The Secretary
NSW Planning, Industry & Environment

10 December 2019

ATTENTION: James Groundwater

I refer to the Department's below email of 12 November 2019 advising of the public exhibition of State Significant Development SSD-9653 Hills Showground Station Precinct (Lots 53, 55 and 56 DP 1253217 and Part Lot 50 DP 1253217) being for the 'Concept proposal for a mixed-use precinct adjacent to the Hills Showground Station, including maximum gross floor area for residential and non-residential land uses, building envelopes, parking rates, principal subdivision and public open space'. Submissions need to be made to the Department by 10 December 2019.

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

- Padmount substations (indicated by the symbol PS) and switch stations (indicated by the symbol SS) and associated underground earth and low voltage and 11,000 volt / 11 kilovolt (kV) high voltage underground power cables.
- 132,000 volt / 132 kV high voltage underground cables and underground pilot cables (carrying protection signals or communications between substations) to the Carrington Road road verge / roadway.
- Easements over the site benefitting Endeavour Energy (indicated by red hatching).

Please note the location, extent and type of any electricity infrastructure, boundaries etc. shown on the plan is indicative only. 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).

Details of the existing electricity and easements over the site are also provided in the following extract of the Environmental Impact Statement (EIS).

4.14. Precinct East Concept Subdivision and Civil design

The proposal seeks the Concept Subdivision of Hills Showground Precinct East (Lot 56 DP 1253217 and part of Lot 50). Part Lot 50 facilitates the expansion of the rail corridor at the point where it exits the station. The lot is sub-terranean and limited in height and depth and as such has limited baring on the ground level considerations in terms of developable area and lot sizes.

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The Plan of subdivision will create five development lots including a new road to provide access through the Site and Precinct East Park. A description of the lots to be created and easements is identified in **Table 16**and **Figure 50**.

Table 16 Subdivision of Lot 50 and 56 DP 1253217

Lot	Description of use	Area (m^2)	Proposed or existing covenants or easements
1	Local road connecting Andalusian Way to De Clambe Drive	3,683	N/A
2	Precinct East Park (Public Park)	3,545	Existing easement for underground cables
3	Development lot accommodating a building up to 12 storeys	2,286	Existing easement for a padmount substation and existing electricity easement for electricity services Existing substratums associated with the Sydney Metro tunnel protection reserves.
4	Development lot accommodating a building up to 12 storeys	6,194	N/A
5	Development lot accommodating a building up to 12 storeys	12,520	Proposed right of way 10.6m wide to accommodate the pedestrian link Existing easement for underground cables

In regard to the electricity infrastructure on or traversing the site which is not held under easement, these are either:

- New electricity infrastructure over which in due course the land owner will be required to provide easements and restrictions in accordance with the attached copy of Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

- 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 ie. they cannot remove the electricity infrastructure from the property. These protected assets are managed on the same basis as if an easement was in existence.

The applicant should note the following requirements of Endeavour Energy's 'Property Tenure Guidelines, Provision of Network Connection Services':

7.0 SUBDIVISIONS

Endeavour Energy will require the developer to create all necessary easements, restrictions, rights of access, and positive covenants.

The creation of property tenure is **not** required for any network asset located within a public road (unless it is a temporary road).

7.2 Urban property tenure requirements

Endeavour Energy will require the creation of property tenure for:

- all new transmission, high voltage and low voltage assets; and
- all existing transmission, high voltage and low voltage assets located within the developer's land.

Where the subdivision result in the incorporation of Endeavour Energy's easement into different and/or multiple lots, the easements, rights and restrictions, covenants etc. must be retained over the effected lots and in accordance with the requirements of NSW Land Registry Services (LRS).

For the existing easement over the site for underground cables which currently has no 'Inservice' electricity infrastructure, unless the easement is released by Endeavour Energy, the easement is managed as if electricity infrastructure is in place and operating. The request for a release of easement is usually dealt with by Endeavour Energy's Network Connections Branch as part of the application for connection of load process – please refer to the below point 'Network Capacity Connection'.

Endeavour Energy assesses all applications prior to acceptance or refusal to identify and manage risks to its network, commercial and community interests. 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. 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 (whilst also allowing appropriate consideration for the applicant's alternative network arrangements).

Subject to 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 Utility Servicing Impact Assessment:

> ### 2.1.1 ENDEAVOUR ENERGY EXISTING CAPACITY
>
> A technical enquiry was submitted to Endeavour Energy on 17/06/19 requesting information on the available capacity of the existing network servicing the Precinct. Endeavour Energy's response provided information about the current electrical loading around the Precinct, including the available feeders to supply the Precinct. The available feeders along Carrington Road and Showground Road are presented in Figure 2-2
>
> Based on Endeavour Energy's advice, the current capacity of the electrical supply network to the Hills Showground Station Precinct as follows:
>
> - 4 x 11kV feeders in the vicinity of the intersection of Carrington Road and Showground Road
> - Feeders CJ1127 & CJ1282 each have an available capacity of 4.5MVA (represented by the green lines in Figure 2-2)
> - Combined, there is a total of 9MVA capacity available between feeders CJ1127 and CJ1282.

Endeavour Energy's Asset Strategy & Planning Branch whilst not having undertaken a detailed analysis of the Development Application have provided the following advice:

Asset Strategy & Planning Branch have no additional comments or concerns regarding the proposal.

The following is an extract of Endeavour Energy's submission made to The Hills Shire Council on 20 February 2018 regarding Exhibition of Draft Development Control Plan, Draft Contributions Plan and Draft Public Domain Plan for the Showground Planned Precinct (Formerly 'Priority Precinct' Within The Sydney Metro Northwest Corridor) (FP223)' which is the area to the south of Carrington Road. The advice was provided by Asset Strategy & Planning Branch at that time and similarly applies to this proposal.

> *The increased dwelling numbers are significant and will require developers to extend and augment the 11,000 volt / 11 kV high voltage network to facilitate connection as per Endeavour Energy's normal customer connection processes.*
>
> *Endeavours present policy is to progressively underground all new residential developments. All new cabling infrastructure must be of an underground construction type. Where existing overhead construction is present in the planned Showground Precinct, it will require undergrounding as the development proceeds.*

Cheriton Avenue Zone Substation (ZS) located at 35-37 Showground Road Castle Hill, will supply this new load. Cheriton Avenue ZS was designed with space for augmentation to install a third transformer which will increase firm capacity from 45 megavolt amperes (MVA) to 90 MVA.

Endeavour Energy will continue to monitor the load growth on Cheriton Avenue ZS and will augment the zone substation at the appropriate time.

The upgrade of the zone substation is not a prerequisite for rezoning and new development proceeding.

Regarding the availability of electricity supply to sites within the Hills Showground Station Precinct, in due course the applicant for the proposed development of the site will need to submit an application for connection of additional load via Endeavour Energy's Network Connections Branch to carry out the final load assessment and the method of supply will be determined.

Depending on the outcome of the assessment, any required padmount or indoor 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 are available by contacting Endeavour Energy's Network Connections Branch 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:

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

In regard to the incorporation of distribution substations within the Hills Showground Station Precinct, traditionally Endeavour Energy's preference has been for the utilisation of padmount substations for supply to urban multi residential load (UML) developments unless the installation of padmount substations is not practicably possible. The reasons for this included ready access and no reliance on the building owners to provide / maintain the building required to house an indoor substation. Padmount substations are regarded as a 'plug and play' system without the need for a physical building which allows for easier reconfiguration and less involvement with a building owner to resolve any issues / conflicts.

However in response to reduced building setbacks which makes the installation of padmount substations more difficult eg. having to provide the easement as well as the additional fire restriction area or using fire rated construction, as well as concerns expressed by developers and councils over the aesthetics of the padmount substation cubicles, in May 2017 Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' (a copy of which is attached) was amended to allow certain types of UML developments to utilise either padmount or indoor substations.

Advice on the electricity infrastructure required to facilitate the proposed development can be obtained by submitting a Technical Review Request to Endeavour Energy's Network Connections Branch, the form for which FPJ6007 is attached and further details (including the applicable charges) are available from Endeavour Energy's website under 'Our connection services'. 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 should engage a Level 3 Accredited Service Provider (ASP) approved to design distribution network assets, including underground or overhead. 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 prior to finalising plans to 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.

- Urban Network 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 treed[2] 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.

- 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. 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.

- 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 services or structures 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.

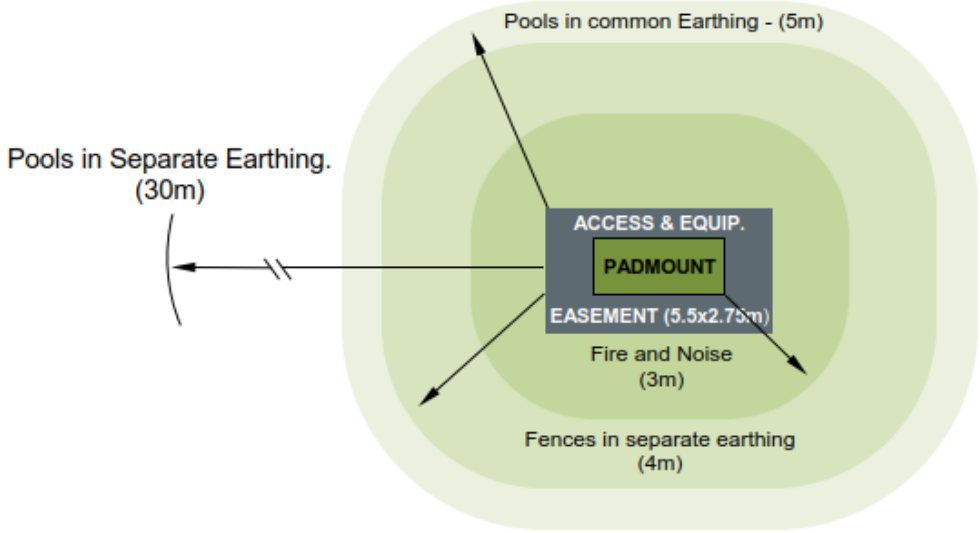
Endeavour Energy's preference is for no activities or encroachments to occur within its easement areas. Most activities are prohibited within the padmount substation easement area. However, if any proposed works (other than those approved / certified by Endeavour Energy's Network Connections Branch as 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, Jeffrey Smith, on direct telephone 9853 7139 or alternately email Jeffrey.Smith@endeavourenergy.com.au or Easements@endeavourenergy.com.au .

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.
  - Guide to Fencing, Retaining Walls and Maintenance Around Padmount Substations.

In regard to the easements for the padmount substations, Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' in addition to the easement for padmount substations now also include additional clearances / restrictions for fire rating which usually extends 3 metres horizontally from the base of the substation footing, and 6 metres vertically from the same point and possibly swimming pools and spas which extends 5 metres from the easement. These requirements are shown in the following extract of Figure A4.3 'Padmount easements and clearances' from Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'.

A4.3 - Padmount easements and clearances



The following extracts from Endeavour Energy's Mains Construction Instruction MCI0006 'Underground distribution: Construction standards manual' explains the fire restriction for padmount substations in more detail. The fire restriction for padmount substations is also outlined in Endeavour Energy's Mains Design Instructions MDI0028 'Underground distribution network design' and the Australian Standard AS2067: 2016 'Substations and high voltage.

7.4.1.2 Fire

Padmount substations require separation from neighbouring areas and buildings that are subject to fire risk. Separation may be by means of adequate clearances or building components having minimum fire resistance level (FRL) as set out in Figure 45.

Fire ratings shall be achieved by static means (that is, walls or distance) rather than active system (that is, deluge showers and the like).

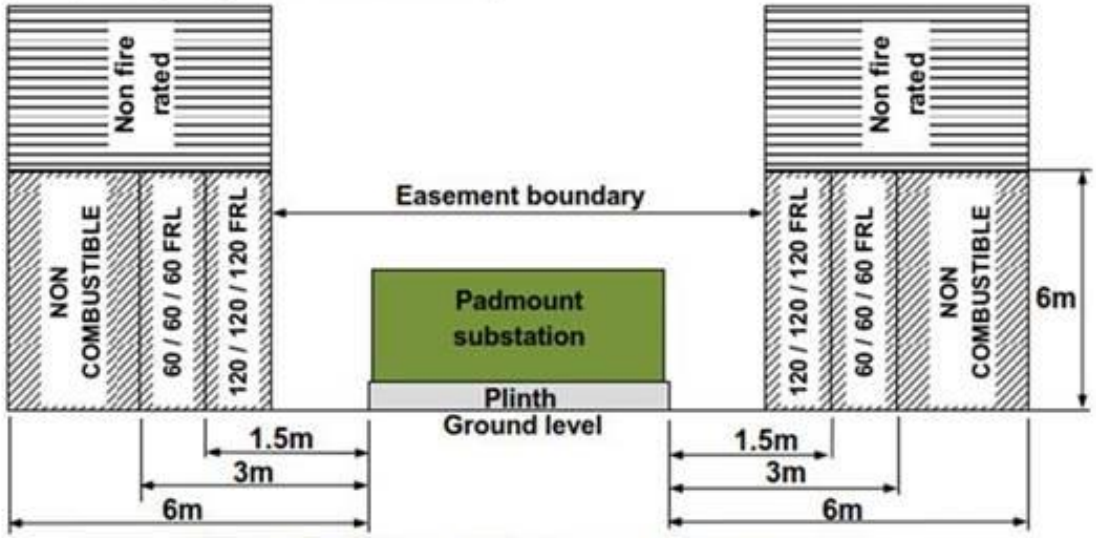


Figure 45 - Minimum FRL clearances for components

These restrictions were introduced on a case for case basis from 2003 before becoming standard in 2009. Whilst the fire rating restriction is not included with the existing easement registered on title, Endeavour Energy strongly recommends that it be considered and adopted for any new development. The fire rating restriction may be sought for the existing padmount substations and will be required for all the new padmount substations within the Precinct. Depending on the site and development proposed, the restriction for swimming pools and spas may also be required.

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 maintenance 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 form 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 the Department) 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.

- Vegetation Management

The planting of large trees near 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). 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.

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.

- 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 Risk & Safety Management Plan.

I appreciate that not all the foregoing issues may be directly 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 near 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.

Yours faithfully

Cornelis Duba
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Network Environment & Assessment
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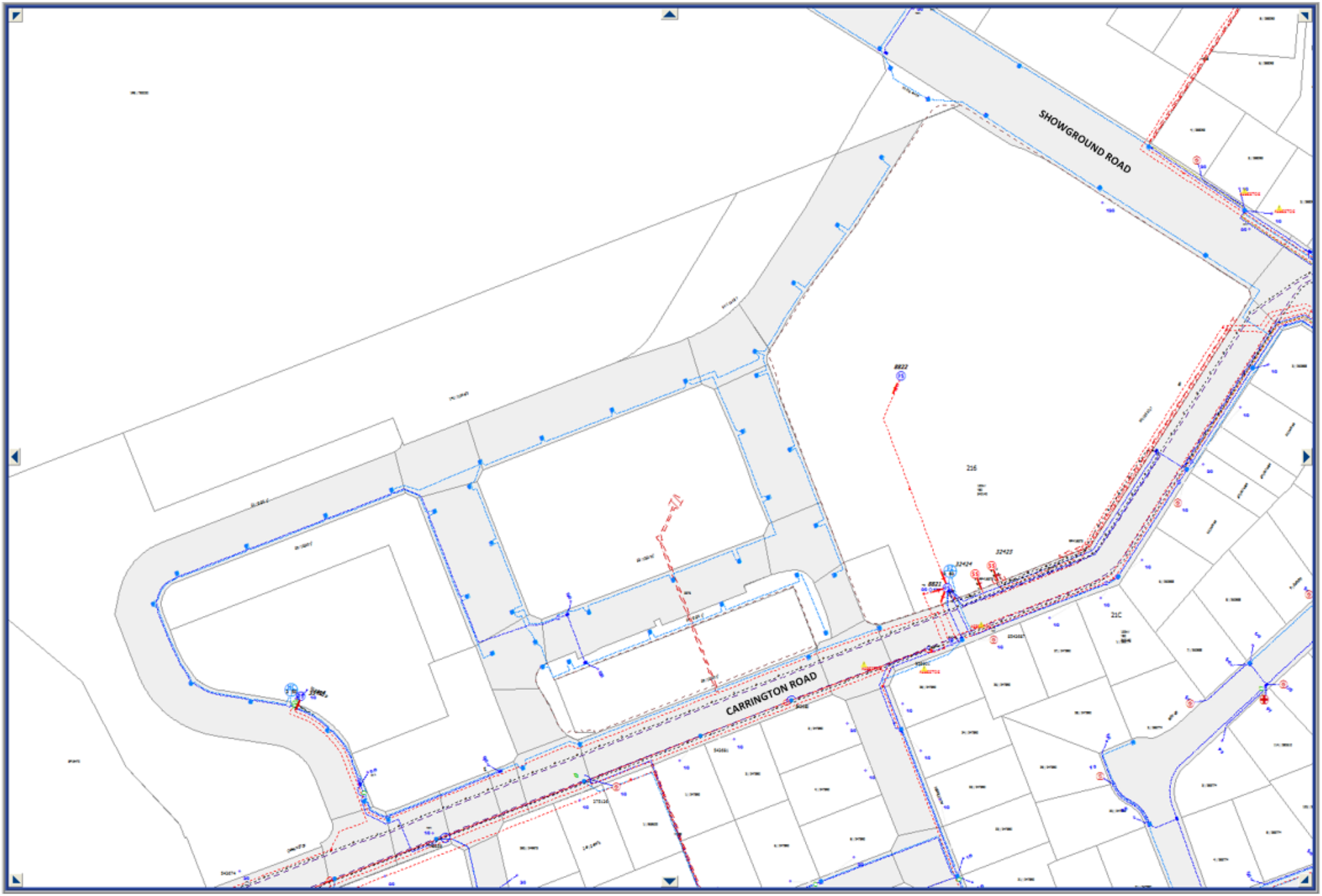
Pedestrian link
New Local Street
Doran Drive Plaza
SHOWGROUND ROAD
DORAN DRIVE
MADONNA PARADE
CARRINGTON ROAD
Precinct East Park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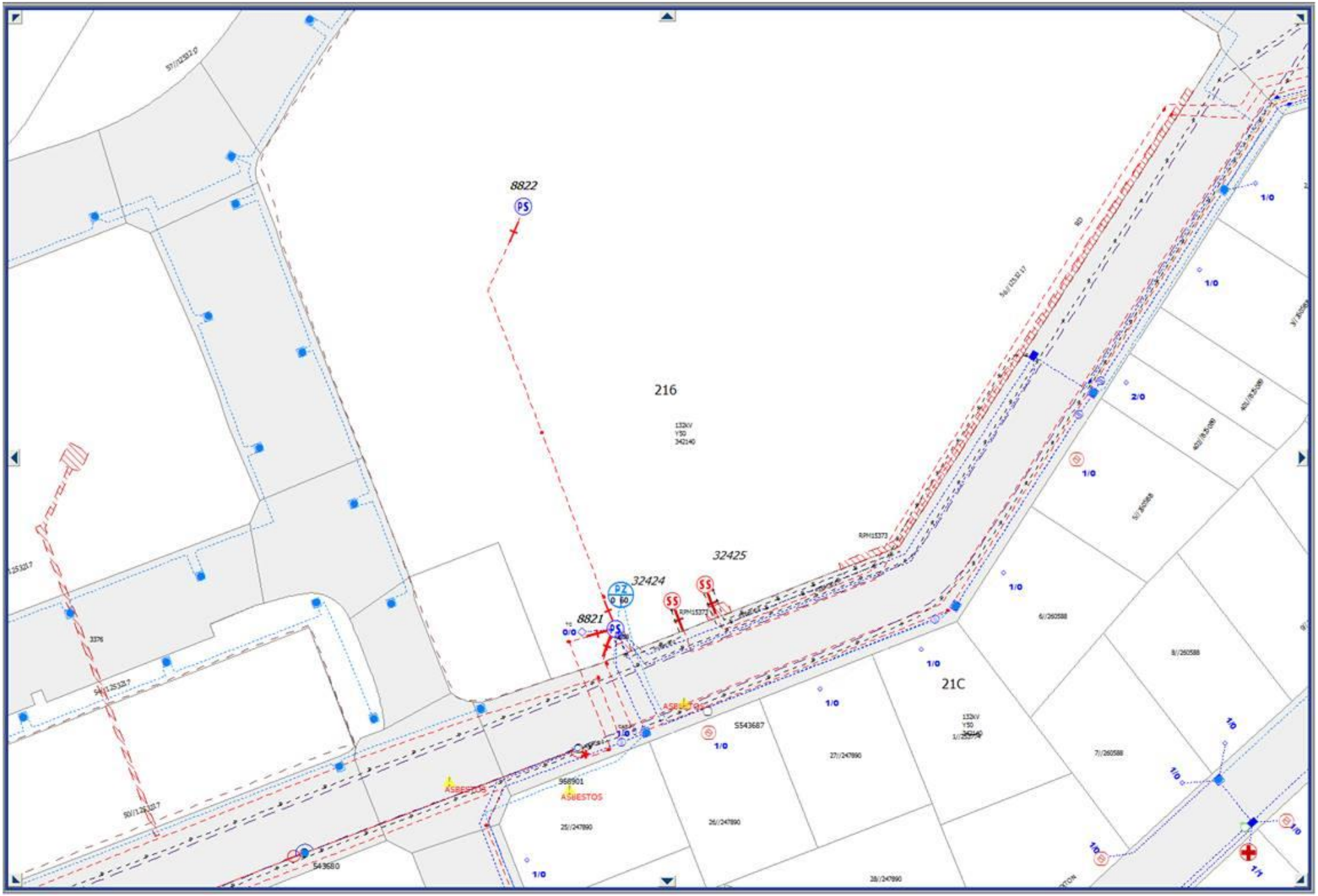
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20 Carrington Rd
Castle Hill, New South Wales
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Street View - Oct 2017
Google
Image capture: Oct 2017 © 2019 Google Australia Terms Report a problem

From: Jessica Fountain <Jessica.Fountain@planning.nsw.gov.au>
Sent: Tuesday, 12 November 2019 2:02 PM
To: Property Development <Property.Development@endeavourenergy.com.au>
Cc: James Groundwater <James.Groundwater@planning.nsw.gov.au>
Subject: Notice of Exhibition – Hills Showground Station Precinct (SSD-9653)

Dear Sir/Madam

The Department of Planning, Industry and Environment has received an Environmental Impact Statement EIS for the Hills Showground Station Precinct.

The EIS will be publicly exhibited from 13/11/2019 to 10/12/2019.

The Department invites you to advise on the proposal, including advice on recommended conditions by the due date.

The documents can be viewed on the Department's Major Projects website at https://www.planningportal.nsw.gov.au/major-projects/project/11481 from 13/11/2019.

If you have any enquiries, please contact James Groundwater on 8289 6778 or james.groundwater@planning.nsw.gov.au.

Please note, you are encouraged to create an account on the major projects website so future requests to your agency, and your responses, can be lodged via the system. A User Guide is attached for your reference.

Regards

Jess Fountain
DA Coordinator

Key Sites and Industry Assessments | Department of Planning, Industry and Environment
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Level 29, 320 Pitt Street, Sydney | GPO Box 39, Sydney NSW 2001
www.dpie.nsw.gov.au

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.