

Department of Planning & Environment/The Hills Shire Council

Development Application No. SSD9274

Samuel Gilbert Public School Redevelopment

Submission due date: 19 December 2018

Endeavour Energy Submission

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7 December 2018

CONTENTS

EXECUTIVE SUMMARY	3
1.0 Background	6
1.1 Brief description of proposal	6
1.2 Location of Endeavour Energy easements and assets	6
2.0 Consideration of proposal	6
2.1 Network connection for new development.....	6
2.2 Electrical network reticulation in urban areas	7
2.3 Easement management and network access.....	7
2.3.1 Underground easement.....	7
2.3.2 Substation easement.....	7
2.3.3 Easement Encroachments	8
2.4 Bushfire risk	8
2.5 Demolition	9
2.6 Excavation and underground works.....	9
2.7 Other utilities or services	9
2.8 Flooding and drainage.....	10
2.9 Electromotive Force or electromagnetic Field (EMF)	10
2.10 Noise	10
2.11 Vegetation management.....	11
2.12 Public Safety.....	11
3.0 Conclusion and recommendations	11
4.0 ANNEXURES	13
4.1 Annexure 1- Endeavour Energy GIS plans and Google Maps street views	13
4.2 Annexure 2- Bushfire Maps	18
4.3 Annexure 3- Padmount substation easement requirements.....	20
4.4 Annexure 4- Easement and fire screening requirements for padmount substations 20	
4.5 Annexure 4- Easement encroachments.....	22
4.6 Annexure 5- Typical layout of Endeavour Energy underground assets adjacent to other utilities within the same easement	25

EXECUTIVE SUMMARY

Endeavour Energy has considered the Department of Planning & Environment's referral of Development Application No. SSD9274 for Samuel Gilbert Public School, Ridgecrop Drive, Castle Hill Lot 1 DP719671.

Endeavour Energy cannot comment on the suitability of the design for the redevelopment of the subject property since Endeavour Energy does not currently have any active electricity easements on or in the vicinity of the property.

Endeavour Energy easements and assets occur on or in the vicinity of the subject property as follows:

- There are no existing easements over the site benefiting Endeavour Energy.
- 11,000 Volt (kV) high voltage (HV) and low voltage underground power lines are located along Ridgecrop Drive on the South side of the subject property.
- 11 kV HV and low voltage underground power lines are located along Gilbert Road on the South side of the subject property.
- 11 kV HV and low voltage underground power lines are located along Excalibur Avenue on the North side of the subject property.
- 11 kV Padmount Distribution Substation DS17185 is located just outside existing demountables adjacent to gate entry off Gilbert Road. Endeavour Energy access gate is next to this gate entry.
- 11 kV Padmount Distribution Substation DS16152 is located on road reserve on the North side of the subject property, adjacent to Castle Glen Reserve.
- There are no powerlines on the West and East sides of the subject property.

Refer to Annexure 1 for relevant Endeavour Energy site plan. Active easements are indicated by red hatching. Google Earth street views are also provided in Annexure 1.

Although Endeavour Energy does not hold any easements over the aforementioned electricity infrastructure, the entire infrastructure is considered as a protected asset under the *Electricity Supply Act 1995* (NSW) Section 53 'Protection of certain electricity works'. This protected asset is managed on the same basis as if easements were in existence.

Endeavour Energy cannot raise objections to the redevelopment since the subject property is not owned by Endeavour Energy and the redevelopment does not encroach on Endeavour Energy property or easements.

Notwithstanding the absence of objections, Endeavour Energy has the following recommendations and advice for the Applicant:

1. The Applicant should engage a Level 3 Accredited Service Provider (ASP) as early as possible to design and prepare a proposed method of supply. Endeavour Energy will assess the proposal and depending on the outcome of the assessment, any required padmount or indoor/chamber substation/s will need to be located within the property in a suitable and accessible location. The substation/s and associated cabling will need to be protected by an easement and associated restrictions benefiting and gifted to Endeavour Energy.

Endeavour Energy's Network Connections Branch can be contacted via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or on Endeavour Energy's website under 'Home > Residential and business > Connecting to our network' via the following link: www.endeavourenergy.com.au.

2. The Applicant is advised that the extension to the existing 11 kV and/or low voltage network to provide power to the redevelopment of the property will be underground and the existing padmount substation will need to be replaced or updated.

3. The Applicant is advised that Endeavour Energy's design requirements for minimum easement widths are as follows and there are mandatory restrictions associated with these easements including **maintaining unimpeded** access to electrical infrastructure within the easements at all times:

- 3 m for low voltage and 11 kV underground power lines which can be reduced to 1 m if there is concrete protection of minimum 50 mm concrete cover at standard burial depth; and
- 2.75 m x 5.5 m for a padmount substation.

If impedances to the electrical infrastructure are present, they must be removable at any notice; otherwise removal costs will be recoverable from the property owner.

Mandatory restrictions are provided in Sections 2.3.1 and 2.3.2.

4. The Applicant is advised that easement encroachments can be permitted, prohibited or controlled; summarised in the table in Annexure 4.

Controlled activities can only be carried out upon approval from Endeavour Energy. The Applicant can obtain this approval via the Regional Easement Officer North by sending an application to the following address:

Regional Easement Officer- North
Endeavour Energy
PO Box 811
Seven Hills NSW 1730

5. The Applicant is advised that permanent surfaces such as asphalt or concrete are prohibited for underground and padmount substation easements. However, construction of new roads and concrete driveways are permissible as a controlled activity subject to a set of restrictions as detailed in Section 2.3.3.
6. The Applicant is advised that other utilities such as telecommunications, water and gas are as a general rule, not allowed within Endeavour Energy easements; however, if it is unavoidable, the Applicant must consult Endeavour Energy via Endeavour Energy Regional Services North by contacting Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or alternately email RegionalServices.North@endeavourenergy.com.au.
7. The Applicant is advised to carry out demolition work in accordance with Australian Standard AS 2601—2001: 'The demolition of structures', and to apply to Endeavour Energy to disconnect and remove 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.
8. The Applicant is advised to contact the **Dial Before You Dig 1100** service prior to any underground work to identify the location of any underground electrical and other utility infrastructure across or in the vicinity of the site and to assist in assessing the risk of the proposed work impacting this infrastructure. This will help to minimise the risk of excavation work damaging electricity works which can be penalised under the *Electricity Supply Act 1995 (NSW)*.
9. The Applicant is advised to take into consideration the bushfire prone nature of the property and provides for suitable siting of the new or uprated padmount substation in compliance with fire restrictions which include providing adequate clearances between the substation and adjacent buildings or if these clearances cannot be achieved, using building components of suitable FRL.
10. The Applicant takes into consideration electricity infrastructure required to supply power to the site such as a padmount substation must not be subject to flood inundation and drains within or in the vicinity of the area allocated for the infrastructure must be properly maintained to avoid the possibility of water damage to the infrastructure.

11. The Applicant is advised to adopt a policy of prudent avoidance by the siting of more sensitive uses away from any electricity infrastructure, including any possible future electricity infrastructure required to facilitate the proposed development.
12. The Applicant is advised that noise emitted by the normal operation of the existing padmount substation is generally not an issue; however, Endeavour Energy recommends that it be included in the detailed acoustic assessment recommended by the acoustic consultants when the mechanical plant for the redevelopment has been finalised.
13. The Applicant avoids the planting of large trees in the vicinity of electricity infrastructure. Suitable planting includes low growing shrubs not exceeding 3.0 metres in height and ground covers and/or smaller shrubs with non-invasive root systems.

1.0 Background

1.1 Brief description of proposal

The Department of Planning and Environment has proposed a development application for the redevelopment of Samuel Gilbert Public School located at Ridgecrop Drive, Castle Hill. The proposed redevelopment is a State Significant Development (SSD) with the Minister for Planning being the Consent Authority. The redevelopment is confined within the boundaries of the property and consists of demolition of some existing buildings, removal and relocation of existing demountables, construction of a new three- storey building to be used for teaching spaces, staff and administration offices, a library and school entry forecourt, alterations and additions to existing administration and library buildings to convert to new home bases, construction of a new hall, refurbishment of 2 toilet blocks, construction of a new circulation axis, landscaping, signage and other associated works.

The new three- storey building will be located along Ridgecrop Drive.

1.2 Location of Endeavour Energy easements and assets

Refer to Annexure 1 for relevant Endeavour Energy site plan and Google Maps street views. As shown in the site plan and street views, Endeavour Energy easements and assets occur on or in the vicinity of the subject property as follows:

- There are no existing easements over the site benefiting Endeavour Energy.
- 11,000 Volt (kV) high voltage (HV) and low voltage underground power lines are located along Ridgecrop Drive on the South side of the subject property.
- 11 kV HV and low voltage underground power lines are located along Gilbert Road on the South side of the subject property.
- 11 kV HV and low voltage underground power lines are located along Excalibur Avenue on the North side of the subject property.
- 11 kV Padmount Distribution Substation DS17185 is located just outside existing demountables adjacent to gate entry off Gilbert Road. Endeavour Energy access gate is next to this gate entry.
- 11 kV Padmount Distribution Substation DS16152 is located on road reserve on the North side of the subject property, adjacent to Castle Glen Reserve.
- There are no powerlines on the West and East sides of the subject property.

Although all the surrounding underground power lines and padmount substations are not held under easement, they are protected assets under the *Electricity Supply Act 1995* (NSW) Section 53 'Protection of certain electricity works'. The owner or occupier of the land cannot take any action by reason of the presence or operation of the electricity works in, on or over the land i.e. the owner or occupier of the land cannot remove the electricity infrastructure from the property. These protected assets are managed on the same basis as if an easement was in existence.

2.0 Consideration of proposal

2.1 Network connection for new development

Power supply to the property is currently provided by the 11 kV Padmount Distribution Substation located within the property in an area screened by trees just off Gilbert Road.

Endeavour Energy advises that the development Applicant should not automatically assume that the presence of existing electricity infrastructure nearby means that adequate supply is immediately available to facilitate their proposed development. The Applicant has already submitted an application for connection of load via Endeavour Energy's Network Connections Branch and has been given a Supply Offer requiring the Applicant to engage a Level 3 Accredited Service Provider (ASP) to design and prepare a proposed method of supply. Endeavour Energy will assess the proposal and depending on the outcome of the assessment, any required padmount or indoor/chamber substation/s will need to be located within the property in a suitable and accessible location. The substation/s and associated cabling

will need to be protected by an easement and associated restrictions benefiting and gifted to Endeavour Energy.

Endeavour Energy's Network Connections Branch can be contacted via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or on Endeavour Energy's website under 'Home > Residential and business > Connecting to our network' via the following link: www.endeavourenergy.com.au.

2.2 Electrical network reticulation in urban areas

Endeavour Energy's network reticulation policy in urban areas specifies that reticulation to redeveloped residential, commercial, industrial and town centre developments are to be underground. Extensions to existing 11 kV network must also be underground. Based on the requirements of the policy, the extension to the existing 11 kV and/or low voltage network to provide power to the redevelopment of the property will be underground.

2.3 Easement management and network access

It is imperative that the access to electrical infrastructure adjacent to and on the subject property is maintained at all times. To ensure an uninterrupted electricity supply, access to the electrical infrastructure may be required at any time.

2.3.1 Underground easement

According to Endeavour Energy design requirements, underground low voltage and 11 kV cables will require a minimum 3 m wide easement, which can be reduced to 1 m if there is concrete protection of minimum 50 mm concrete cover at standard burial depth. New easements within the property may need to be created.

Endeavour Energy advises that any underground electrical easements created within or in the vicinity of the property will be subject to the following restrictions:

- The underground cables must be positioned in the centre of the easement.
- Any other services or structures besides the required electricity supply or structures associated with the electricity supply must not be installed within the easement site.
- The surface level or ground contour of the easement site must not be altered.
- No mechanical compacting is to occur within the easement.
- Excavations greater than 300 mm deep are not allowed within the easement.
- Any activity that restricts access to the easement site must not be carried out without the prior written permission of Endeavour Energy and in accordance with such conditions as Endeavour Energy may reasonably impose.
- Access to Endeavour Energy joints and joint bays must not be impeded.
- If Endeavour Energy requires access to the underground assets within the easement but is impeded by easement encroachments such as storage of the owner's assets, Endeavour Energy can direct removal of the encroachments at a given notice; otherwise, removal will be at the expense of the owner. For example, storage of metallic pipes greater than 3 m is allowed provided Endeavour Energy has approved the storage and the pipes can be moved upon request.

2.3.2 Substation easement

A new or uprated padmount substation will be required to supply power to the redeveloped property, whether located within or external to the property, an easement of minimum 2.75 m x 5.5 m will be required, with a suitable size increase to accommodate bollards or retaining walls installed to protect the substation from vehicle impact.

Endeavour Energy advises that padmount substation easements created within or in the vicinity of the property will be subject to the following restrictions:

- The substation may need to be screened or protected by fencing or retaining walls for security and aesthetic reasons. If screening vegetation is planted, it must be outside the easement and maintained to allow easy access to the substation.
- The ground contour surrounding the padmount substation does not substantially change.
- Only temporary storage of objects or machinery within the easement is allowed. Removal of the stored items can be directed by Endeavour Energy at a given notice; otherwise, removal will be at the expense of the owner.
- There must be no building overhangs within the 6 m airspace above a padmount substation site. A pictorial representation of this restriction is given in Annexure 3.
- No construction within the easement is allowed.
- No mechanical compacting is to occur within the easement.
- Access to Endeavour Energy joints, joint bays and the substation itself must not be impeded.

2.3.3 Easement Encroachments

Encroachments into an Endeavour Energy easement, whether permitted, controlled or prohibited, are summarised in the table in Annexure 4. Controlled activities can only be carried out upon approval from Endeavour Energy. The Applicant can obtain this approval via the Regional Easement Officer North by sending an application to the following address:

Regional Easement Officer- North
Endeavour Energy
PO Box 811
Seven Hills NSW 1730

Controlled activities impacting particular Endeavour Energy infrastructure must meet the minimum safety requirements associated with that infrastructure. Additional controls may also be specified by Endeavour Energy and they will be included in the conditions of approval for the controlled activity. For instance, conductive fencing on the boundary of an underground easement is a controlled activity but may be erected once approved by Endeavour Energy and on condition that the fence has a minimum 4.2 m wide opening or gate (with provision to install Endeavour Energy locks) for vehicle access. If the fencing runs through the easement, the posts must be located outside the easement. If the easement is an overhead easement, the fence will also need to be earthed and/or have interval breaks in electrical continuity to prevent electromagnetic induction and transferred voltage hazards.

The Applicant is advised that permanent surfaces such as asphalt or concrete are prohibited for underground and padmount substation easements. However, construction of new roads and concrete driveways are controlled activities for underground easements subject to restrictions as follows:

- Cables are installed in continuous ducts.
- The roadway or driveway is capable of supporting the heaviest vehicle likely to traverse the driveway.
- The thermal rating of the underground cables is not compromised by the installation of the road or driveway.
- The road or driveway is not installed within a distance that would restrict access to or maintenance of a joint or pit.
- The road or driveway is not installed over a joint or pit.
- Spare ducts must be installed for future use.

2.4 Bushfire risk

Refer Bushfire Protection Assessment prepared by Australian Bushfire Protection Planners Pty Limited. The assessment was based on mapped bushfire prone areas in The Hills Council Bushfire Prone Land Map. The area occupied by the school buildings is within the bushfire prone area buffer. This area is surrounded by bushfire prone land that has been classified as Vegetation Category 1. Endeavour Energy GIS map concurs with this mapping (refer Annexure 2). The relevant map from the Hills Council Bushfire Prone Land Map is also included in Annexure 2. Note that this map was included in the assessment but was annotated wrongly.

Endeavour Energy's bushfire management policy specifies that the network must be designed such that the risk of the network initiating or spreading bushfires must be minimised to a status of as low as reasonably practicable (ALARP). It is likely that the new or uprated padmount substation required for the redevelopment will be sited in the existing padmount area adjacent to Home Base Building M, which will not be changed. However, a new site may be proposed for the Proposed Method of Supply. In view of the bushfire risk identified on the property, Endeavour Energy advises that the siting of a padmount substation is subject to fire restrictions as follows:

- The padmount substation must be separated from neighbouring areas and buildings that are subject to fire risk by means of providing adequate clearances or using building components with a minimum fire resistance level (FRL) as shown in Diagram 1, Annexure 4.
- When a padmount substation is located under the overhang of a building, the substation may be considered to be within the building and the components of the building above and adjacent to the substation must have an FRL of 120/120/120. A ruling must be obtained from the relevant government body.
- Personnel access doors and the fire exit doors to a building are not permitted within 3 metres of the padmount plinth.
- The materials used in the construction of buildings between 3 and 6 metre must be non-combustible. (only Class 1 and Class 10 buildings are exempt).
- Where minimum clearances cannot be achieved, non-FRL openings such as windows may be permitted within the fire rated area, provided that suitable screening walls with 120/120/120 FRL are installed to create sheltered areas. Such openings must be within these sheltered areas.
- Screen walls must be located outside the standard easement and no structure is allowed to overhang a protected area that could trap smoke or fire and cause it to enter any openings in any structures.

Refer to diagrams in Annexure 4.

2.5 Demolition

Demolition work is to be carried out in accordance with Australian Standard AS 2601—2001: 'The demolition of structures'. 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 i.e. the existing customer service lines will need to be isolated and/or removed during demolition. Appropriate care must be taken to not otherwise interfere with any electrical infrastructure on or in the vicinity of the site e.g. streetlight columns, power poles, overhead power lines and underground cables.

2.6 Excavation and underground works

The Applicant is advised that excavation work affecting electricity works can be penalised under the *Electricity Supply Act 1995 (NSW)*. Penalties include recovery of costs for repairing or replacing damaged electricity works and an injunction to stop the work. The Applicant may request guidance from Endeavour Energy by contacting Endeavour Energy Regional Services North via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or alternately email RegionalServices.North@endeavourenergy.com.au.

Endeavour Energy also advises that before commencing any underground activity, the Applicant obtains advice from the **Dial Before You Dig 1100** service. This should be obtained by the Applicant to identify the location of any underground electrical and other utility infrastructure on or in the vicinity of the site and to assist in assessing the risk of the proposed work impacting this infrastructure.

2.7 Other utilities or services

As a general rule, other utilities such as telecommunications, water and gas are not allowed within Endeavour Energy easements, whether in parallel or longitudinally above Endeavour Energy power cables. The installation of other utilities within an Endeavour Energy padmount substation easement is a prohibited activity. If the sharing of an Endeavour Energy underground easement with third party assets is unavoidable, the Applicant must consult Endeavour Energy on the layout of the utilities in relation to Endeavour Energy cables. The cables may need concrete encasement and there will be minimum

clearances to be maintained between Endeavour Energy power cables and the utilities. Refer Annexure 5 for a typical layout of Endeavour Energy underground assets adjacent to other utilities within the same easement.

The installation of the utilities must be consulted and coordinated with Endeavour Energy Regional Services North via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or alternately email RegionalServices.North@endeavourenergy.com.au.

2.8 Flooding and drainage

The Flood Statement provided by H&H Consulting Engineers Pty Ltd states that the subject property is not affected by mainstream flooding. It is expected that the existing padmount site will be utilised to house the new or uprated padmount, which should not be affected by flooding. Nevertheless, Endeavour Energy advises that electricity infrastructure required to supply power to the site must not be subject to flood inundation. As such, the Applicant is required to take this into account and allocate an appropriate area for the location of the infrastructure.

Drains within or in the vicinity of the area allocated for the infrastructure must be properly maintained to avoid the possibility of water damage to the infrastructure. In the case where the infrastructure is raised above ground level, all materials used in the construction below the infrastructure must be capable of withstanding prolonged immersion in water without swelling or deterioration.

2.9 Electromotive Force or electromagnetic Field (EMF)

Endeavour Energy recognises that a causal link between EMF exposure and demonstrated health effects has not been established, even after much scientific investigation throughout the world. There are no state or federal exposure standards for 50/60- hertz (Hz) EMF based on demonstrated health effects. Nor are there any such standards world-wide. Endeavour Energy is committed to ensuring that its activities and assets conform to all relevant International and Australian Standards, National Health and Medical Research Council (NH&MRC) Standards, Energy Networks Association (ENA) Standards and NSW legislation. This includes a commitment to a policy of prudent avoidance as endorsed by the ENA with regard to the location of assets and electromagnetic fields.

Localised EMFs may be encountered in specific situations such as near substations, underground cables, specialised electrical equipment, or at elevated locations near lines. Note that the strengths of EMFs decrease rapidly with distance from the source. Typical magnetic field measurements associated with Endeavour Energy's activities and assets given the required easement widths and safety clearances will not exceed the recommended magnetic field public exposure limits. Nevertheless, Endeavour Energy advises that the Applicant adopts a policy of prudent avoidance by the siting of more sensitive uses away from any electricity infrastructure, including any possible future electricity infrastructure required to facilitate development on the site.

2.10 Noise

Endeavour Energy's substations are not 'scheduled premises' under the *Protection of the Environment Operations Act 1997* (NSW) and the holding of a licence under that Act for operations at the site is not required i.e. a substation is generally located and designed to not result in the emission of offensive noise. Endeavour Energy's substations nominally meet the Environmental Protection Authority 'NSW Industrial Noise Policy' with the overall aim to allow the need for its network operations to be balanced with the desire for quiet in the community. Padmount substations may emit a hum during normal operation, especially when under heavy load 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 or to the point where amelioration measures are required.

Noise emitted by the normal operation of the existing padmount substation has not been included in the Environmental Noise Assessment Report No 6395-1.1R Rev A, provided by Day Design Pty Ltd. Padmount substation operating sounds are generally not an issue; however, Endeavour Energy recommends that they be included in the detailed acoustic assessment recommended by the acoustic consultants when the mechanical plant for the redevelopment has been finalised.

2.11 Vegetation management

The padmount substation area has not been included in the Landscape Plans provided by GROUND iNK since the buildings in the vicinity are to be retained with no changes. However, the new or uprated padmount substation may be sited in a new location. As such, Endeavour Energy advises that the planting of large trees in the vicinity of electricity infrastructure is not supported by Endeavour Energy. Suitable planting includes low growing shrubs not exceeding 3.0 metres in height and ground covers and/or smaller shrubs with non-invasive root systems. Larger trees should be planted well away from electricity infrastructure and with underground cables, be installed with a root barrier around the root ball of the plant. Landscaping that interferes with electricity infrastructure may become a potential safety risk, cause bush fires, restrict access, reduce light levels from streetlights or result in the interruption of supply. Such landscaping may be 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. It is recommended that the Applicant considers this advice when siting the required electricity infrastructure for supply to the subject property.

2.12 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. Endeavour Energy's public safety training resources have been developed to help the general public or workers understand why they may be at risk and what they can do to work safely. The public safety training resources are available on Endeavour Energy's website via the following link:

[Endeavour Energy Public Safety Training Resources](#)

If the Applicant has any concerns over the proposed works in proximity to electricity infrastructure, the Applicant may contact the appropriate staff in Endeavour Energy for advice via email Construction.Works@endeavourenergy.com.au.

In case of an emergency relating to Endeavour Energy's electrical network, the Applicant is advised to contact Endeavour Energy via emergency telephone number 131 003. This emergency line is available 24 hours/7 days.

3.0 Conclusion and recommendations

Endeavour Energy cannot comment on the suitability of the design for the redevelopment of the subject property since Endeavour Energy does not currently have any active electricity easements on or in the vicinity of the property. Also, Endeavour Energy cannot raise objections to the redevelopment since the property is not owned by Endeavour Energy and the redevelopment does not encroach on Endeavour Energy property or easements.

Notwithstanding the absence of objections, Endeavour Energy has the following recommendations and advises the Applicant as follows:

- That the Applicant engages a Level 3 Accredited Service Provider (ASP) as early as possible to design and prepare a proposed method of supply. Endeavour Energy will assess the proposal and depending on the outcome of the assessment, any required padmount or indoor/chamber substation/s will need to be located within the property in a suitable and accessible location. The substation and associated cabling will need to be protected by an easement and associated restrictions benefiting and gifted to Endeavour Energy.

Endeavour Energy's Network Connections Branch can be contacted via Head Office enquiries on telephone: 133 718 or (02) 9853 6666 from 8am - 5:30pm or on Endeavour Energy's website under 'Home > Residential and business > Connecting to our network' via the following link: www.endeavourenergy.com.au.

- That the applicant recognises Endeavour Energy's design requirements for minimum easement widths as follows and that there are mandatory restrictions associated with these easements:
 - 3 m for low voltage and 11 kV underground power lines which can be reduced to 1 m if there is concrete protection of minimum 50 mm concrete cover at standard burial depth; and
 - 2.75 m x 5.5 m for a padmount substation.
- That the Applicant takes into consideration the restrictions and encroachments that are permitted, prohibited or controlled, associated with Endeavour Energy easements.
- That the Applicant must maintain unimpeded access to Endeavour Energy assets at all times. If impedances are present, they must be removable at any notice; otherwise removal by Endeavour Energy will be charged to the property owner's account.
- That the Applicant takes into consideration the bushfire prone nature of the property and provides for suitable siting of the new or uprated padmount substation in compliance with fire restrictions which include providing adequate clearances between the substation and adjacent buildings or if these clearances cannot be achieved, using building components of suitable FRL.
- That the Applicant carries out demolition work in accordance with Australian Standard AS 2601—2001: 'The demolition of structures', and applies to Endeavour Energy to disconnect and remove 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.
- That the Applicant obtains advice from the **Dial Before You Dig 1100** service or seek guidance from Endeavour Energy Regional Services North, prior to any underground work to identify the location of any underground electrical and other utility infrastructure across or in the vicinity of the site and to assist in assessing the risk of the proposed work impacting this infrastructure. This will help to minimise the risk of excavation work damaging electricity works which can be penalised under the *Electricity Supply Act 1995 (NSW)*.
- That the Applicant takes into consideration other utilities such as telecommunications, water and gas are as a general rule, not allowed within Endeavour Energy easements, whether in parallel or longitudinally above Endeavour Energy power cables, and are prohibited within an Endeavour Energy padmount substation easement. If the sharing of an Endeavour Energy easement with third party assets is unavoidable, the Applicant must consult Endeavour Energy on the layout of the utilities in relation to Endeavour Energy cables. The cables may need concrete encasement and there will be minimum clearances to be maintained between Endeavour Energy power cables and the utilities.
- That the Applicant takes into consideration electricity infrastructure must not be subject to flood inundation and drains within or in the vicinity of the area allocated for the infrastructure must be properly maintained to avoid the possibility of water damage to the infrastructure.
- That the Applicant adopts a policy of prudent avoidance by the siting of more sensitive uses away from any electricity infrastructure, including any possible future electricity infrastructure required to facilitate the proposed development.
- That the Applicant recognises noise emitted by the normal operation of the existing padmount substation is generally not an issue; however, Endeavour Energy recommends that it be included in the detailed acoustic assessment recommended by the acoustic consultants when the mechanical plant for the redevelopment has been finalised.
- That the Applicant avoids the planting of large trees in the vicinity of electricity infrastructure. Suitable planting includes low growing shrubs not exceeding 3.0 metres in height and ground covers and/or smaller shrubs with non-invasive root systems.

4.0 ANNEXURES

4.1 Annexure 1- Endeavour Energy GIS plans and Google Maps street views

Notes for Endeavour Energy GIS site plans

- The location, extent and type of any electricity infrastructure, boundaries, etc. as shown on Endeavour Energy GIS site plans are indicative only.
- Generally (depending on the scale and/or features selected), low voltage (normally not exceeding 1,000 volts) is indicated by blue lines.
- High voltage (normally exceeding 1,000 volts or for Endeavour Energy's network, not exceeding 132,000 volts or 132 kV) is indicated by red lines.
- Red lines indicating high voltage can appear as solid or dashed.
- Where there are multiple lines or cables in one location, only the higher voltage may be shown.
- Endeavour Energy GIS site plans only show the Endeavour Energy network and does not show electricity infrastructure belonging to other authorities or customers owned electrical equipment beyond the customer connection point or point of supply to the property.
- Endeavour Energy GIS site plans are not 'Dial Before You Dig' plans under the provisions of Part 5E 'Protection of underground electricity power lines' of the *Electricity Supply Act 1995* (NSW).



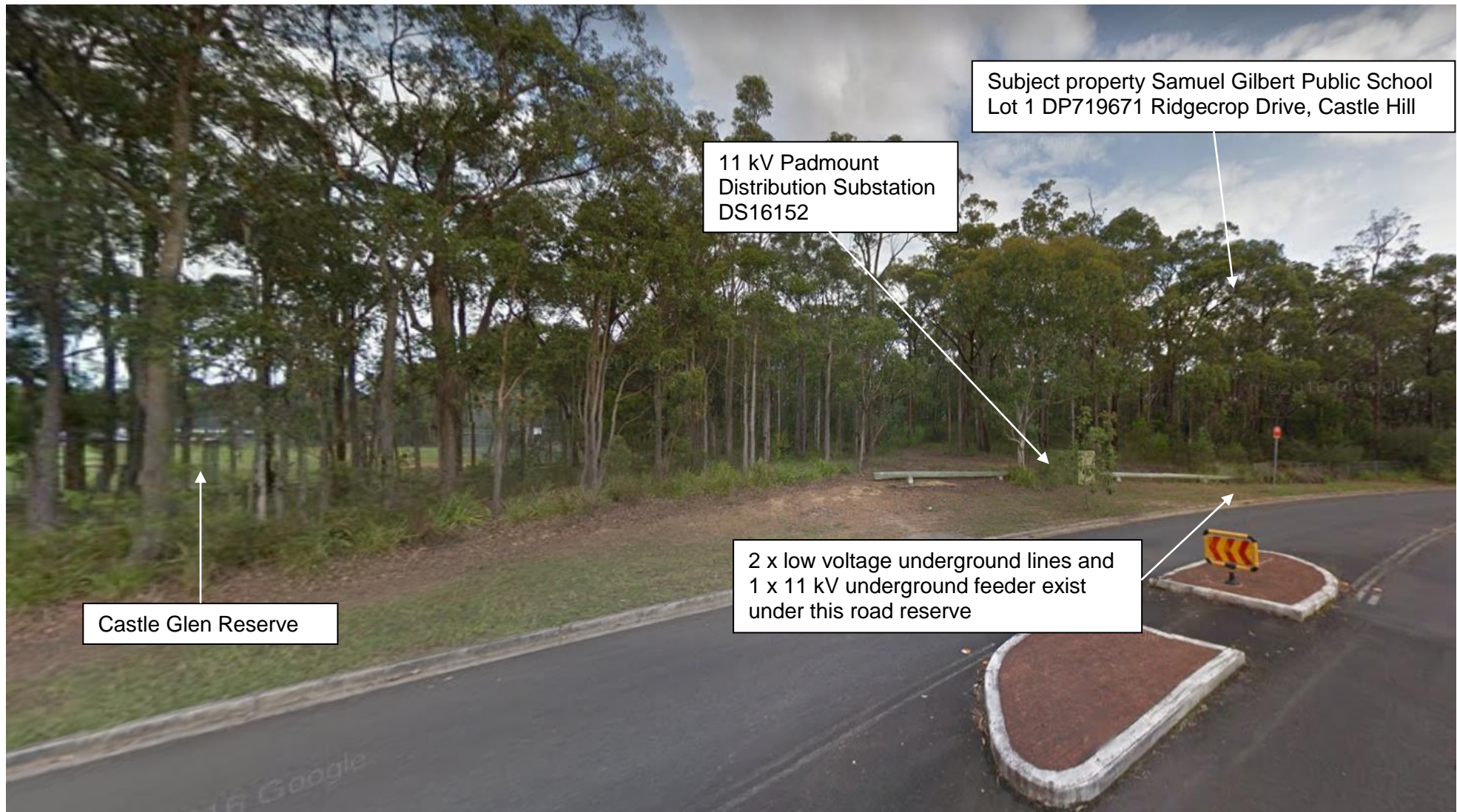
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Caption: Google Maps street view looking North from Gilbert Road and showing 11 kV Padmount Distribution Substation DS17185 within the school grounds.

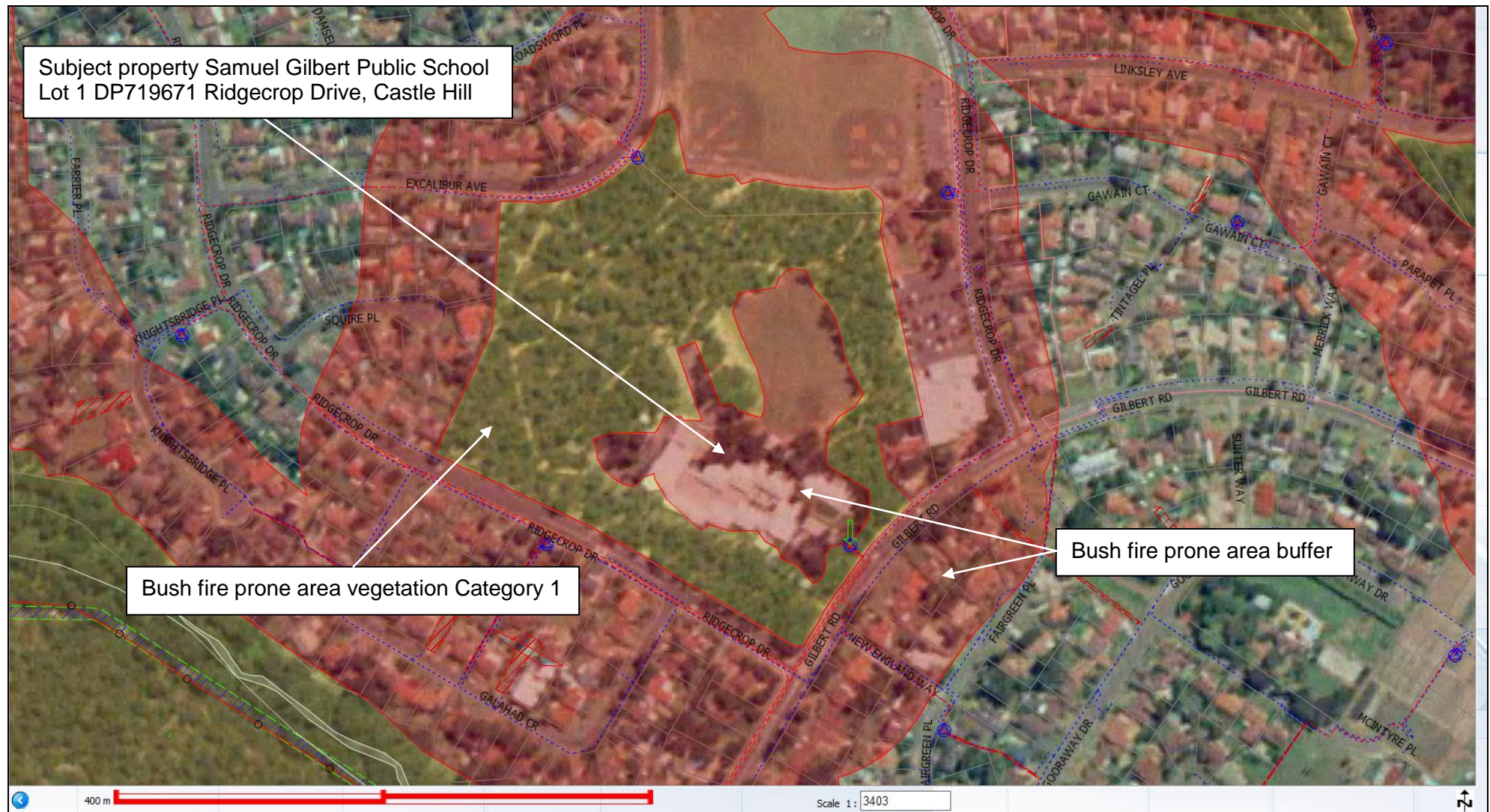


Caption: Google Maps street view looking North at the corner of Ridgescrop Drive and Gilbert Road. Underground cables exist under the road reserve/pavement along both streets.

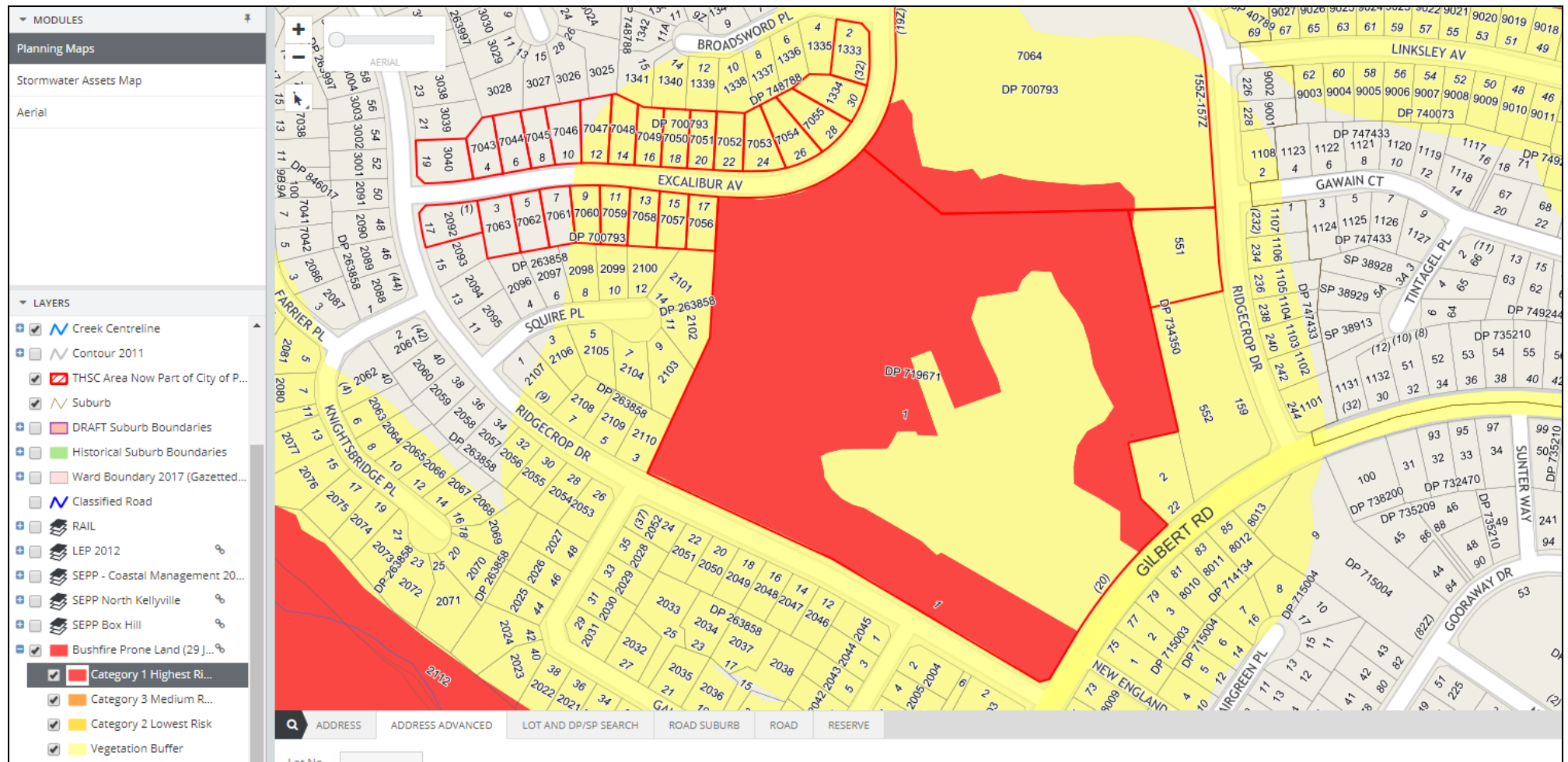


Caption: Google Maps street view looking South along Excalibur Avenue. 11 kV Padmount Distribution Substation DS17185 is located at the boundary between the Samuel Gilbert Public School and Castle Glen Reserve. Underground cables exist under the road reserve going West along Excalibur Avenue.

4.2 Annexure 2- Bushfire Maps

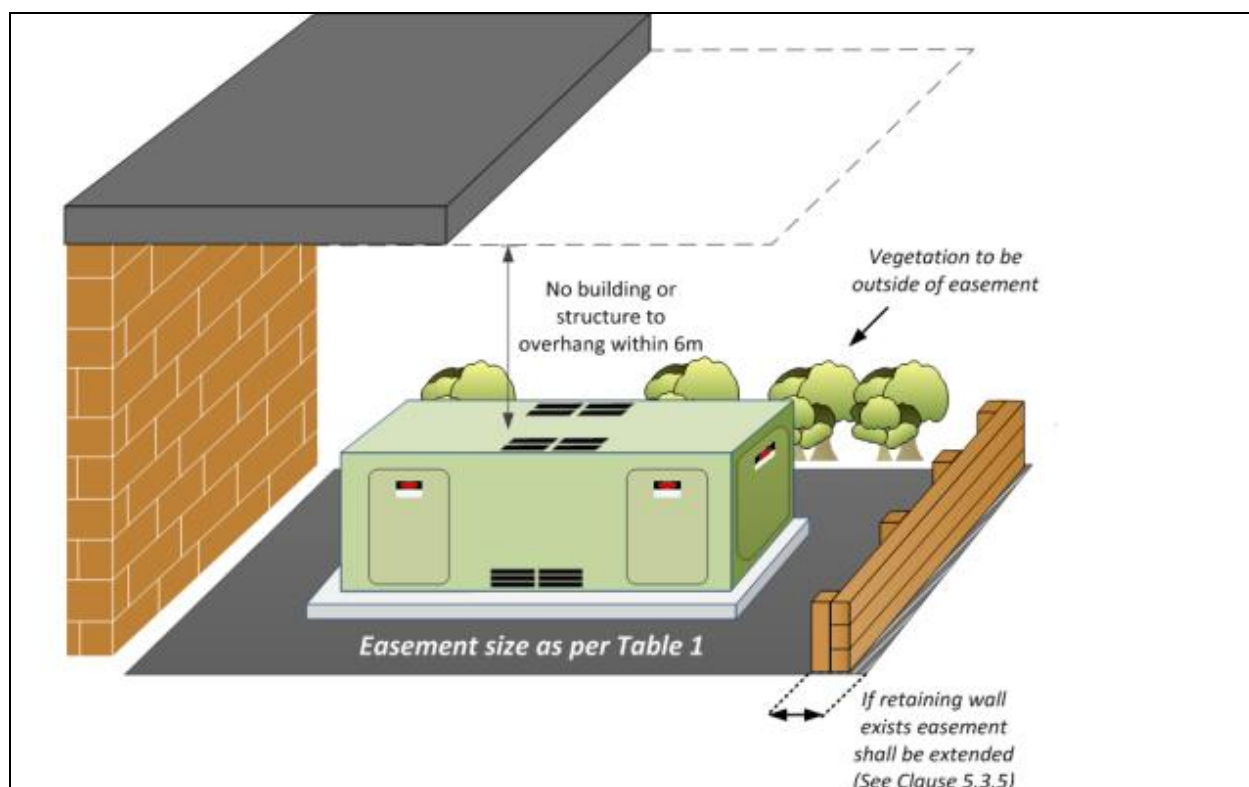


Caption: Endeavour Energy GIS map view showing subject property located in bush fire prone area Vegetation Category 1 with the school buildings, playing field and areas surrounding the property classified as buffer.



Caption: The Hills Council Bushfire Prone Land Map showing bushfire mapping in concurrence with Endeavour Energy GIS mapping

4.3 Annexure 3- Padmount substation easement requirements



4.4 Annexure 4- Easement and fire screening requirements for padmount substations

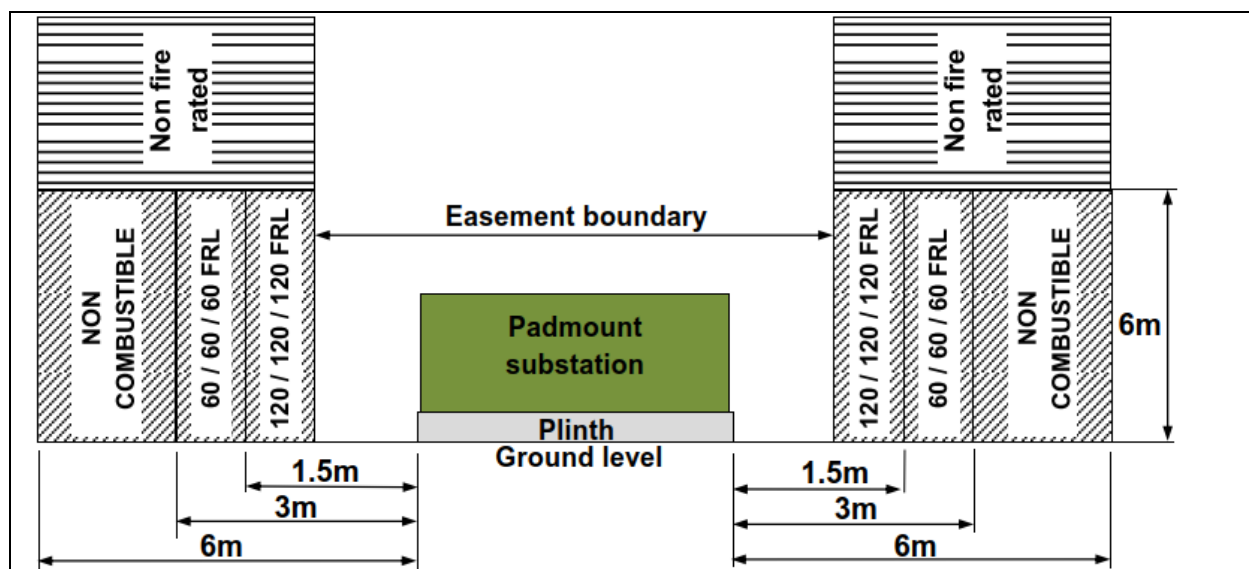


Diagram 1: Minimum padmount substation FRL clearances for building components

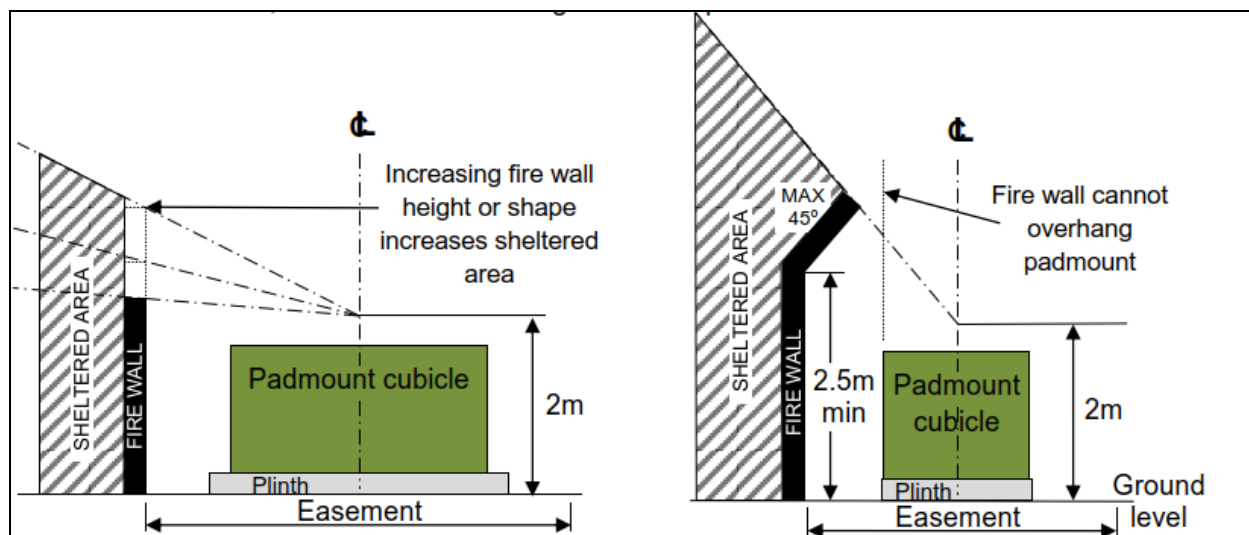


Diagram 2: Screen wall examples

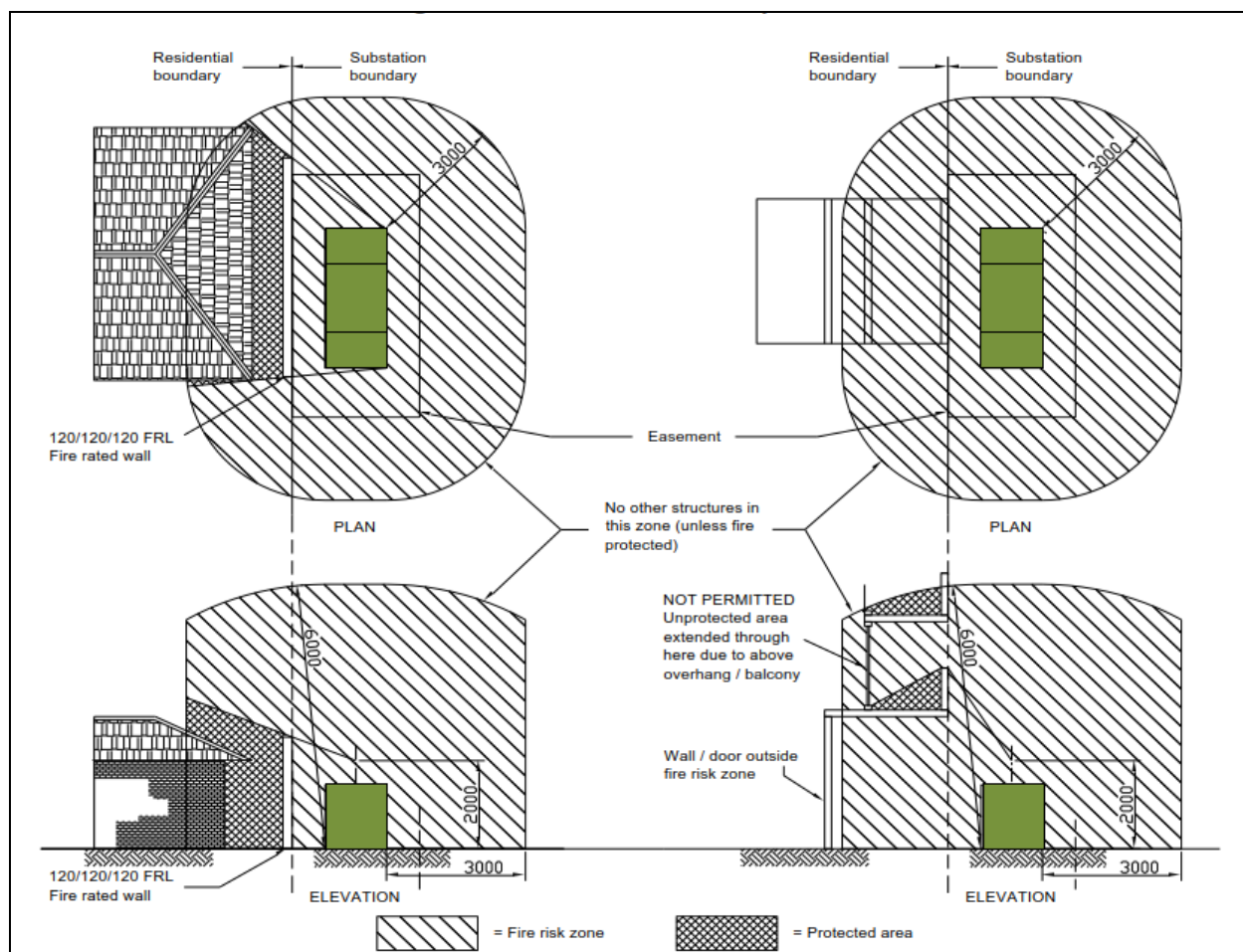


Diagram 3: Typical effect of screen walls

4.5 Annexure 4- Easement encroachments

Allowed- The activity is allowed within the easement but is subject to Endeavour Energy's minimum easement safety requirements.

Prohibited- The activity is not allowed within the easement under any circumstance.

Controlled- The activity is allowed only if it meets Endeavour Energy's minimum safety requirements specific to the type of easement with additional controls specified by Endeavour Energy. Approval from Endeavour Energy is required for any controlled activity.

Category	Encroachment	Overhead			Underground			Padmount Substation		
		Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled
Buildings/ Structures	Buildings (habitable)		✓			✓			✓	
	Tents- Commercial or Recreational		✓		✓				✓	
	Shade Cloths/ Umbrellas			✓		✓			✓	
	Minor structures (clotheslines, playground equipment, non- metallic fences and bbqs)			✓		✓			✓	
	Garages, large sheds and shipping containers (habitable)		✓			✓			✓	
	Non- habitable buildings (carports and metallic sheds), and shipping containers (uninhabited)			✓		✓			✓	
	Flag pole/ weather vane		✓			✓			✓	
Barriers/Walls	Sound walls			✓		✓			✓	
	Conductive fencing through an easement			✓			✓		✓	
	Conductive fencing on boundary of an easement			✓			✓		✓	
	Metal safety barriers			✓		✓			✓	
	Electric fencing		✓			✓			✓	
	Retaining walls			✓			✓			✓
	Metallic pipes in lengths greater than 3 m		✓				✓		✓	
Fixed/ Mobile Plant	Footings of fixed plant		✓			✓			✓	
	Fixed plant or equipment		✓			✓			✓	
	Mobile plant or equipment			✓			✓	✓		
	Parking of tall vehicles, trucks, caravans, campervans		✓				✓		✓	
	Parking of other vehicles			✓	✓				✓	

Category	Encroachment	Overhead			Underground			Padmount Substation		
		Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled
Vegetation	Shrubs with roots < 400 mm	✓			✓			✓		
	Planting of trees which grow less than 3 m	✓				✓			✓	
	Planting of trees which exceed 3 m		✓			✓			✓	
	Storage of organic matter (leaves, compost)			✓			✓		✓	
Swimming pools	Spas and swimming pools- above ground		✓			✓			✓	
	Swimming pools- in ground		✓			✓			✓	
Fires	Lighting of fires		✓			✓			✓	
	Back burning			✓		✓			✓	
Agricultural use of the land	Agricultural pursuits such as dusting, harvesting, netting, irrigation			✓			✓			✓
	Ploughing near structures		✓		N/A				✓	
	Ploughing not near structures	✓				✓			✓	
Other	Objects which may hinder access		✓			✓			✓	
	Storage of combustible/ flammable/ corrosive material		✓			✓			✓	
	Storage of non- combustible, non-flammable or non- corrosive material	✓			✓				✓	
	Rainwater tanks			✓		✓			✓	
	Detention basins			✓		✓			✓	
	Earth works- reducing cover or filling			✓		✓			✓	
	Permanent surfaces (asphalt, concrete, etc)	✓				✓			✓	
	Different surfaces (bluemetal, woodchips)	✓			✓			✓		
	New roads			✓			✓			✓
	Concrete driveways			✓			✓			✓
	Installation of utility services- telecoms, water, LV electricity, sewerage			✓			✓		✓	
	Residential/ commercial subdivision lots			✓			✓	N/A		
	Use of explosives		✓				✓		✓	

Category	Encroachment	Overhead			Underground			Padmount Substation		
		Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled	Allowed	Prohibited	Controlled
Recreational activities	Recreational activities- general (not including activities listed below)	✓			✓				✓	
	Recreational activities- flying kites, model aircraft, balloons		✓		✓				✓	
	Recreational activities- flood lighting, grandstands		✓			✓			✓	
	Recreational activities- firearms		✓		✓				✓	
	Recreational activities- tennis courts			✓		✓			✓	

4.6 Annexure 5- Typical layout of Endeavour Energy underground assets adjacent to other utilities within the same easement

