:
 - (a) to modify the excavation work, or
 - (b) not to carry out the excavation work, but only if the network operator is of the opinion that modifying the excavation work will not be effective in preventing the destruction or damage of, or interference with, the electricity works concerned or in preventing those works becoming a potential cause of bush fire or a potential risk to public safety.
- (3) A notice under subsection (2) must specify the excavation work that is to be modified or not carried out.

With the increased number of developments incorporating basements often being constructed to (or close to) the property boundaries or immediately adjacent to easements, the integrity of the nearby electricity infrastructure can be placed at risk.

If any excavation work affects Endeavour Energy's electricity infrastructure, prior contact must be made to Endeavour Energy's Field Operations Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or alternately email Construction.Works@endeavourenergy.com.au .

- Asbestos

Endeavour Energy's G/Net master facility model indicates that the site is in an area identified or suspected of having asbestos or asbestos containing materials (ACM) present in the electricity network. Whilst Endeavour Energy's underground detail is not complete within G/Net in some areas, in older communities, cement piping was regularly used for the electricity distribution system and in some instances containing asbestos to strengthen the pipe; for insulation; lightness and cost saving.

When undertaking works on or in the vicinity of Endeavour Energy's electricity network, asbestos or ACM must be identified by a competent person employed by or contracted to the applicant and an asbestos management plan, including its proper disposal, is required whenever construction works has the potential to impact asbestos or ACM.

The company's potential locations of asbestos to which construction / electricity workers could be exposed include:

- o customer meter boards;
- o conduits in ground;
- o padmount substation culvert end panels; and
- o joint connection boxes and connection pits.

Further details are available by contacting Endeavour Energy's Electrical and Public Safety Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666.

- Site Remediation

Endeavour Energy has noted the Report on Preliminary (Subsurface) Contaminated Land Investigation does not appear to identify the electricity infrastructure on or in vicinity of the site which is likely to become redundant assets as a result of the proposed development as potential areas of environmental concern (AEC) and associated contaminants of potential concern (COPC).

Endeavour Energy's Environmental Business Partner Team have advised that the remediation of soils or surfaces impacted by various forms of electricity infrastructure is not uncommon but is usually not significant eg. transformer oil associated with leaking substations, pole treatment chemicals at the base of timber poles etc. The method of remediation is generally the removal of the electricity infrastructure, removal of any stained surfaces or excavation of any contaminated soils and their disposal at a licensed land fill. The decommissioning and removal of the redundant electricity infrastructure will be dealt with by Endeavour Energy's Network Connections Branch as part of the application for the connection of load for the new development – please refer to the above point 'Network Capacity / Connection'.

If the applicant has any concerns over the remediation works related to redundant electricity infrastructure they should contact Environmental Business Partner Team via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666.

- Public Safety

Workers involved in work near electricity infrastructure run the risk of receiving an electric shock and causing substantial damage to plant and equipment. I have attached Endeavour Energy's public safety training resources, which were developed to help general public / workers to understand why you may be at risk and what you can do to work safely. The public safety training resources are also available via Endeavour Energy's website via the following link:

<http://www.endeavourenergy.com.au/wps/wcm/connect/ee/nsw/nsw+homepage/communitynav/safety/safety+brochures> .

If the applicant has any concerns over the proposed works in proximity of the Endeavour Energy's electricity infrastructure to the road verge / roadway, as part of a public safety initiative Endeavour Energy has set up an email account that is accessible by a range of stakeholders across the company in order to provide more effective lines of communication with the general public who may be undertaking construction activities in proximity of electricity infrastructure such as builders, construction industry workers etc. The email address is Construction.Works@endeavourenergy.com.au .

- Emergency Contact

In case of an emergency relating to Endeavour Energy's electrical network, the applicant should note the Emergencies Telephone is 131 003 which can be contacted 24 hours / 7 days. Endeavour Energy's contact details should be included in the any risk or safety management plan.

I appreciate that not all the foregoing issues may be directly or immediately relevant or significant to the Development Application. However, Endeavour Energy's preference is to alert proponents / applicants of the potential matters that may arise should development within closer proximity of the existing and/or required electricity infrastructure needed to facilitate the proposed development on or in the vicinity of the site occur.

Could you please pass on a copy of this submission and the attached resources to the applicant? Should you wish to discuss this matter, or have any questions, please do not hesitate to contact me or the contacts identified above in relation to the various matters. Due to the high number of development application / planning proposal notifications submitted to Endeavour Energy, to ensure a response contact by email to property.development@endeavourenergy.com.au is preferred.

With the COVID-19 health risk a significant number of Endeavour Energy staff are working from home. Access to emails and other internal stakeholders can accordingly be somewhat limited. As a result, it may sometimes take longer than usual to respond to enquiries. Thank you for your ongoing understanding during this time.

Yours faithfully

Cornelis Duba

Development Application Specialist

Network Environment & Assessment

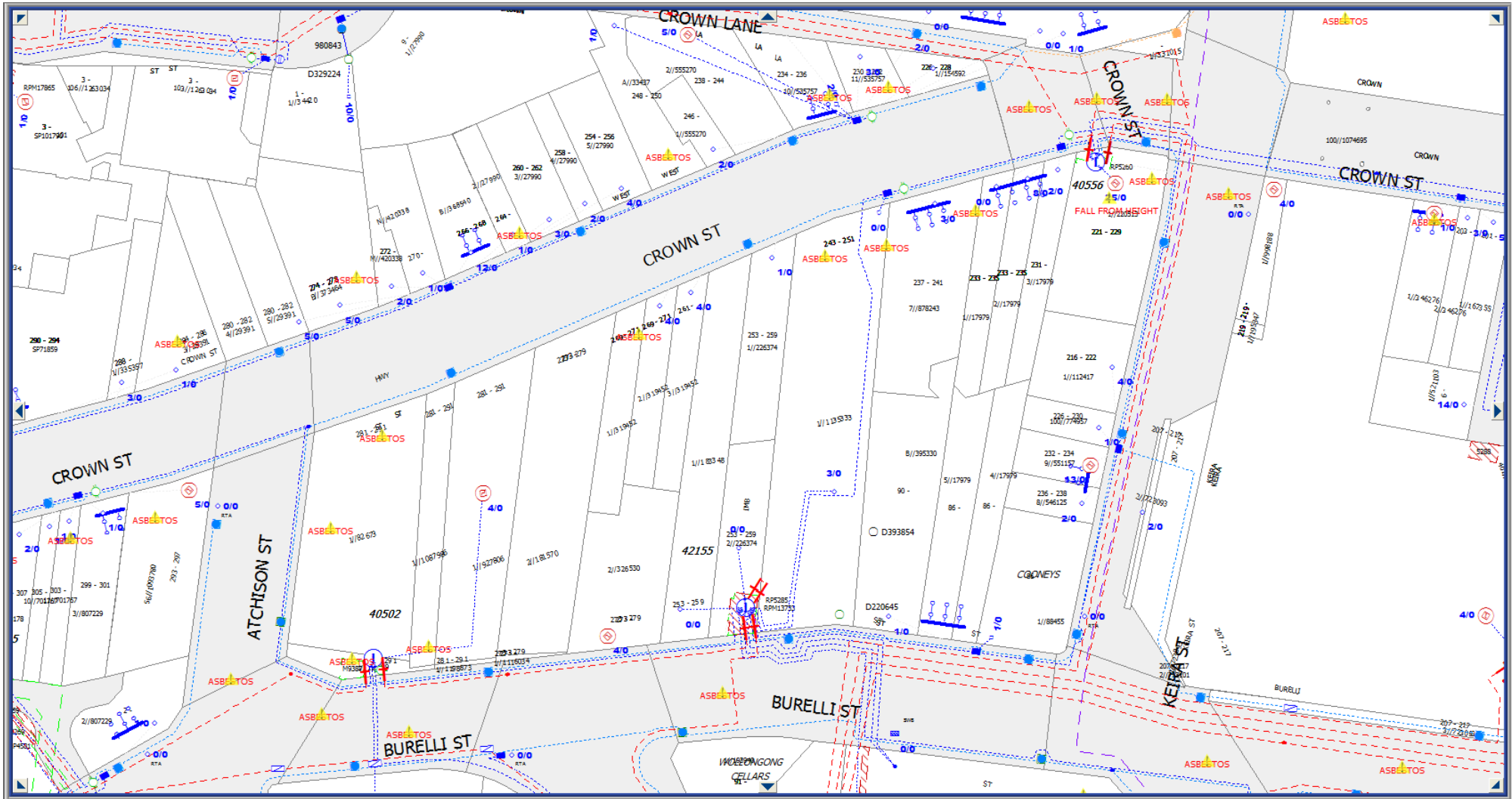
M: 0455 250 981

E: cornelis.duba@endeavourenergy.com.au

51 Huntingwood Drive, Huntingwood NSW 2148

www.endeavourenergy.com.au



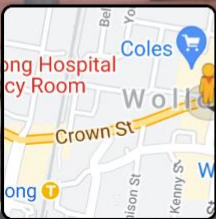
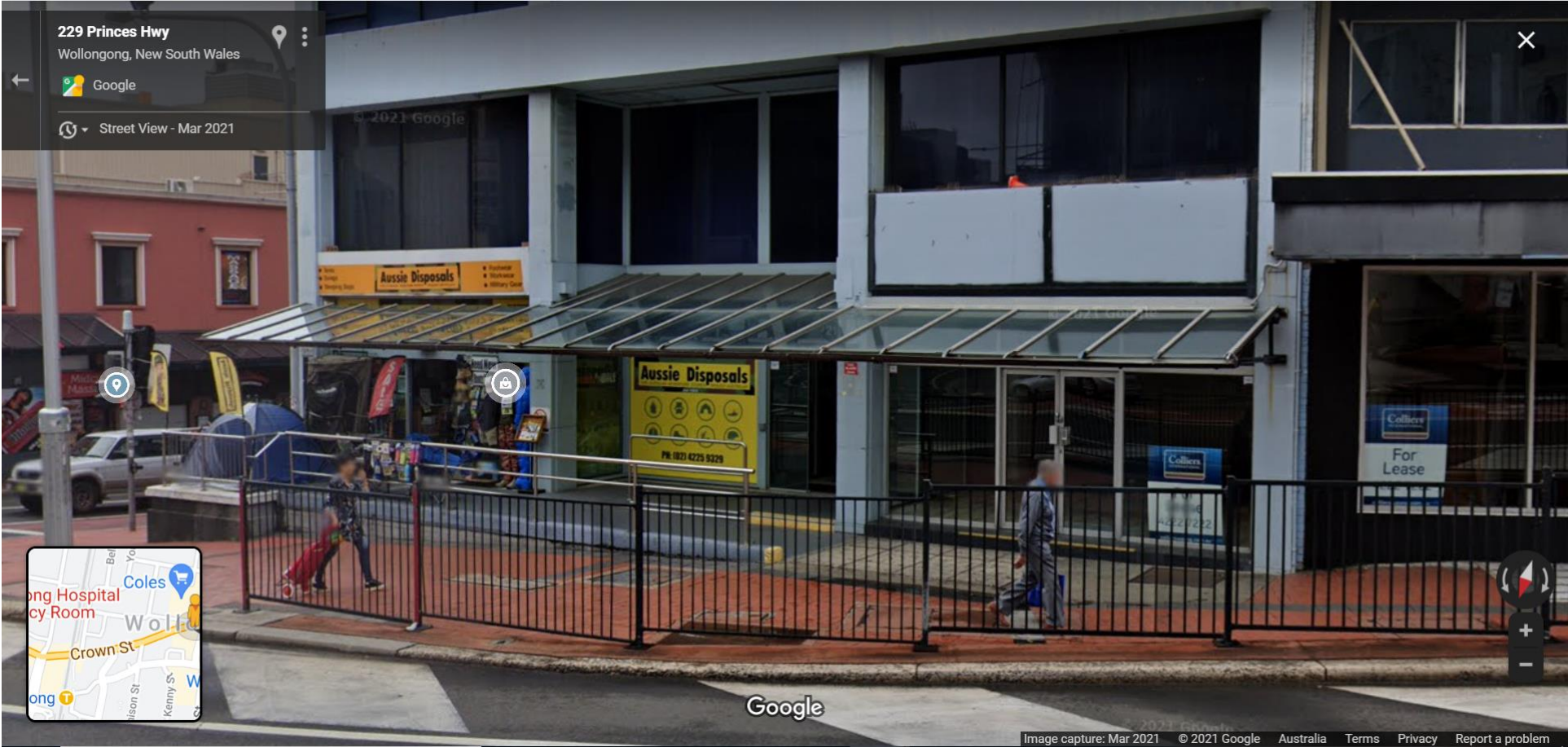


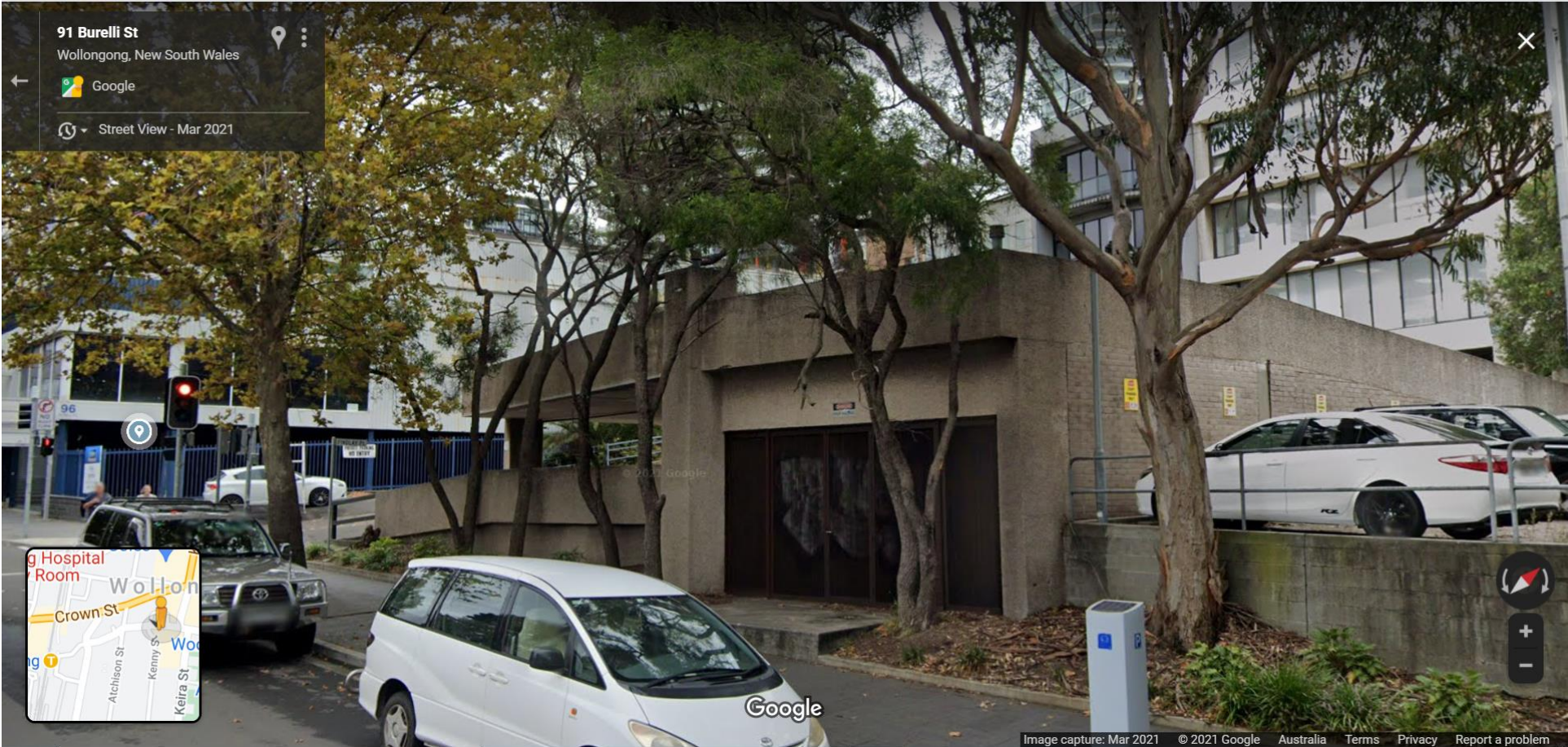
Please note the location, extent and type of any electricity infrastructure, boundaries etc. shown on the plan is indicative only. In addition it must be recognised that the electricity network is constantly extended, augmented and modified and there is a delay from the completion and commissioning of these works until their capture in the model. Easements benefitting Endeavour Energy are indicated by red hatching. Generally (depending on the scale and/or features selected), low voltage (normally not exceeding 1,000 volts) is indicated by blue lines and high voltage (normally exceeding 1,000 volts but for Endeavour Energy’s network not exceeding 132,000 volts / 132 kV) by red lines (these lines can appear as solid or dashed and where there are multiple lines / cables only the higher voltage may be shown). This plan only shows the Endeavour Energy network and does not show electricity infrastructure belonging to other authorities or customers owned electrical equipment beyond the customer connection point / point of supply to the property. This plan is not a ‘Dial Before You Dig’ plan under the provisions of Part 5E ‘Protection of underground electricity power lines’ of the *Electricity Supply Act 1995* (NSW).

229 Princes Hwy
Wollongong, New South Wales

Google

Street View - Mar 2021

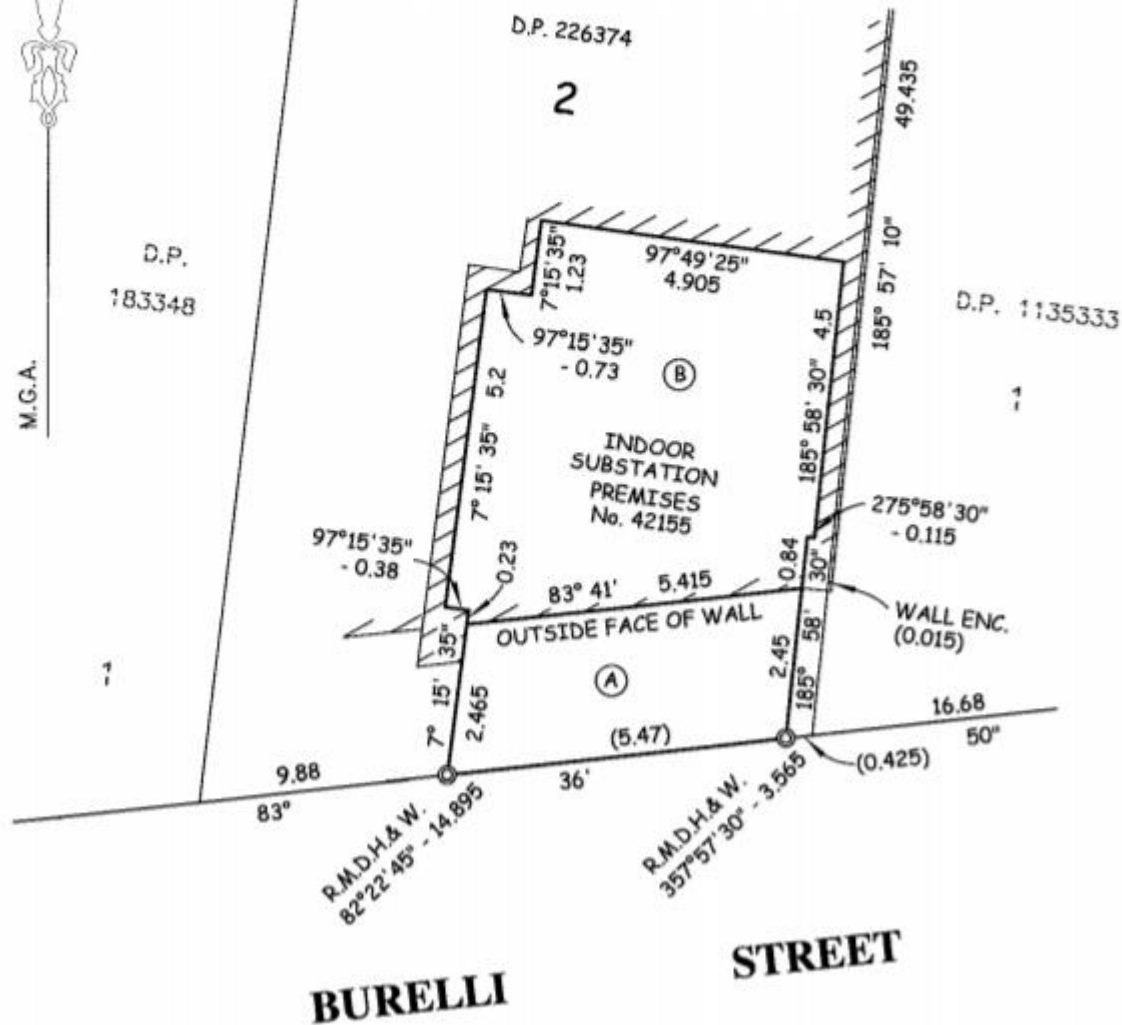




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- (A) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES AND RIGHT OF WAY
- (B) PROPOSED EASEMENT FOR SUBSTATION PREMISES No.42155

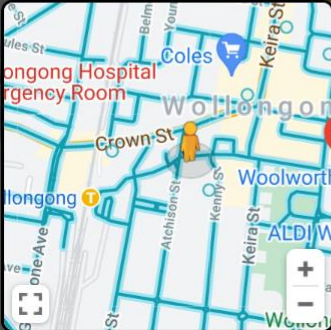




Burrelli St
Wollongong, New South Wales

Google

Street View - Mar 2021



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