Conditions of consent (draft)

Proposed development	Construction and operation of a warehouse and distribution facility including main ancillary offices, hardstand loading docks, provision of 281 car parking spaces, signage, retaining walls and emergency private access road.
Property description	Archbold Road, Eastern Creek being Part Lot 2 DP 1145808, Part Lot 1 DP 1145808 and Part Lot 2 DP 1247691

1 DEFERRED COMMENCEMENT MATTERS

1.1 Provide owner's consent from Frasers Property for the shared use of the existing Right of Carriageway over Kangaroo Avenue.

1.2 Provide either a right-of-way and easement for access and services along the full length and full width of Kangaroo Avenue from the boundary of the subject site (near the access driveway) to the legally dedicated section of Kangaroo Avenue near Honeycomb Drive under S88b of the Conveyancing Act 1919, or evidence of dedication of this access road as public road. The right-of-way and easement for services is to be in favour of Lot 2 DP1145808 burdening Frasers land being Lot 7 DP 1200048 and the right-of-way and easement for services must be registered with Land Registry Services NSW.

1.3 Creation of an easement in gross Under S88B of the Conveyancing Act 1919 for emergency access benefitting Council and the public over Lot 1 DP 1145808 and Lot 2 DP 1247691 for the emergency access road over Bingo's land from the subject land out to Honeycomb Drive. The private access way is also to be upgraded to Council's satisfaction in accordance with the requirements of Council's Engineering Guide for Development 2005.

1.4 Council is to approve a provisional parking plan on the adjacent land being Lot 1 DP 1145808. Provisional parking is to be allocated on part of Lot 1 DP 1145808 catering for 300 provisional car parking spaces to be situated off the adjacent emergency access road for use by this approved development on Lot 2 DP 1145808 when required. A restriction as to user is to be created on the title over of this land under S88B of the Conveyancing Act 1919 burdening the deposited plan for the area nominated for parking in accordance with the Council approved carparking plan benefitting Lot 1 DP 114588 for us by Lot 2.

1.5 The Nil or Beneficial Effect (NorBE) flow targets have not been achieved and may adversely impact the bushland conservation area. The NorBE requirement is for the volume of post developed flows to be equal to or less than the volume of pre-development flows off the development site. Suggested strategies may include, but not limited to, one or more of the following:

a) Provision of a pond for evaporation only, upstream or downstream of the wetland or downstream of the main discharge point.

b) Provide a treated stormwater storage tank downstream of the main treatment, likely storing the first say 20 to 40 mm of site area draining to this system (treated first flush), subject to modelling as a detention tank. This volume would then be pumped out to the existing drainage system in Kangaroo Avenue over say a 24 to 48 hour period. In the NorBE modelling the volume draining to Kangaroo Avenue leaves the system and would be excluded from the post developed assessment. Size the detention orifice to match the pump rate.

c) Modelling the pumped first flush storage and/or wetlands and/or evaporative ponds and/or other approved approach in a separate MUSIC model, independent of the water quality targets for the site which would be met separately. Demonstrate that the NorBE flow target has been achieved.

1.6 The wetland drainage design set out on at&l drawing 19-692-C125(A) is a general layout only, with insufficient details, depth and flow controls. Provide a revised wetland design to the satisfaction of the Manager Asset Design that addresses the following:

a) That has a combined minimum surface area of 1500 m^2.

b) Has a maximum of two ponds at differing levels of approximately similar areas with a low flow pipe and an overflow weir/spillway that direct flow from the upper basin to the lower basin.

c) Direct about 10,000 m^2 of site catchment to the upper wetland (or evaporative pond if provided) to ensure an ongoing water supply for a healthy wetland.

d) Provide details of the weir overflow to prevent scour protection

e) that generally incorporate the requirements of section 11.3.1 of Council's WSUD developer handbook regarding "Wetland and macrophyte zone" except that the sinuous flow path is not required.

f) Maintain a minimum 100 mm depth of water around the edge of the macrophyte zone using a rock edge or similar to minimise mosquito breeding.

g) Provide a typical 3 to 6% slope for a minimum of 3m from the edge to create a shallow marsh. Maintain additional areas of shallow marsh approximately 200 mm deep as required. Extend or vary the slope in different parts of the wetland past the shallow marsh to create areas of deep and submerged marsh.

h) From the deep/submerged marsh grade down at 1V:1H to the deep-water zone. Provide a deep-water zone, of at least 800 to 1000mm depth below the PWL covering an area of no less than 80m^2

i) For each basin provide a minimum extended detention depth (EDD) of 100 mm above the PWL before weir overflow. Provide a 25 mm outlet pipe with the invert at the PWL. Protect the outlet with both an initial Rh3030 maximesh screen and a slightly finer screen closer to the control. Provide safe pedestrian access to facilitate cleaning the screens. Provide an additional 25 mm pipe with a cap with invert set 100 mm below the Permanent Water Level (PWL) to assist in plant establishment. Protect the outlet with a maximesh screen. The screens to be lockable to limit vandalism.

j) Provide a series of sections through the wetland in both directions with enlarged details at the controls.

k) Provide a minimum of 8 habitat features including secured logs, large rocks and half buried stub pipes above the EDD. Provide details.

1.7 Provide a revised Stormwater Management Report for the site detailing all the assumptions for the WSUD systems.

1.8 Revised Drainage Plans by at&l Civil Engineers Project No. 19-692 (various dates) is to be provided to address the following to the satisfaction of the Manager Asset Design:

i. Direct between say 5,000 to 10,000 m^2 of site catchment to the upper wetland (or to the evaporative pond if provided) to ensure an ongoing water supply for the wetland. Provide an independent detention and water quality tank that meets all targets.

ii. Modify the existing main detention and water quality system to account for the separate catchment discharging to the wetland.

iii. The On-site Stormwater Detention design is incorrect as the bypass area on at&l drawing 19-692-C125(A) in Kangaroo Avenue is too small. This is noted as 3476 m^2 which is added to the site area for the OSD catchment. However, in reviewing the contour plan of Kangaroo Avenue a bypass catchment of 5500 m^2 is a more accurate representation. This will require variations to the detention tank size and orifice control sizes. This catchment and bypass area is to be proportioned equally between the two tank systems.

iv. the total combined minimum volume of 2040 m^3 will be provided below the 1.5 year ARI overflow weir;

v. the total combined minimum volume of 3094 m^3 will be provided below the 100 year ARI emergency overflow weir

vi. Provide revised OSD Deemed to Comply Spreadsheets for both tanks.

vii. On drawing C113 (E) and C114 (D) provide a minimum of two access points for the below ground Stormfilter chamber within the chamber area upstream of the weir. Access points must be a minimum 1200mm by 1500mm or 1500mm by 1500mm with step irons.

viii. Where the pump out chamber (to Kangaroo Ave) is provided detail a minimum 1200mm by 1500mm or 1500mm by 1500mm with step irons access point over the pump.

ix. Increase the rainwater tank size to a minimum of 240 kL as the landscape is too low. Allow for 1700 kL/yr.

x. The minimum design shall allow for 36 OceanGuards and 130 x 690 Stormfilters combined. Split the catchments in two in MUSIC, with separate Stormfilter chamber for each tank. The MUSIC model is to work for the site independently of any NorBE requirements.

xi. The revised MUSIC model will split the road node in two and that part of the road/parking that drains directly into the northern detention and Stormfilter tanks will bypass the OceanGuards, but treated by the Stormfilters.

xii. The water conservation internal usage rate is contradictory across the *DA Civil Stormwater Report dated July 2022 noted at Section 6.1.3* and the drainage plan 19-692-C112(A), both by at&l. The report refers to 31 toilets at a usage rate of 4 kL/day. The drainage plan 19-692-C112(A) refers to 31 toilets and waterless urinals at a usage rate of 2.65 kL/day. Waterless urinals as specified on the drawing must NOT be used. Ensure consistency. Allow for a landscape usage of 1700 kL/yr and a tank size of 240 kL. Ensure consistency.

1.9 A Vegetation Management Plan (VMP) must be prepared by a suitably qualified and experienced Restoration Ecologist for all of the C2 Primary Conservation zoned land and areas of avoided land on Lot 2 DP 1145808.

The VMP must integrate with the Wetland Design Plan.

The VMP must include:

- A plan delineating management zones, including the area of each zone and a description of the management regime to be applied within each zone.
- The proposed length of coarse woody debris generated from clearing the site and its placement around the wetland.
- Proposed types and numbers of nesting boxes or alternatively 'chainsawn' hollows to achieve a target of four nesting boxes or hollows per hectare.
- Details of the species proposed to be used in the revegetation, including the preferred planting density or direct seeding rate.
- Details of the locally endemic plant species such as Old Mans Beard or Clematis to be used for the downward cascading landscaping treatment of the western retaining wall.
- Type of fencing to be used to delineate the VMP area, including educational and/ or enforcement signage. This must be established to stop unauthorised access including during construction.
- A project timeline, gaant chart or similar documenting the required stages of the project for each quarter for a duration of no less than five years.
- An estimated cost of completing the works, attached to each year.
- The location of monitoring points, to be permanently marked and be completed in accordance with the Biodiversity Assessment Method, with monitoring performance to be based on Composition, Structural, Function Condition Scores (where possible) and the aggregate Vegetation Integrity Score.
- The required annual benchmarks tied to Composition, Structural, Functional Condition Scores, and the aggregate Vegetation Integrity Score.
- Proposed management intervention to be enacted for if the annual benchmarks are not reached.
- A water quality monitoring program in wetland areas, including target water quality or macroinvertebrate benchmarks.
- A monitoring program for the Southern Myotis to determine its use of the reconstructed wetland, at years 2-5.
- Required routine maintenance work beyond year 5 for the life of the development.
- In addition to the above requirements, the VMP should be prepared in accordance with Council's VMP Guidelines.

1.10 A Dam Dewatering Plan must be prepared. The Plan must be prepared by a suitably qualified and experienced aquatic ecologist. The Plan must be submitted to Council's Natural Areas Team for approval.

The Dam Dewatering Plan must include the following:

- The requirement to undertake a survey prior to dam dewatering.
- Proposed relocation sites for native species. Additional release points must be considered if large numbers of predatory fish (e.g. Long-finned Eels) are recovered.

- Identification of the licence details required under the Fisheries Management Act 1994 and / or the Biodiversity Conservation Act 2016.
- Methods to prevent injury to fauna during pumping of water from the dam.
- Details of how exotic pest species will be humanely euthanased in a manner consistent with the Prevention of Cruelty to Animals Act 1979.
- Methods for disposing of dam water and preventing the spread of carp eggs, juvenile pest species or eggs into the catchment and natural waterways.
- Details on how fauna will be rescued from dam sediments or allowed to relocate from the dam.
- Details of the appropriate timing (season) for dewatering.
- Details on reporting of actions undertaken with tallies of fauna removed from the dam with details of their relocation destination (or destruction).
- Discharge limits as per relevant ANZECC guidelines.

1.11 A Biodiversity Management Plan (BMP), comprising of a detailed site plan and an accompanying report in a legible format prepared by a person who has qualifications and experience in respect of ecology is to be submitted by the proponent for Council's consideration. The BMP is to relate to the land within and adjacent to the development footprint and must contain full details of the actions proposed to be taken with respect to the management of fauna during the course of carrying out the development. The BMP is to be consistent with the NSW Department of Planning, Industry and Environment "Code of Practice for injured, sick and orphaned protected fauna" 2011 (the Code).

- The BMP must include the following:
    a) Biodiversity management strategies for pre-construction, construction and post construction activities including environmental control measures for the pre-clearing process.
    b) A fauna rescue and release procedure. Where tree removal is required then a licensed wildlife carer or ecologist will be required on site as a fauna handler ('Rescuer' under the Code) during tree removal works.
    c) A procedure for controlling the introduction and spreading of weeds and pathogens, including hygiene protocols and the arrangements for monitoring;
    d) Proposed strategies for re-use of top soil, tree hollows, logs, coarse woody debris and bush rock.
    e) A procedure for dealing with unexpected threatened species finds. The procedure must include, as a minimum, the following:
        i. stop work arrangements in the immediate area of the threatened species;
        ii. notification and communication protocol;
        iii. consultation with the specialists to assess the significance of the find; and
        iv. a list of approvals, licences or permits likely required prior to recommencing works.
    f) If trees or areas of vegetation are to be retained as part of the development, the procedures and methods for identifying and protecting the areas of vegetation to be retained showing them as exclusion zones in accordance with Australian Standard (AS) 4970 - 2009 Protection of trees on development sites.

- The commencement of any works under this consent and the issuing of any construction certificate must not occur unless and until the Council has given notice in writing to the proponent that it has approved the BMP.
- The development must be carried out at all times in accordance with the approved BMP.

1.12 All of the requirements listed in the above condition must be completed within 24 months of the date of this "Deferred Commencement" consent. Should these matters not be completed to Council's satisfaction within this time period, this "Deferred Commencement" consent will lapse.

2 ADVISORY NOTES

2.1 Terminology

1.1.1 Any reference in this document to a "consent" means a "development consent" defined in the Environmental Planning and Assessment Act 1979.

1.1.2 Any reference in this consent to a Construction, Compliance**,** Occupation or Subdivision Certificate is a reference to a certificate as defined by Section 6 of the Environmental Planning and Assessment Act 1979.

2.2 Scope of Consent

1.2.1 The granting of this consent does not imply or confer compliance with the requirements of the Disability Discrimination Act 1992. The applicant is advised to investigate any liability that may apply under that Act. The current suite of Australian Standard 1428 - Design for Access and Mobility, should be consulted for guidance. The prescriptive requirements of Part 1 of the Standard apply to certain buildings requiring development consent.

2.3 Other Approvals

2.3.1 A separate valid Construction Certificate shall be issued prior to commencement of any construction works

2.4 Services

2.4.1 The applicant is advised to consult with:

(a) Sydney Water Corporation Limited

(b) Energy provider

(c) Jemena Gas

(d) The relevant local telecommunications carrier

regarding any requirements for the provision of services to the development and the location of existing services that may be affected by proposed works, either on the land or on the adjacent public road(s).

All approved building construction plans attached to the Construction Certificate should be submitted to Sydney Water Tap In, to determine whether the development will affect Sydney Water's sewer and water mains, stormwater drains and/or easements and if further requirements need to be met. The plans are to be appropriately stamped and all amended plans will require re-stamping. For further information go to: www.sydneywater.com.au, then follow the "Developing Your Land" link or telephone 1300 082 746 for assistance.

Sydney Water may also require the applicant to obtain a Trade Waste Approval as part of the operation of the approved development. Enquiries should be made to ascertain the Sydney Water requirements for the eventual operation of the approved use.

2.4.2 Underground assets may exist in the area that is subject to your application. In the interests of health, safety, and in order to protect damage to third party assets, please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures (this is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset holders a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

2.4.3 Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the Criminal Code Act 1995 (Cth) and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number: 1800 810 443.

2.4.4 The developer shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.

2.5 Identification Survey

1.5.1 The applicant is advised to obtain an identification survey from a registered surveyor to ascertain the correct location of the property boundaries, and to ensure the development does not encroach upon adjoining properties.

2.6 Payment of Engineering Fees

2.6.1 If the applicant wishes for Council to issue the Construction Certificate as nominated in the 'Prior to Construction Certificate' please:

- Complete application form
- Submit all relevant plans produced by a suitably qualified person and in accordance with Councils Standards.

2.7 Transport for NSW Requirements

2.7.1 The subject site is:

- Within an area of investigation for the Smart Motorway Project.
- In vicinity of a broad area currently identified for Archbold Road upgrade and extension Project.

  Further information in regard to the Archbold Road upgrade and extension Project can be obtained by contacting the Project Team – E mail: archboldroadupgrade@rms.nsw.gov.au; Ph: 1800 548 813 (during business hours) or by visiting the project website at www.rms.nsw.gov.au/projects/sydney-west/archbold-road/index.html

2.8 Endeavour Energy Requirements

2.8.1 Any required padmount substation/s 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'.

2.8.2 All encroachments and /or activities (works) within the easements (or affecting the right of carriageway) (other than those approved / certified by Endeavour Energy's Customer Network Solutions Branch as part of an enquiry / application for load or asset relocation project and even if not part of the Development Application) need to be referred to Endeavour Energy's Easement Officer for assessment and possible approval if they meet the minimum safety requirements and controls. However please note that this does not constitute or imply the granting of approval by Endeavour Energy to any or all of the proposed encroachments and / or activities within the easement.

2.8.3 Endeavour Energy's G/Net Master Facility Model indicates Kangaroo Avenue is in a 'Developer Area' and is a 'Developer Road' indicating enquiries and applications for proposed contestable works projects with Endeavour Energy's Customer Network Solutions Branch for electricity supply.

The applicant will need to contact Endeavour Energy's Customer Network Solutions Branch [via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666] who are responsible for managing the conditions of supply with the proponent and their Accredited Service Provider (ASP) if this Development Application:

- Includes any contestable works projects that are outside of any existing approved / certified works.
- Results in an electricity load that is outside of any existing Supply / Connection Offer requiring the incorporation of the additional load for consideration.

If Kangaroo Avenue is not intended to be dedicated as a public road, the right of carriageway will need to be extended over the entire permanent cul-de-sac.

3 GENERAL

3.1 Scope of Consent

3.1.1 This consent relates to the following drawings/details submitted to Council with the Development Application, subject to compliance with any other conditions of this consent:

Drawing No.	Dated	Revision	Prepared by
DA201 SITE PLAN	15.04.2021	8	SBA Architects
DA202 ROOF PLAN	15.04.2021	4	SBA Architects
DA301 ELEVATIONS	15.04.2021	5	SBA Architects
DA302 WAREHOUSE SECTIONS	15.04.2021	4	SBA Architects
DA401 OFFICE - GROUND FLOOR PLAN	15.04.2021	5	SBA Architects
DA411 OFFICE - LEVEL 1 FLOOR PLAN	15.04.2021	5	SBA Architects

DA420 OFFICE ELEVATIONS	15.04.2021	5	SBA Architects
DA430 OFFICE SECTIONS	15.04.2021	5	SBA Architects
101 LANDSCAPE PLAN	19.04.2021	D	Site Image (NSW) Pty Ltd
102 LANDSCAPE PLAN	19.04.2021	D	Site Image (NSW) Pty Ltd
103 LANDSCAPE PLAN	19.04.2021	D	Site Image (NSW) Pty Ltd
104 LANDSCAPE PLAN	19.04.2021	D	Site Image (NSW) Pty Ltd
501 LANDSCAPE DETAILS	12.03.2021	B	Site Image (NSW) Pty Ltd

* All the plans are subject to relevant conditions of this consent

3.1.2 This consent authorises the use of the completed approved buildings for a warehouse and distribution centre subject to full compliance with all other conditions of this consent

3.2 Services

3.2.1 Low voltage electricity and telecommunications services for the approved development shall be reticulated underground.

3.3 Suburb Name

3.3.1 The land the subject of this consent is known to be located in the following suburb. This suburb name shall be used for all correspondence and property transactions:

Suburb: Eastern Creek

3.4 Engineering Matters

3.4.1 **Design and Works Specification**

3.4.1.1 All engineering works required by this consent must be designed and undertaken in accordance with the relevant aspects of the following documents except as otherwise authorised by this consent:

(a) Blacktown City Council's Works Specification - Civil (Current Version)

(b) Blacktown City Council's Engineering Guide for Development (Current Version)

(c) Blacktown City Council Development Control Plan (Current Version) including Part J – Water Sensitive Urban Design and Integrated Water Cycle Management

(d) Blacktown City Council On Site Detention General Guidelines, S3QM online tool and standard drawing A(BS)175M

Design plans, calculations and other supporting documentations prepared in accordance with the above requirements MUST be submitted to Council with any application for Construction Certificate, Subdivision Works Certificate, Road Act 1993 or Local Government Act 1993 approval.

Any Construction Certificates or Subdivision Works Certificate issued by Private Certifiers must also be accompanied by the above documents.

NOTE: Any variations from these design requirements must be separately approved by Council.

3.5 Other Necessary Approvals

3.5.1 A separate application will be required for the following approvals, under the Local Government Act 1993 and/or the Roads Act 1993.

- Vehicular Crossing
- Works on or occupation of existing public roads (Not including works covered by a Roads Act Approval)

3.6 Other Matters

3.6.1 No construction preparatory work (such as, excavation, filling, and the like) shall be undertaken on the land prior to a valid Construction Certificate being issued.

3.6.2 Any future substation, temporary drainage works or other utility installation required to service the approved development shall not be sited on future or existing Council land, including road reservations and/or public reserves.

3.6.3 The development must at all times maintain the water quality system to achieve the following minimum pollutant removal targets for the entire development site (excluding the wetland) for the life of the development:

Required percentage reductions in post development average annual load of pollutants

Pollutant	**% post development pollutant reduction targets**
Gross Pollutants	90
Total Suspended Solids	86
Total Phosphorous	65
Total Nitrogen	45

3.6.4 The registered proprietor/lessee is to provide to Council's WSUD Compliance Officer a report outlining all maintenance undertaken on the Stormwater Quality Improvement Devices in accordance with the approved maintenance schedule. All material removed are to be disposed of in an approved manner. Copies are to be provided of all contractor's cleaning reports or certificates to Council's WSUD Compliance Officer WSUD@blacktown.nsw.gov.au.

3.6.5 Each year the registered proprietor/lessee is to provide to Council's WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au a report outlining all non-potable water used annually and the percentage of non-potable reuse. The nominated rate for all design reuse supplied is 3.37 ML/yr at 72%.

3.7 Transport for NSW requirements

3.7.1 Access is denied across the northern boundary adjacent to the Western Motorway. All buildings and structures (including signage), together with any improvements integral to the future use of the site are to be wholly within the freehold property (unlimited in height or depth), along the Western Motorway boundary.

3.7.2 A construction zone will not be permitted on the Western Motorway.

3.7.3 Transport for NSW requests that the south-eastern emergency egress be gated to restrict access to the site via the Eastern Creek Recycling Ecology Park.

3.8 Sydney Water Requirements

3.8.1 Full compliance with the requirements contained in Sydney Water's letter dated 6 April 2022 and included at Annexure A of this consent is required.

3.9 Endeavour Energy Requirements

3.9.1 Full compliance with the relevant requirements contained in Endeavour Energy's standard conditions for development applications dated December 2021 and included at Annexure B of this consent is required.

4 PRIOR TO CONSTRUCTION CERTIFICATE (GENERAL)

4.1 DA Plan Consistency

4.1.1 A Construction Certificate or Subdivision Works Certificate for the proposed development shall only be issued when the accompanying plans, specifications and/or details are consistent with the approved Development Application design plans.

4.2 Transport for NSW Requirements

4.2.1 A Construction Pedestrian Traffic Management Plan (CPTMP) detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to Council for approval prior to the issue of a Construction Certificate.

4.3 Endeavour Energy Requirements

4.3.1 Submit 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 Construction Certificate.

4.3.2 The driveways should be designed to increase the separation to the pole on the road verge as much as reasonably possible.

4.4 Retirement of Ecosystem Credits

4.4.1 Prior to the commencement of any works, the class and number of ecosystem credits shown below must be retired to offset the residual biodiversity impacts of the development.

The requirement to retire credits outlined in this Condition may be satisfied by payment to the Biodiversity Conservation Fund of an amount equivalent to the type of ecosystem credits, as calculated by the BAM Credit Calculator (BAM-C).

Evidence of the retirement of credits or payment to the Biodiversity Conservation Fund in satisfaction of the Table in this Condition must be provided to the consent authority prior to the commencement of any works.

Impacted plant community type	Number of ecosystem credits	IBRA sub-region	Approved variation
849	5	Cumberland	None
1071	3	Cumberland	None

5 PRIOR TO CONSTRUCTION CERTIFICATE (ENGINEERING)

5.1 General

5.1.1 All relevant conditions within the 'Prior to Construction Certificate' section of this consent shall be satisfied before any Construction Certificate or Subdivision Works Certificate can be issued.

5.1.2 The engineering drawings referred to below are not for construction. The Construction Certificate drawings shall be generally in accordance with the approved drawings and conditions of consent. Any significant variation to the design shall require a section 4.55 application.

5.1.3 Construction Certificate plans shall be generally in accordance with the following drawings and relevant Consent conditions:

Prepared By	Project No.	Drawing No.	Sheet No.	Revision	Dated
At & L Civil Engineers & Project Managers	Lot 2 Archbold Road Eastern Creek	19-692-C100	1	D	21-06-22
		19-692-C101	2	A	06-04-21
		19-692-C102	3	C	21-06-22
		19-692-C103	4	D	01-02-22
		19-692-C104	5	B	28-07-21
		19-692-C105	6	A	06-04-21
		19-692-C106	7	B	21-06-22
		19-692-C107	8	E	21-06-22
		19-692-C108	9	D	21-06-22
		19-692-C109	10	E	21-06-22
		19-692-C110	11	C	21-06-22
		19-692-C111	12	C	21-06-22
		19-692-C112	13	C	16-08-21
		19-692-C113	14	E	21-06-22
		19-692-C114	15	D	21-06-22
		19-692-C115	16	B	16-08-21
		19-692-C116	17	B	28-07-21
		19-692-C117	18	A	06-04-21
		19-692-C118	19	A	06-04-21
		19-692-C119	20	B	28-07-21
		19-692-C120	21	C	21-06-22
		19-692-C121	22	A	06-04-21
		19-692-C122	23	A	06-04-21
		19-692-C123	24	C	21-06-22
		19-692-C125	25	A	21-06-22
		19-692-C126	26	A	21-06-22

5.1.4 The following items are required to be addressed on the Construction Certificate plans:

a) Provide a wetland planting schedule in accordance with Council's website for plant species and density. Detail all planting on the banks particularly within the EDD.

b) Revised Drainage Plans by at&l Civil Engineers Project No. 19-692 (various dates) are to be provided to address the following:

i. Provide step irons or ladders to all access points in the rainwater tank, OSD tank and Stormfilter chamber and pump out chamber (if provided).

ii. Provide a Floodway Warning Sign for the wetland (and evaporative pond if provided) in accordance with Plan A(BS)114S from Council's Engineering Guide for Development 2005.

iii. Detail Confined space entry warning signs on the drainage plans adjacent to all entries into the Stormfilter chamber, rainwater tank and On-site detention tank (and first flush pump out chamber if provided) in accordance with Council's Engineering Guide for Development 2005.

iv. Provide metal mosquito proof screens over all grated accesses into the Stormfilter tank.

v. Provide on-site detention (OSD) warning plaques as per the Upper Parramatta River Catchment Trust guidelines.

vi. On drawing C113 and C114 reposition the energy dissipator on the inlet to the Stormfilter chamber to be about 2 m from the inlet pipe.

vii. OceanGuards treating only surface flows require a minimum clear depth of 550 mm below the grate to any inlet or outlet pipe obvert.

viii. Detail the roof downpipe and drainage system to demonstrate that a minimum 11,000 m2 of roof area is directed to the minimum 240 KL rainwater tank

ix. Detail ladder maintenance access to each of the retaining wall terraces and to all levels from the carpark level at maximum 50 m intervals.

c) An experienced Drainage Engineer registered with NER and supported by a DRAINS or other hydraulic modelling is to certify that the internal drainage system is capable of carrying the 5% AEP flows without surcharge at any pits and that the 1% AEP flows can reach the respective detention basin by surface and/or pipe flows.

d) Amended architectural plans are required for buildings, or parts of buildings, that are not affected by BASIX, to demonstrate compliance with the minimum standards defined by the Water Efficiency Labelling and Standards (WELS) Scheme for any water use fittings. Minimum WELS ratings are:

i. 4 star dual-flush toilets;

ii. 3 star showerheads;

iii. 5 star taps (for all taps other than bath outlets and garden taps);

iv. 3 star urinals; and

v. Water efficient washing machines and dishwashers are to be specified.

e) An experienced chartered hydraulic engineer is to prepare and certify a detailed Non-Potable Water Supply Plan for non-potable water uses on the site including all toilet/urinal flushing and general washdown. The plan is to show the rainwater pipe and tank arrangement including:

i) a first flush or pre-treatment system,

ii) a pump with isolation valves for toilet reuse and irrigation off-take and a warning light to indicate pump failure;

iii) a solenoid controlled mains water bypass for the pump supplying water for the toilets and irrigation system and a second solenoid controlled mains water bypass for the wetland supply.

iv) flow meters on the solenoid controlled mains water bypass line and the pump outflow line, to determine actual non-potable usage;

v) providing a minimum rainwater tank size of 240 kL before overflow;

vi) ensuring all the rainwater reuse pipes are coloured purple;

vii) waterless urinals are NOT permitted.

viii) an automatic backwash inline filter.

ix) fitting rainwater warning signs to all external taps using rainwater;

x) providing connection points for the landscape irrigation scheme;

xi) providing wash down taps connected to the rainwater tank around the accessible building perimeter at approximately 50 m intervals

xii) ensuring that all Sydney Water requirements have been satisfied

f) An experienced irrigation specialist is to prepare and certify a detailed Landscape Watering Plan for non-potable landscape watering. The plan is to show the irrigation layout based on non-potable water supply point from the rainwater tank, including:

i. isolation valve on the irrigation system for maintenance or during water restrictions.

ii. a timer and control box for landscape watering, allowing for seasonal variations and split systems.

iii. designed to automatically achieve a minimum average usage rate of 1700 kL/yr at minimum 1.0 kL/yr/m2 including the landscaped terraces. Design the system increase the frequency of watering by a minimum 50% above average for the hotter months and reducing by 50% for the cooler months.

iv. Clearly identify the landscaping areas serviced by the tank. Every terrace level is to be irrigated.

v. ensuring all the reuse pipes and taps are coloured purple.

vi. fitting warning signs to all external taps using non-potable water.

5.2 Construction Certificate Requirements

5.2.1 Under the Environmental Planning and Assessment Act 1979 a Construction Certificate is required. These works include but are not limited to the following:

- Road and drainage construction
- On-site stormwater detention
- Water quality treatment
- Earthworks
- Inter-allotment drainage (created within the subject lot)

The above requirements are further outlined in this section of the consent.

5.3 Local Government Act Requirements

5.3.1 Under Section 68 of the Local Government Act 1993 an approval for engineering work is required. These works include but are not limited to the following:

- Any works within a Council Reserve
- Any works on adjoining land (outside the subject site boundaries)
- Inter-allotment drainage on adjoining land

The above requirements are further outlined in this section of the consent.

5.4 Roads Act Requirements

5.4.1 Under Section 138 of the Roads Act 1993 an approval for engineering work is required. These works include but are not limited to the following:

- Any works within Council's road reserve
- Vehicular crossings
- Path Paving

The above requirements are further outlined in this section of the consent.

5.5 Other Engineering Requirements

5.5.1 If the estimated cost is $25,000 or greater proof of long service levy payment is required.

5.5.2 Any ancillary works undertaken shall be at no cost to Council.

5.5.3 Submit written permission from the affected property owner for any works proposed on adjoining land.

5.5.4 Submit a Public Utilities Plan demonstrating adequate clearance between services to stormwater pits, pipes, driveways, light poles, etc.

5.6 Drainage

5.6.1 Drainage from the site must be connected into Council's existing drainage system.

5.7 Erosion and Sediment Control

5.7.1 Provide a sediment and erosion control plan in accordance with Council's Soil Erosion and Sediment Control Policy and Engineering Guide for Development.

5.8 On-Site Detention

5.8.1 On-site detention system shall be designed in accordance with the parameters set out in Council's Water Sensitive Urban Design Standard Drawings A(BS)175M On-site detention requirements - Sheet 20, or an S3QM Certificate.

5.8.2 A registered engineer (NER) must certify that:

- The structures associated with the on-site stormwater detention system have been designed to withstand all loads likely to be imposed on them during their lifetime.
- The on-site stormwater detention system will perform to meet the on-site stormwater detention requirements and function hydraulically in general accordance with Council's Engineering Guide for Development, DCP Part J - Water Sensitive Urban Design and Integrated Water Cycle Management, S3QM Deemed to comply tool and Councils Standard Drawing A(BS)175M.

5.8.3 The following documents shall be submitted to accompany the on-site detention design in accordance with the design:

- Comprehensive drainage drawings with cross-sectional details of the storage area, pit numbers, pipe sizes, catchment plan, etc.
- On-site detention detailed design submission and calculation summary sheet
- A maintenance schedule that complies with Council's Water Sensitive Urban Design maintenance guidelines, signed and dated by the designer
- S3QM Deemed to Comply On-site detention summary details

5.9 Stormwater Quality Control

5.9.1 Stormwater quality treatment system shall be designed in accordance with Council's Engineering Guide for Development and DCP Part J - Water Sensitive Urban Design and Integrated Water Cycle Management.

5.10 Vehicular Crossings

5.10.1 Plans to demonstrate the construction a commercial and industrial vehicular crossing to Council's standard A(BS)103S.

5.11 Footpaths

5.11.1 The construction of path paving is to be provided generally in accordance with Council's Path Paving Policy, Blacktown City Council Engineering Guide for Development and Blacktown City Council Growth Centre Precincts Development Control Plan 2010.

5.11.2 Proposed locations and widths are to be approved by Blacktown City Council's Co-ordinator Engineering Approvals. Cycleways/ shared pathways are to include line marking and signposting in accordance with the requirements of Austroads "Guide to Road Design" Part 6A and the Roads and Maritime Services NSW Bicycle Guidelines November 2003.

6 PRIOR TO CONSTRUCTION CERTIFICATE (PLANNING)

6.1 Monetary contributions payable in accordance with the Part Lot 2 DP1145808, Archbold Road, Eastern Creek Planning Agreement

6.1.1 The following monetary contributions pursuant to the *Part Lot 2 DP1145808, Archbold Road, Eastern Creek Planning Agreement dated 14 July 2022,* must be paid. The amounts below are as 24 AUGUST 2022. They WILL BE INDEXED from this date to the date of payment. Payment of the indexed amounts must be made prior to the issue of a Construction Certificate (for building works) or Subdivision Certificate (for subdivision works) either by Council or any accredited certifier, whichever occurs first.

PLEASE NOTE: *Indexed payments must be made by BANK CHEQUE IF IMMEDIATE CLEARANCE IS REQUIRED and payments made by credit card or EFTPOS attract a 0.5% surcharge.*

Contribution Item	Amount
Traffic Management	
Quarry Link Road	$130,509.00
Eastern Creek Precinct 3	$7,322.00
Total	**$137,831.00**

The contribution(s) will be indexed according to the Australian Bureau of Statistics' Consumer Price Index (Sydney Housing) or Consumer Price Index (All Groups Sydney).

These contributions are calculated in accordance with *Section 7.11 Contributions Plan No. 18 – Eastern Creek Stage 3* (CP18) as defined in the planning agreement.

The contribution(s) have been based on the total developable area, nominated below. Should the final plan of survey indicate any change in the total developable area the contribution(s) will be adjusted accordingly.

Developable Area: 6.2580 hectares

Voluntary Planning Agreement

The applicant must perform all obligations required under the *Part Lot 2 DP1145808, Archbold Road, Eastern Creek Planning Agreement* dated 14 July 2022.

6.2 Access/Parking

6.2.1 The internal driveway and parking areas are to be designed in accordance with Australian Standard 2890.1.

6.2.2 A minimum of 281 car parking spaces are to be provided on site, including 6 accessible and 52 provisional car parking spaces. A minimum of 229 parking spaces are to be permanently line marked (this is separate to the 300 provisional parking spaces shown on title of adjoining land benefitting this site).

6.2.3 On-site parking spaces are to be designed having minimum internal clear dimensions in accordance with Australian Standard 2890.1 as follows:

Uncovered Car Space: 2.5m x 5.4m

Disabled Car Space: 2.4m x 5.4m (plus shared zone)

6.2.4 All internal paved areas and other paved areas shall be designed to provide continuous surface drainage flow paths to approved points of discharge.

6.2.5 Access to and parking for persons with disabilities shall be designed in accordance with Australian Standard 2890.6.

6.3 Salinity

6.3.1 Consideration shall be given to the guidelines in Building In Saline Environment 2008, Western Sydney Salinity Code of Practice 2003 and the design of structures in contact with the soils in accordance with AS 2159-1995 ‘Piling –Design and Installation’.

6.4 Aesthetics/Landscaping

6.4.1 The reflectivity index of glass used in the external facade of the building is not to exceed 20% must not affect road traffic and must not cause discomfort through glare or intense heat to surrounding areas. "Anti-glare" glazing is to be used to minimise any glare affect. Details are to be provided as part of the Construction Certificate plans.

6.4.2 All materials of construction are to be fire resistant. Documentary evidence shall be submitted to Council to ensure compliance.

6.4.3 The development approved by this consent is to be constructed in accordance with the materials, finishes and colours indicated on the finishes schedule on the Elevations plan (Drawing number DA301). Details of these building materials and finishes, including colour samples from brochures or the like, are to be included as part of the Construction Certificate plans.

6.4.4 All boundaries facing roads are to be fenced using metal fencing of up to 1.8m high in black powder-coated and ‘diplomat’ style pressed metal. No chain wire (including PVC coated) fencing is to be installed along public roads.

6.4.5 Any other perimeter fencing is to be black plastic coated wire fencing to a height of 1.8m with security measures above if required.

6.4.6 Details of the proposed fencing are to be submitted to Council for approval prior to the separate approval of the relevant Construction Certificate.

6.4.7 All retaining walls are to be of masonry construction. All footings for these retaining walls are to be wholly within the boundaries of the site. All retaining walls are to be designed by a suitably qualified structural engineer.

6.4.8 The western retaining wall adjacent to the C2 zoned land is to incorporate colour banding. The half is to be a light colour and the bottom half a dark colour. Details are to be submitted for approval by Manager Development Assessment.

6.4.9 Submit an additional landscape plan that illustrates either a downward cascading plants landscape treatment feature on the western retaining wall adjacent to the C2 zoned land.

7 PRIOR TO CONSTRUCTION CERTIFICATE (BUILDING)

7.1 Building Code of Australia Compliance

7.1.1 All aspects of the building design shall comply with the applicable performance requirements of the Building Code of Australia so as to achieve and maintain acceptable standards of structural sufficiency, safety (including fire safety), health and amenity for the ongoing benefit of the community. Compliance with the performance requirements can only be achieved by:

(a) Complying with the deemed to satisfy provisions, or

(b) Formulating an alternative solution which:

(i) complies with the performance requirements, or

(ii) is shown to be at least equivalent to the deemed to satisfy provision, or

(iii) A combination of (a) and (b).

7.2 Site Works and Drainage

7.2.1 Any required retaining wall(s) and/or other effective method to retain excavated or filled ground (not being Exempt Development under the Blacktown Local Environmental Plan), together with any associated groundwater drainage system, shall be designed by an appropriately qualified person. Details of such site works shall accompany the Construction Certificate.

7.2.2 Stormwater drainage from the site shall be designed to satisfactorily drain rainfall intensities of 159 mm per hour over an average recurrence interval of 20 years. The design shall:

(a) be in accordance with Australian Standard 3500.3, and

(b) provide for drainage discharge to an existing Council drainage system, and

(c) ensure that the development, either during construction or upon completion, does not impede or divert natural surface water runoff so as to cause a nuisance to adjoining properties.

7.2.3 Soil erosion and sediment control measures shall be designed in accordance with Council's Soil Erosion and Sediment Control Policy. Details shall accompany any Construction Certificate.

7.2.4 Should any proposed excavation associated with the development extend below the level of the base of the footings of a building or any other structure on any adjoining allotment of land (including a public place), separate details prepared by a suitably qualified person shall be prepared indicating how that building or structure is to be:

(a) Preserved and protected from damage, and

(b) Underpinned and supported.

Such details shall accompany the Construction Certificate.

8 PRIOR TO CONSTRUCTION CERTIFICATE (ENVIRONMENTAL HEALTH)

8.1 Environmental Management

8.1.1 Submit to Council, a Construction Environment Management Plan (CEMP) which must include noise management measures during construction.

8.1.2 An unexpected finds policy (UFP) should be prepared and implemented for the proposed site redevelopment works.

8.1.3 All areas potentially/contaminated shall be remediated. Upon completion of remediation an appropriately qualified environmental consultant shall prepare a validation report. The validation report shall be carried out in accordance with;

- o NSW Environment Protection Authority's Guidelines for Consultants Reporting on Contaminated Sites (1997)
- o NSW Environment Protection Authority's Contaminated Sites Sampling Design Guidelines (1995).
- o Australian and New Zealand Environment and Conservation Council and National Health and Medical Research Council's Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (1992).

A NSW Environment Protection Authority accredited Site Auditor shall review the validation report and submit to Council a Site Audit Statement. The Site Audit Statement shall verify that the investigation, remediation and validation was carried out in accordance with the aforementioned guidelines and that the site is suitable for the proposed use.

8.1.4 The recommendations made in the Noise Impact Assessment (Ref: 210299), prepared by RWDI, dated 9 April 2021, be implemented.

8.1.5 The recommendations made in Addendum letter to Assess the Suitability of the Existing Preliminary Site Investigation for Lot 2 DP 1145808 (Ref: CES210202-9SP-AB), prepared by Consulting Earth Scientists, dated 1 April 2021 and Preliminary Investigation (Ref: CES161004-ECS-AU), prepared by Consulting Earth Scientists, dated 30 November 2017, to be implemented.

8.1.6 Submit to Council for approval, a detailed site investigation which has assessed the landfill gas risks posed by the nearby Eastern Creek Recycling and Ecology.

9 PRIOR TO COMMENCEMENT OF DEVELOPMENT WORKS

9.1 Safety/Health/Amenity

9.1.1 Toilet facilities shall be provided on the land at the rate of 1 toilet for every 20 persons or part thereof employed at the site.

Each toilet provided shall be:

(a) a standard flushing toilet, or

(b) a temporary on-site toilet which is regularly maintained and the waste disposed to an approved sewerage management facility.

9.1.2 A sign is to be erected and maintained in a prominent position on the site in accordance with Clause 98 A (2) of the Environmental Planning and Assessment Regulations 2000 indicating:

(a) the name, address and telephone number of the principal certifying authority for the work, and

(b) the name of the principal contractor (if any) for the building work and a telephone number on which that person may be contacted outside working hours, and

(c) stating that unauthorised entry to the work site is prohibited.

This condition does not apply to:

(a) building work carried out inside an existing building, or

(b) building work carried out on premises that are to be occupied continuously (both during and outside working hours) while the work is being carried out.

9.1.3 Should the development work:

(a) be likely to cause pedestrian or vehicular traffic in a public place to be obstructed or rendered inconvenient, or

(b) involve the enclosure of a public place,

a hoarding or protective barrier shall be erected between the work site and the public place. Such hoarding or barrier shall be designed and erected in accordance with Council's current Local Approvals Policy under the Local Government Act 1993.

Where necessary, an awning shall be erected, sufficient to prevent any substance from, or in connection with, the work falling into the public place.

The hoarding, awning or protective barrier shall be effectively illuminated between sunset and sunrise where it may be hazardous to any person in the public place.

9.1.4 Soil erosion and sediment control measures shall be provided in accordance with Council's Soil Erosion and Sediment Control Policy.

9.1.5 All soil erosion and sedimentation control measures indicated in the documentation accompanying the Construction Certificate shall be installed prior to the commencement of development works.

9.1.6 A single vehicle/plant access to the land shall be provided to minimise ground disturbance and transport of soil onto any public place. Such access shall be provided in accordance with the requirements of Appendix "F" of Council's Soil Erosion and Sediment Control Policy. Single sized 40mm or larger aggregate placed 150mm deep, and extending from the street kerb/road shoulder to the land shall be provided as a minimum.

9.1.7 Any excavation and/or backfilling associated with the development shall be executed safely and in accordance with appropriate professional standards, with any excavation properly guarded and protected to prevent such work being dangerous to life or property.

9.1.8 Should any excavation associated with the development extend below the level of the base of the footings of a building or any other structure on any adjoining allotment of land (including a public place), that building or structure:

(a) shall be preserved and protected from damage, and

(b) if necessary, shall be underpinned and supported in accordance with structural design details accompanying the Construction Certificate, and

(c) the owner(s) of which shall, at least 7 days before any such excavation or supporting work commences, be given notice of such intention and particulars of the excavation or supporting work.

9.2 Notification to Council

9.2.1 The person having the benefit of this consent shall, at least 2 days prior to work commencing on site, submit to Council a notice under Clauses 135 and 136 of the Environmental Planning and Assessment Regulation 2000, indicating details of the

appointed Principal Certifying Authority and the date construction work is proposed to commence.

9.3 Tree Protection

9.3.1 Any tree not approved for removal in the consent is to be effectively protected against damage.

9.4 Sydney Water Authorisation

9.4.1 Sydney Water Corporation's approval, in the form of appropriately stamped Construction Certificate plans, shall be obtained and furnished to the Principal Certifying Authority to verify that the development meets the Corporation's requirements concerning the relationship of the development to any water mains, sewers or stormwater channels.

OR

All approved building construction plans attached to the Construction Certificate should be submitted to Sydney Water Tap In, to determine whether the development will affect Sydney Water's sewer and water mains, stormwater drains and/or easements and if further requirements need to be met. The plans are to be appropriately stamped and all amended plans will require re-stamping. For further information go to: www.sydneywater.com.au, then follow the "Developing Your Land" link or telephone 1300 082 746 for assistance.

9.5 Natural Areas Requirements

9.5.1 Activities specified in the VMP that must be commenced prior to the commencement of any works, including fencing of the VMP area must be completed.

9.6 Transport for NSW requirements

9.6.1 Detailed design plans and hydraulic calculations of any changes to the stormwater drainage system are to be submitted to TfNSW for approval, prior to the commencement of any works. Please send all documentation to development.sydney@rms.nsw.gov.au.

A plan checking fee will be payable and a performance bond may be required before TfNSW approval is issued.

9.6.2 The developer is to submit design drawings and documents relating to the excavation of the site and support structures to TfNSW for assessment, in accordance with Technical Direction GTD2012/001.

The developer is to submit all documentation at least six (6) weeks prior to commencement of construction and is to meet the full cost of the assessment by TfNSW. Please send all documentation to development.sydney@rms.nsw.gov.au

If it is necessary to excavate below the level of the base of the footings of the adjoining roadways, the person acting on the consent shall ensure that the owner/s of the roadway is/are given at least seven (7) day notice of the intention to excavate below the base of the footings. The notice is to include complete details of the work.

10 DURING CONSTRUCTION (BUILDING)

10.1 Safety/Health/Amenity

10.1.1 The required toilet facilities shall be maintained on the land at the rate of 1 toilet for every 20 persons or part of 20 persons employed at the site.

10.1.2 A sign is to be erected and maintained in a prominent position on the site in accordance with Clause 98 A (2) of the Environmental Planning and Assessment Regulations 2000 indicating:

(a) the name, address and telephone number of the principal certifying authority for the work, and

(b) the name of the principal contractor (if any) for the building work and a telephone number on which that person may be contacted outside working hours, and

(c) stating that unauthorised entry to the work site is prohibited.

10.1.3 Should the development work:

(a) be likely to cause pedestrian or vehicular traffic in a public place to be obstructed or rendered inconvenient, or

(b) involve the enclosure of a public place,

the required hoarding, awning or protective barrier shall be maintained between the land and the public place.

The hoarding, awning or protective barrier shall be effectively illuminated between sunset and sunrise where it may be hazardous to persons in the public place.

10.1.4 Soil erosion and sediment control measures (including the connection of roofwater downpipes to stormwater drainage lines upon fixing of roof covering) shall be maintained during the development works.

10.1.5 All measures specified in the Construction Certificate to control soil erosion and sedimentation shall be maintained throughout development works.

10.1.6 A single vehicle/plant access to the land shall be maintained to minimise ground disturbance and transport of soil onto any public place. Such access shall be maintained in accordance with the requirements of Appendix "F" of Council's Soil Erosion and Sediment Control Policy. As a minimum, single sized 40mm or larger aggregate placed 150mm deep, and extending from the street kerb/road shoulder to the land shall be provided.

10.1.7 Any excavation and/or backfilling associated with the ongoing development works shall be executed safely and in accordance with appropriate professional standards, with any excavation properly guarded and protected to prevent them from being dangerous to life or property.

10.1.8 Should any excavation associated with the ongoing development works extend below the level of the base of the footings of a building or any other structure on any adjoining allotment of land (including a public place), that building or structure:

(a) shall be preserved and protected from damage, and

(b) if necessary, shall be underpinned and supported in accordance with structural design details accompanying the Construction Certificate, and

(c) the owner(s) of which shall, at least 7 days before any such excavation or supporting works be given notice of such intention and particulars of the excavation or supporting works.

10.1.9 Building and construction materials, plant, equipment and the like shall not to be placed or stored at any time on Council's footpath, roadway or any public place.

10.2 Building Code of Australia Compliance

10.2.1 All building work shall be carried out in accordance with the provisions of the Building Code of Australia.

10.3 Surveys

10.3.1 The building(s) shall be set out by a registered surveyor and a survey report lodged with the Principal Certifying Authority to verify the approved position of each structure in relation to the property boundaries.

10.3.2 A registered surveyor's report confirming the approved design ground and/or floor levels, shall be lodged with the Principal Certifier prior to work proceeding above floor level.

10.4 Nuisance Control

10.4.1 Any objectionable noise, dust, concussion, vibration or other emission from the development works shall not exceed the limit prescribed in the Protection of the Environment Operations Act 1997.

10.4.2 The hours of any offensive noise-generating development works shall be limited to between 7am to 6pm, Mondays to Fridays: 8am to 1pm, Saturdays; and no such work to be undertaken at any time on Sundays or public holidays.

10.5 Waste Control

10.5.1 The waste material sorting, storage and re-use requirements of the approved Waste Management Plan and Council's Site Waste Management and Minimisation Development Control Plan shall be implemented during the course of development works.

10.6 Construction Inspections

10.6.1 The person having the benefit of this consent is required to notify the Principal Contractor for the building construction project that various mandatory and critical stage inspections must be conducted by an accredited certifier, and may include inspections (where applicable):

(a) After excavation for, and prior to placement of, any footings; and

(b) Prior to pouring any in-situ reinforced concrete building element; and

(c) Prior to the covering of the framework for any floor, wall roof or other building element, and prior to covering waterproofing in any wet areas; and

(d) Prior to covering waterproofing in any wet areas (but for a minimum of 10% of rooms with wet areas in any class 2, 3 or 4 building); and

(e) Prior to covering any stormwater drainage connections; and

(f) After the building work has been completed and prior to any Occupation Certificate being issued in relation to the building.

The critical stage inspection "(f)" must be carried out by the Principal Certifier.

Any inspection conducted by an accredited certifier other than the nominated PC for the project must be verified by way of a Compliance Certificate issued for the relevant works.

Note: Failure to ensure the relevant inspections are conducted will preclude the issue of an Occupation Certificate.

10.7 Stormwater Drainage

10.7.1 Stormwater, surface water and sub-surface seepage (other than natural flows) shall be prevented from entering the building or being diverted onto any adjoining land (as applicable) by:

(a) the floor level being a minimum 225 mm above the adjoining finished ground level, and/or

(b) being drained to an effective drainage system.

(c) if draining to kerb use an approved kerb outlet and sewer grade PVC or RHS

10.8 Aboriginal Heritage

10.8.1 If, during the course of construction, the applicant or persons acting on this consent become aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the NSW Office of Environment & Heritage informed in accordance with Section 89A of the National Parks and Wildlife Act 1974. Relevant works shall not recommence until written authorisation from the NSW Office of Environment & Heritage is received by the Applicant. In addition, a member of each of the Western Sydney Aboriginal Stakeholder Groups is to be contacted.

11 DURING CONSTRUCTION (ENGINEERING)

11.1 Notification of Works

11.1.1 A written notification of works must be submitted to Council's Engineering Approvals Team prior to the commencement of any engineering works required by this consent. This must be submitted a minimum 5 business days prior to commencement of engineering works.

11.1.2 A notification of works flyer (letter drop) is to be provided to all residential housing, businesses and organisations adjacent to any engineering works approved by this consent. This is for works undertaken on Council controlled lands such as roads, drainage reserves and parks. The notification of works flyer must contain details of the proposed works, locality map of works, contact details and the anticipated time period. A signed copy of the notice is to be provided to Council's Engineering Approvals Team and is to show the date of the letter drop as well as highlight the area that received the notification.

11.2 Insurances

11.2.1 Current copies of relevant insurance Certificates of Currency are to be submitted to Council's Engineering Approvals Team. This shall be submitted prior to commencement of engineering works required by this consent that are carried out on Council controlled lands such as roads, drainage reserves and parks. This includes Public Liability Insurance with a minimum of $20,000,000 Indemnity and Workers Compensation.

11.3 Service Authority Approvals

11.3.1 Prior to the commencement for construction of footway crossings and driveways a clearance shall be obtained from the relevant telecommunications carriers and Endeavour Energy. The clearance shall notify that all necessary ducts have been provided under the proposed crossing.

11.4 Boundary Levels

11.4.1 Any construction at the property boundary, including but not limited to fences, retaining walls and driveways shall not be carried out until boundary alignment levels have been fixed.

11.5 Soil Erosion and Sediment Control Measures

11.5.1 Soil erosion and sediment control measures onsite shall be implemented, maintained and monitored in accordance with Council's Soil Erosion and Sediment Control Policy.

11.5.2 Re-vegetation and restoration of all disturbed areas as a result of the development works shall be completed as soon as practicable after the completion of earthworks and before the commencement of any other works on-site. The revegetated/restored areas must be established prior to the release of maintenance security/bonds. Note: All open drains must be turfed.

11.5.3 All required soil erosion and sedimentation control measures are to be maintained throughout the entire construction period and until all disturbed areas are restored to the satisfaction of Council in accordance with the design and construction specification. Infringement Notices incurring a monetary penalty may be issued by Council where the maintenance of measures is deemed inadequate.

11.6 Inspection of Engineering Works - Environmental Planning and Assessment Act 1979.

11.6.1 Comprehensive inspection compliance certificate(s) to be issued for all engineering works required by this consent and the approved construction certificate. The inspection compliance certificate(s) can only be issued by Council or an accredited certifier, under *Part 4A of the Environmental Planning and Assessment Act 1979* as amended. A schedule of mandatory inspections is listed in Council's Works Specification – Civil (current version).

Where Council is appointed as the Principal Certifying Authority for the development, compliance certificates issued by accredited certifiers in lieu of council inspections will only be accepted by prior agreement or by Council request. All compliance certificate(s) must certify that the relevant work has been completed in accordance with the pertinent Notice of Determination / Development Consent and Construction Certificate.

11.7 Inspection of Engineering Works - Roads Act 1993 or Local Government Act 1993

11.7.1 All inspection(s) required by this consent for any engineering works that are approved under the Roads Act 1993 or Local Government Act 1993 must be made by Council's Development Overseers.

11.7.2 Inspections must be pre-booked with a minimum 24 hours' notice. Councils Development Overseers may be contacted on 02 9839 6586 between 6 am – 7 am, Monday to Friday. Note: A site inspection is required prior to commencement of work. A schedule of mandatory inspections is listed in Council's Works Specification – Civil (current version).

11.8 Public Safety

11.8.1 The applicant is advised that all works undertaken are to be maintained in a safe condition at all times. Council may at any time and without prior notification make safe any such works Council considers to be unsafe and recover all reasonable costs incurred from the applicant.

11.9 Site Security

11.9.1 Chain wire gates and security fencing must be provided around the site in order to prevent unauthorised access and dumping of rubbish.

11.10 Traffic Control

11.10.1 Any "Traffic Control Plan" utilised for engineering works required by this consent must be prepared by a person who holds a current Roads and Maritime Services (RMS) Work Zone Traffic Management Plan accreditation and photo card for all works that are carried out in or adjacent to a public road. This Plan must satisfy all the requirements of AS 1742.3 - 2009.

11.10.2 Traffic control devices/facilities (i.e. barricades, signs, lights, etc.) required by the certified Traffic Control Plan must be setup, installed, monitored and maintained and by a person who holds a current Roads and Maritime Services (RMS) accreditation and photo card to implement Traffic Control Plans.

11.10.3 Persons undertaking the control of traffic through or around work sites on Council controlled roads must hold a current Roads and Maritime Services (RMS) Traffic Controller accreditation and photo card and carry it with them.

11.10.4 The applicant is advised that prior to implementation of any traffic control system and during the entire course of construction suitably qualified Roads and Maritime Services (RMS) accredited work site traffic controllers will ensure a smooth transition with other nearby traffic control setups. The coordination, communication and cohesion between adjacent traffic control systems shall be addressed by the applicant and must satisfy all the requirements of AS 1742.3 - 2009.

11.13.5 Where the Traffic Control Plan may change during the course of construction to facilitate new works, a revised traffic control plan shall be prepared and certified by a person who holds a current Roads and Maritime Services (RMS) accreditation to prepare a Work Zone Traffic Management Plan. This Plan must satisfy all the requirements of AS 1742.3 – 2009 and the current version of the RMS Traffic Control at Work Sites manual and shall be submitted to Council prior to implementation.

11.11 Other Matters - Drainage

11.11.1 The 200-micron Stormsacks and Spelfilter cartridges supplied by Spel, as detailed on the approved drainage plan, are not to be reduced in size or quantity, nor replaced with an alternate manufacturer's product.

11.11.2 A plumber licensed with NSW Fair Trading is to undertake flow testing of the non-potable water reuse system to certify that all the toilets and landscape watering are capable of being supplied by rainwater and that there is no cross mixing, or cross contamination with the potable water supply.

12 DURING CONSTRUCTION (ENVIRONMENTAL HEALTH)

12.1 Environmental Health Matters

12.1.1 Any asbestos material is to be handled and treated in accordance with the SafeWork NSW document "*Your Guide to Working With Asbestos - Safety guidelines and requirements for work involving asbestos*" dated March 2008.

12.1.2 The recommendations made in the Noise Impact Assessment (Ref: 210299), prepared by RWDI, dated 9 April 2021, be implemented.

13 DURING CONSTRUCTION (BIODIVERSITY)

13.1 Biodiversity Management

13.1.1 The Dam Dewatering Plan and Biodiversity Management Plan must be fully implemented. Any aspect of the Vegetation Management Plan that must be implemented during works must be completed.

14 PRIOR TO OCCUPATION CERTIFICATE

14.1 Road Damage

14.1.1 The cost of repairing any damage caused to Council's assets in the vicinity of the land as a result of the development works shall be met in full by the applicant/developer.

14.2 Compliance with Conditions

14.2.1 An Occupation Certificate shall not be issued until such time as all conditions of this consent, other than "Operational" conditions, have been satisfied. The use or occupation of the development prior to compliance with all conditions of consent, other

than “Operational” conditions, may render the applicant/developer liable to legal proceedings.

14.2.2 Prior to commencement of the occupation or use of the whole or any part of a new building, or commencement of a change of building use for the whole or any part of an existing building, it is necessary to obtain an Occupation Certificate from the Principal Certifier in accordance with the provisions of Section 6.9 of the Environmental Planning and Assessment Act 1979.

14.3 Temporary Facilities Removal

14.3.1 Any hoarding or similar barrier erected to protect a public place shall be removed from the land and/or public place.

14.3.2 Any temporary toilet facilities provided during construction works shall be appropriately dismantled, disconnected and removed from the land.

14.3.3 Any temporary soil erosion control measure installed during development works shall be removed and other permanent measures required by Council’s Soil Erosion Control Policy shall be provided.

14.3.4 Any temporary builder's sign or other site information sign shall be removed from the land.

14.3.5 Any temporary site access provided for the purpose of development works shall be removed and the kerb and gutter and/or previous roadworks reinstated in a manner satisfactory to Council. Should the reinstatement involve the provision of a new vehicular crossing, layback, kerb and gutter or road shoulder works the separate approval of Council's Maintenance Section shall be obtained (and any appropriate fees paid) prior to such works commencing.

14.4 Fire Safety Certificate

14.4.1 A final fire safety certificate complying with Clause 153 of the Environmental Planning and Assessment Regulation 2000 shall be issued prior to the use or change of use of the building, except in the case of any Class 1a and Class 10 building(s).

14.5 Fee Payment

14.5.1 Any fee payable to Council as part of a Construction, Compliance or Occupation Certificate or inspection associated with the development (including the registration of privately issued certificates) shall be paid in full.

14.6 Inspections

14.6.1 Any additional Council inspections beyond the scope of any Compliance Certificate package and needed to verify full compliance with the terms of this consent will be charged at the individual inspection rate nominated in Council's Fees and Charges Schedule.

14.7 Engineering Matters

14.7.1 **Surveys/Certificates/Works As Executed plans**

14.7.1.1 A Work-as-Executed (WAE) plan signed by a Registered Engineer (NER) or a Registered Surveyor must be submitted to Council when the engineering works are completed. A colour soft copy (on a CD/USB with file format .PDF) of the WAE plans are to be submitted to Council. All engineering WAE plans MUST be prepared on a copy of the original, stamped Construction Certificate plans for engineering works.

14.7.1.2 The Work-as-Executed (WAE) plan must confirm that the On Site Detention system identification plate has been installed in accordance with the Upper Parramatta River Catchment Trust Guidelines.

14.7.1.2 A certificate from a Registered Surveyor must be obtained and submitted to Council verifying that all finished floor levels (FFL) required by this consent have been achieved. The certificate must acknowledge that works and the construction of the floors have been completed. All levels must be to Australian Height Datum (AHD).

14.7.1.3 A certificate from a Registered Surveyor must be obtained and submitted to Council verifying that all finished surface levels (FSL) for lot(s) required by this consent have been achieved and/or have been maintained in accordance with those established at the time of creation of the lot. The certificate must acknowledge that works have been complete. All levels must be to Australian Height Datum (AHD).

14.7.1.5 A certificate from a Registered Engineer (NER) must be obtained and submitted to Council verifying that the On-Site Detention System as constructed will perform to meet the on-site stormwater detention requirements in accordance with the approved design plans.

14.7.1.6 A certificate from a Registered Engineer (NER) must be lodged with Council verifying that the structures associated with the On-Site Detention System(s) have been constructed to withstand all loads likely to be imposed on them during their lifetime.

14.7.1.7 A Certificate from a Registered Engineer (NER) must be lodged with Council verifying that pier and beam style construction was used adjacent to the easement to the depth of the invert of the pipeline.

14.7.1.8 A Certificate shall be submitted by a Registered Surveyor indicating that all pipelines and associated structures lie wholly within any easements required by this consent.

14.7.1.9 A certificate from a Registered Engineer (NER) must be obtained and submitted to Council verifying that the constructed Stormwater Quality Control system will function effectively in accordance with Blacktown Council's DCP Part J – Water Sensitive Urban Design and Integrated Water Cycle Management.

14.7.1.10 This development requires separate approvals under the Roads Act 1993 and / or Local Government Act 1993. Prior to the issue of an Occupation Certificate, the applicant must obtain written confirmation from Council that these works have been completed to its satisfaction.

14.8 Easements/Restrictions/Positive Covenants

14.8.1 Any covenant(s) easement(s) or restriction(s) required by this consent must nominate Blacktown City Council as the authority to release, vary or modify the easement(s) or restriction(s). The form of easement or restriction created as a result of this consent must be in accordance with the following:

- Blacktown City Council's standard recitals for Terms of Easements and Restrictions (Current Version).
- The standard format for covenants, easements and restrictions as accepted by the Land Registry Services (LRS).

14.8.2 Restrictions and/ or positive covenant must be endorsed by Council and lodged with NSW Land Registry Services (LRS) over the overland flow-path.

14.8.3 Restrictions and positive covenants must be endorsed by Council and lodged with NSW Land Registry Services (LRS) over the on-site detention storage areas and outlet works.

14.8.4 An easement in gross for emergency access is to be created on the title of Lot 2 DP1145808 benefitting Council and the public to allow emergency access to and from Kangaroo Avenue through Lot 1 and 2 DP1145808 out to Honeycomb Drive in the event of an emergency.

14.8.5 A Right of Carriageway is to be registered pursuant to S88E of Conveyancing Act 1919 on the title of Lot 1 DP1145808 and Lot 2 DP1247691 benefitting the subject land, Council and the public for the entire length of the emergency egress route.

14.8.6 Prior to issuing of an Occupation Certificate under this consent, a Restriction as to User as referred to in section 88B of the Conveyancing Act 1919, specifying Blacktown City Council as having the sole responsibility to vary or modify the Restriction must be registered and recorded on the title of Lot 2 DP 1145808 in the following terms:

- The land within the area covered by the VMP on Lot 2 DP 1145808 Kangaroo Avenue Eastern Creek must be protected and maintained as a conservation area in perpetuity by the registered proprietor and the registered proprietor must ensure that:
  - Any activity carried out on the land does not damage or otherwise have an adverse effect on the ecological, scientific, cultural or aesthetic values of the land.

14.8.7 Prior to issuing of an Occupation Certificate under this consent, a Public Positive Covenant referred to in section 88E of the Conveyancing Act 1919, specifying Blacktown City Council as having the sole responsibility to vary or modify the Restriction and being the prescribed authority that is imposing the public positive covenant must be registered and recorded on the title of Lot 2 DP 1145808 Kangaroo Avenue Eastern Creek in the following terms:

- The land within the area covered by the VMP on Lot 2 DP 1145808 must be managed in accordance with the VMP for the life of the development.
- The vegetation condition of the vegetation in the area covered by this covenant, following the implementation phase of the VMP must be maintained.
- Biosecurity matters on the land are continually supressed and destroyed so that they do not exceed at any time a density of more than 10% in any 1,000 m² area; and
- Nesting boxes and artificial hollows that are installed on the land are maintained and replaced as needed to ensure that the density specified in the VMP are maintained for the life of the development.

14.9 Drainage Engineering Matters

14.9.1 A Chartered Civil Engineer registered with NER, is to certify that:

i. the total combined minimum volume of 2040 m³ has been provided below the 1.5 year ARI overflow weir;

ii. the total combined minimum volume of 3094 m³ has been provided below the 100 year ARI emergency overflow weir as per the approved construction certificate plans;

iii. the orifice sizes match the approved construction certificate plans;

iv. A minimum 240KL rainwater tank has been provided collecting roof water from a minimum 11,000 m² of roof area;

v. That all grated surface inlet pits that drain to the Stormfilters are fitted with OceanGuards (excluding the detention tank access grates).

vi. The wetland has been constructed in accordance with the approved plans.

vii. the interpretative water quality sign has been correctly installed;

viii. all other signage and warning notices have been installed;

ix. all the other requirements of the approved drainage plan have been undertaken.

14.9.2 Ocean Protect is to certify for the installation of the 200micron OceanGuards and Stormfilters that:

a. They are installed in accordance with the Ocean Protect standard operational guidelines and production drawings;

b. A combined minimum of thirty-six 200micron OceanGuards have been installed;

c. The Stormfilter tanks include a baffle, a minimum of 400 mm below the Stormfilter weir and set 250 mm upstream from the weir to retain floatables for the 690 mm cartridges;

d. The combined Stormfilter weir length is a minimum of 11 m;

e. A combined minimum of 130 x 690 Stormfilters have been installed;

f. Metal mosquito proof screens have been provided over all grated accesses into the Stormfilter tank;

g. Energy dissipaters have been provided on all the inlets to the Stormfilter chambers.

h. A maintenance contract has been entered into for the replacement of the Stormfilter cartridges.

14.9.3 A plumber licensed with NSW Fair Trading, or experienced hydraulic engineer, is to certify that:

i. All the non-potable water uses are being supplied by rainwater;

ii. All the requirements of the detailed Non-Potable Water Supply Plan have been installed to the required locations including discharge to the wetland.

iii. The flow meters have been installed on the pump outflow to the toilets and irrigation and the solenoid-controlled mains water bypass for each pump to determine non-potable usage and actual percentage of reuse;

iv. The initial flow meter readings are detailed in the certificate;

v. The pumps, alarms and all other systems are working correctly;

vi. No waterless urinals have been used.

vii. The water from at least ten toilets and five wash down taps have been tested to show no chlorine residual.

viii. the wash down taps are connected to the rainwater tank around the accessible building perimeter at approximately 50 m intervals.

ix. Rainwater warning signs are fitted to all external taps using rainwater.

x. A signed, works-as-executed Non-Potable Water Supply Plan has been provided to Council's WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au

14.9.4 An experienced irrigation specialist, is to certify that:

i. All the non-potable landscape water uses are being supplied by rainwater;

ii. All the requirements of the detailed Landscape Watering Plan have been installed to the required locations.

iii. The automatic timer has been set up for time and frequency to deliver 1700 kl/year on average and the system has been design will adjust for a 50% increase in rate in summer and half the rate in winter.

iv. The pumps, alarms and all other systems are working correctly; and

v. The water from at least three sample points for the landscape watering system have been tested to show no chlorine residual.

vi. Rainwater warning signs are fitted to all external taps using rainwater.

vii. A signed, works-as-executed Landscape Watering Plan has been provided to Council's WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au

14.9.5 A plumber licensed with NSW Fair Trading is to certify that the buildings, or parts of buildings that are not affected by BASIX, comply with the minimum standards defined by the Water Efficiency Labelling and Standards (WELS) Scheme for any water use fittings. Minimum WELS ratings are:

i. 4 star dual-flush toilets;

ii. 3 star showerheads;

iii. 5 star taps (for all taps other than bath outlets and garden taps);

iv. 3 star urinals; and

v. 3 star Water efficient washing machines and dishwashers have been used.

14.9.6 Provide details for permanent coloured interpretive signage minimum A0 size to be installed to highlight the water quality improvement process, together with the wetland and conservation areas. The sign is to incorporate a simplified drainage layout of the site and detail through words and pictures all the different water quality devices including the rainwater tank and explain the benefit to the site and community generally in accordance with section 14 of the WSUD developer handbook 2020. Locate the sign in a prominent location. Sign to be approved by Council. Contact WSUD@blacktown.nsw.gov.au.

14.9.7 Prior to the issue of the Occupation certificate, the applicant shall provide a Positive covenant and Restriction on the use of land over the WSUD systems installed on the property. The Positive covenant and Restriction on the use of land is to be accordance with Appendix F of Council's Engineering Guide for Development. The Positive covenant and Restriction on the use of land is to be endorsed by Council and lodged with New South Wales Land Registry Services. The applicant shall submit documentary evidence of the lodgement and execution of the Positive covenant and Restriction on the use of land to Council prior to the issue of the final Occupation certificate.

14.9.8 Provide a minimum 4 m right-of-way from the cul-de-sac end of Kangaroo Avenue with access for 24 hours a day 7 days a week to a safe legal access point at Kangaroo Avenue or Honeycomb Drive in an emergency. The right-of-way to be in favour of 6/1200048, 5/1200048, 4/1177982 and 3/1189504. Details to be provided to Council for agreed wording for access only in emergency egress situations and how this can be accessed and regulated while maintain security of site. The right-of-way in must be registered with NSW Land Registry Services.

14.10 Service Authorities

14.10.1 The following documentary evidence shall be obtained and forwarded to the Principal Certifying Authority prior to the release of any Occupation Certificate:

(a) A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained. Applications must be made through an authorised Water Servicing Coordinator. Please refer to the "Building Plumbing and Developing" Section of the website www.sydneywater.com.au, then follow the "Developing Your Land" link or telephone 13 20 92 for assistance. Following application a "Notice of Requirements" will advise of water and sewer extensions to be built and charges to be paid. Please make early contact with the Coordinator since building of water/sewer extensions can be time consuming and may impact on other services

and building, driveway or landscape design. A copy of Sydney Water's Notice of Requirements must be submitted to the Principal Certifying Authority prior to the Construction Certificate being issued. The Section 73 Certificate must be submitted to the Principal Certifying Authority prior to the occupation of the development/release of the plan of subdivision, whichever occurs first.

(b) A “Notification of Arrangement" Certificate from energy provider, or any other recognised energy provider, stating that arrangements have been made with the servicing authority for electrical services, including the provision of street lighting, to the development.

(c) A written clearance from Telstra or any other recognised communication carrier, stating that services have been made available to the development or that arrangements have been made for the provision of services to the development.

14.10.2 A final written clearance shall be obtained from Sydney Water Corporation, Energy provider and Telstra (or any other recognised communication carrier) if such clearance (in the form of a Section 73 Certificate, Notification of Arrangement, etc.) has not previously been issued.

14.10.3 The applicant shall obtain a Trade Waste Approval from the Sydney Water Corporation Limited in relation to any discharges to the Corporation's sewerage system.

14.11 Landscaping/Car Parking

14.11.1 A minimum of 281 car parking spaces are to be provided on site, including 6 accessible and 52 provisional car parking spaces. A minimum of 229 parking spaces are to be permanently line marked.

14.11.2 All car parking spaces are to be designed in accordance with Australian Standard 2890.1-2004 and 2890.2 – 2002.

14.11.3 All required internal driveways and car parking spaces shall be line-marked, sealed with a hard standing, all-weather material to a standard suitable for the intended purpose.

14.11.4 Off-street car parking shall be encouraged by the installation of appropriate, permanent and prominent signs indicating its availability.

14.11.5 All landscaping shall be completed in accordance with the final approved landscape plan and shall be maintained at all times to the satisfaction of the Principal Certifying Authority.

14.11.6 The car parks, all open space areas, the pedestrian footpath areas and internal driveways shall be appropriately illuminated by the use of bollard lighting or the like to provide for the safety and convenience of occupants and other people resorting to the land at night.

14.11.7 All vehicular entrance / exit points are to be clearly signposted and visible from the street and the site at all times. The signage shall distinguish which driveways are for truck entry and those for car entry.

14.11.8 Access and parking for people with disabilities shall be provided in accordance with Australian Standard 2890.1.

14.11.9 All boundary fencing is to be erected, being 1.8m high, black powder-coated metal ‘diplomat’ style fencing to boundaries facing roads and 1.8m high black PVC wire fencing to the remaining perimeter fencing as required under condition 9.4.4.

14.11.10 All fencing and retaining walls shall be completed in accordance with the approved details submitted as part of the Construction Certificate. All fencing/retaining work must be provided at full cost to the developer. All fencing is to be constructed on top of any retaining walls. The selected fencing material/design must also

minimise/eliminate the potential for graffiti attacks. Where possible, foliage should be grown on/over fencing adjacent to public areas to minimise any potential for graffiti.

14.11.11 The entry and exit driveways are to be clearly signposted ‘entry’ and ‘exit’ accordingly.

14.11.12 The emergency access private road is to be sign posted with directional signage to assist users to navigate the access to and from the subject site and Honeycomb Drive.

14.12 Other Matters

14.12.1 Retaining wall(s) and/or other effective methods to retain excavated or filled ground (other than those sites works which may be Exempt Development under an Environmental Planning Instrument), together with any associated groundwater drainage system, shall be constructed and/or provided in accordance with the plans attached to the Construction Certificate.

14.12.2 Prior to the issue of the Occupation certificate, the applicant shall submit to Council’s WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au documentation that identifies the correct locations, types, models, and model numbers of assets that form the WSUD system installed on the property. The documentation is to include the final version of the Stormwater management report and certified and signed stormwater Works-as-executed plans. Note this assessment noted on-site stormwater detention, wetland, rainwater tank, Stormfilters and OceanGuards. Subject to the deferred commencement requirements other elements may include ponds, stormwater first flush storage and pumping or other agreed strategies.

14.12.3 Prior to the issue of the Occupation certificate, the Applicant shall provide a Maintenance schedule for the WSUD systems installed on the property. The Maintenance schedule is to be prepared in accordance with the Maintenance schedule template and WSUD inspection and maintenance guidelines available on Council’s website. The Applicant shall submit the Maintenance schedule to Council’s WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au for approval

14.12.4 The registered owner/lessee shall enter into a Maintenance Agreement with a maintenance contractor for the WSUD system installed on the property. The Maintenance Agreement is to be in accordance with the Maintenance schedule approved by Council. The maintenance contractor is to possess the qualifications and licences, if any, required to undertake the maintenance works in accordance with Council and New South Wales policy and legislation. The Stormfilter cartridge replacements must be provide by Ocean Protect. The Maintenance Agreement must be maintained for the life of the development. The Applicant shall submit a copy of the executed Maintenance agreement to Council for approval. The Maintenance Agreement can be replaced with an alternative Maintenance Agreement of the same or better standard. In the event that the Applicant enters into a replacement Maintenance Agreement the Applicant must, as soon as practically possible, forward a copy to Council’s WSUD Compliance Officer at WSUD@blacktown.nsw.gov.au

14.13 Site Access

14.13.1 There shall be no direct vehicular or pedestrian access to and/or from the following nominated road(s) for any lot/lots having frontage to that road. An appropriate restriction on the use of land shall be created under Section 88B of the Conveyancing Act 1919 covering this requirement. The Section 88B Instrument shall contain a provision that it may not be extinguished or altered except with the consent of Blacktown City Council.

Nominated Road(s): M4 Western Motorway

15 OPERATIONAL (PLANNING)

15.1 Access/Parking

15.1.1 All required off-street car parking spaces and internal roads shall be maintained to a standard suitable for the intended purpose.

15.1.2 A minimum of 281 car parking spaces are to be provided on site, including 6 accessible and 52 provisional car parking spaces. A minimum of 229 parking spaces are to be permanently line marked.

15.1.3 All loading and unloading operations shall take place at all times wholly within the confines of the land within the designated loading areas. Loading and unloading operations are not to obstruct internal driveways or car parking spaces at any time.

15.1.4 Access and parking for people with disabilities shall be maintained in accordance with provisions of Australian Standards 1428.1 and 2890.1.

15.1.5 All vehicles are to enter and leave the site in a forward direction.

15.1.6 All vehicles are to be wholly contained on site before being required to stop.

15.2 General

15.2.1 No goods or materials shall be stored, displayed for sale or manufactured at any time outside the building.

15.2.2 Spillage of light, if any, shall be controlled so as not to cause nuisance to the amenity of adjoining land.

15.2.3 Should an intruder alarm be installed on the land it shall be fitted with a timing device in accordance with the requirements of the Protection of the Environment Operations Act 1997.

15.2.4 Emission of sound from the land shall be controlled at all times so as to not unreasonably impact upon nearby owners/occupants.

15.2.5 No goods, materials or trade wastes are to be stored at any time outside the building on either the internal vehicular driveway, car parking area, landscaping or footpath, other than in approved garbage receptacles.

15.2.6 No approval is given in this consent for the storage of any hazardous or dangerous goods above the threshold quantities set in State Environmental Planning Policy 33.

15.2.7 The carpark and manoeuvring areas are to be kept free of any storage materials and other items so they are freely available for their approved purpose of parking and vehicle manoeuvring.

15.3 Use of Premises

15.3.1 The use of the approved development shall, at all times, be conducted in a manner consistent with the terms and conditions of this consent.

15.3.2 The development shall not be used or converted for use for any purpose other than that:

(a) Granted consent by Council's Notice of Determination, or

(b) Which is "Exempt Development" or "Complying Development" under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 or other NSW or Council planning instrument.

15.4 Emergency Procedures

15.4.1 Instructions concerning procedures to be adopted in the event of an emergency shall be clearly displayed on the premises for both public and staff information at all times to the satisfaction of Council.

15.5 Landscaping

15.5.1 All landscaped areas provided in accordance with the approved landscape plan and shall be maintained at all times in a suitable manner.

15.6 Operating Hours

15.6.1 The use of premises is permitted to operate 24 hours a day, 7 days a week.

15.7 Signage

15.7.1 The approved signage must not have or incorporate any of the following:

(a) flashing lights:

(b) electronically changeable or variable messages:

(c) animated displays, moving parts of simulated movements:

(d) complex displays that hold motorists attention;

(e) a method or level of illumination that distracts or dazzles;

(f) displays resembling or imitating road traffic signs or signals;

(g) instructions to passing traffic (i.e. 'Halt', 'Stop' or the like); or

(h) glossy paints or luminous colours

15.7.2 At no time shall any signage approved as part of this consent be used for general advertising purposes.

16 OPERATIONAL (ENVIRONMENTAL HEALTH)

16.1 Environmental Health Matters

16.1.1 No contaminated waste water or liquid waste shall be discharged into Council's stormwater system.

16.1.2 Upon receipt of a justified complaint in relation to noise pollution emanating from the premises, an acoustical assessment is to be carried out in accordance with the requirements of the Department of Environment and Conservation's Environmental Noise Management - NSW Industrial Noise Policy and provide recommendations to mitigate the emission of offensive noise from the premises. The report shall be prepared by an appropriately qualified acoustic consultant that is a member of the Association of Australian Acoustic Consultants and shall be submitted to Council for consideration.

16.1.3 All gases, odours, fumes, steam, moisture and particulate matter generated by the use of these premises shall be collected and discharged in accordance with the requirements of the Protection of the Environment Operations Act 1997.

16.1.4 A Trade Waste Agreement shall be obtained from Sydney Water prior to the discharge of trade wastewater to the sewer system.

16.1.5 Any activity carried out in accordance with this approval shall not give rise to air pollution (including odour), offensive noise or pollution of land and/or water as defined by the Protection of the Environment Operations Act 1997.

16.1.6 All waste generated on the site is to be stored, handled and disposed of in such a manner as to not create air pollution (including odour), offensive noise or pollution of land and/or water as defined by the Protection of the Environment Operations Act 1997.

16.1.7 In accordance with the requirements of Part 5.7 Protection of the Environment Operations Act 1997, Council is to be informed of any pollution incident that occurs in

the course of carrying out the approved activity where material harm to the environment is caused or threatened.

17 OPERATIONAL (BIODIVERSITY)

17.1 Implementation of the Vegetation Management Plan

17.1.1 The Vegetation Management Plan (VMP) must be fully implemented for the life of the development. Prior to the 30th June each year, submit an annual VMP progress report for no less than five years, or until restoration performance targets (Vegetation Integrity Scores or other benchmarks) are reached. If after year five the performance targets are not reached, an alternative mitigation strategy must be agreed with Council's Ecologist.

17.1.2 Fencing established under the VMP must be maintained in good order for the life of the development.

17.1.3 After the performance targets identified in the VMP are reached, weed densities must not exceed 10% in any 1000m² area, while nesting boxes and/ or artificial hollows are maintained.

ANNEXURE A

Sydney Water letter dated 6 April 2022

6 April 2022

Jared Spies
Senior Town Planner
Blacktown City Council
PO Box 63, Blacktown NSW 2148
jared.spies@blacktown.nsw.gov.au

RE: Development Application SPP-21-00007 at Kangaroo Avenue, Eastern Creek

Thank you for notifying Sydney Water of SPP-21-00007 at Kangaroo Avenue, Eastern Creek (12/-/DP1145808), which proposes a 40,730m^2 warehouse and distribution facility. Sydney Water has reviewed the application based on the information supplied and provides the following comments to assist in planning the servicing needs of the proposed development.

Water Servicing

- Potable water servicing should be available via a 250mm uPVC watermain (laid in 2014) along Kangaroo Avenue.

Wastewater Servicing

- Wastewater servicing should be available via a 225mm PP wastewater main (laid in 2012) along Kangaroo Avenue.
- Extensions or adjustments to the wastewater network may be required complying with the Water Services Association of Australia (WSAA) code – Sydney Water edition.

This advice is not formal approval of our servicing requirements. Detailed requirements, including any potential extensions or amplifications, will be provided once the development is referred to Sydney Water for a Section 73 application. More information about the Section 73 application process is available on our web page in the Land Development Manual.

Further advice and requirements for this proposal are in Attachments 1 & 2. If you require any further information, please contact Thomas Mudgway, Senior Development Consultant in the Growth Planning team, via urbangrowth@sydneywater.com.au.

Yours sincerely,

Kristine Leitch
Commercial Growth Manager
City Growth and Development, Business Development Group
Sydney Water, 1 Smith Street, Parramatta NSW 2150

Attachment 1

Section 73 Compliance Certificate

A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained from Sydney Water.

The proponent is advised to make an early application for the certificate, as there may be water and wastewater pipes to be built that can take some time. This can also impact on other services and buildings, driveways or landscape designs.

Applications must be made through an authorised Water Servicing Coordinator. For help either visit www.sydneywater.com.au > Plumbing, building and developing > Developing > Land development or telephone 13 20 92.

Building Plan Approval

The approved plans must be submitted to the Sydney Water Tap in™ online service to determine whether the development will affect any Sydney Water sewer or water main, stormwater drains and/or easement, and if further requirements need to be met.

The Tap in™ service provides 24/7 access to a range of services, including:

- building plan approvals
- connection and disconnection approvals
- diagrams
- trade waste approvals
- pressure information
- water meter installations
- pressure boosting and pump approvals
- changes to an existing service or asset, e.g. relocating or moving an asset.

Sydney Water's Tap in™ online service is available at: https://www.sydneywater.com.au/SW/plumbing-building-developing/building/sydney-water-tap-in/index.htm

Sydney Water recommends developers apply for Building Plan approval early as in some instances the initial assessment will identify that an Out of Scope Building Plan Approval will be required.

Out of Scope Building Plan Approval

Sydney Water will need to undertake a detailed review of building plans:

1. That affect or are likely to affect any of the following:
   - Wastewater pipes larger than 300mm in size
   - Pressure wastewater pipes
   - Drinking water or recycled water pipes
   - Our property boundary
   - An easement in our favour
   - Stormwater infrastructure within 10m of the property boundary.

2. Where the building plan includes:
   - Construction of a retaining wall over, or within the zone of influence of our assets
   - Excavation of a basement or building over, or adjacent to, one of our assets
   - Dewatering – removing water from solid material or soil.

The detailed review is to ensure that:

- our assets will not be damaged during, or because of the construction of the development
- we can access our assets for operation and maintenance
- your building will be protected if we need to work on our assets in the future.

The developer will be required to pay Sydney Water for the costs associated with the detailed review.

Tree Planting

Certain tree species placed in close proximity to Sydney Water's underground assets have the potential to inflict damage through invasive root penetration and soil destabilisation. Sydney Water requires that all proposed or removed trees and vegetation included within the proposal adhere to the specifications and requirements within Section 46 of the Sydney Water Act (1994) and *Diagram 5 – Planting Trees* within our Technical guidelines – Building over and adjacent to pipe assets. Please note these guidelines include more examples of potential activities impacting our assets which may also apply to your development.

If any tree planting proposed breaches our policy, Sydney Water may need to issue an order to remove every tree breaching the act, or directly remove every tree breaching the Act and bill the developer or Council for their removal.

Attachment 2

Requirements for **Business Customers for Commercial and Industrial Property Developments.**

Trade Wastewater Requirements

If this development is going to generate trade wastewater, the property owner must submit an application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. You must obtain Sydney Water approval for this permit before any business activities can commence. It is illegal to discharge Trade Wastewater into the Sydney Water sewerage system without permission.

The permit application should be emailed to Sydney Water's Business Customer Services at businesscustomers@sydneywater.com.au

A Boundary Trap is required for all developments that discharge trade wastewater where arrestors and special units are installed for trade wastewater pre-treatment.

If the property development is for Industrial operations, the wastewater may discharge into a sewerage area that is subject to wastewater reuse. Find out from Business Customer Services if this is applicable to your development.

Backflow Prevention Requirements

Backflow is when there is unintentional flow of water in the wrong direction from a potentially polluted source into the drinking water supply.

All properties connected to Sydney Water's supply must install a testable Backflow Prevention Containment Device appropriate to the property's hazard rating. Property with a high or medium hazard rating must have the backflow prevention containment device tested annually. Properties identified as having a low hazard rating must install a non-testable device, as a minimum.

Separate hydrant and sprinkler fire services on non-residential properties, require the installation of a testable double check detector assembly. The device is to be located at the boundary of the property.

Before you install a backflow prevention device:

1. Get your hydraulic consultant or plumber to check the available water pressure versus the property's required pressure and flow requirements.
2. Conduct a site assessment to confirm the hazard rating of the property and its services. Contact PIAS at NSW Fair Trading on 1300 889 099.

For installation you will need to engage a licensed plumber with backflow accreditation who can be found on the Sydney Water website:
https://www.sydneywater.com.au/plumbing-building-developing/plumbing/backflow-prevention.html

Water Efficiency Recommendations

Water is our most precious resource and every customer can play a role in its conservation. By working together with Sydney Water, business customers are able to reduce their water consumption. This will help your business save money, improve productivity and protect the environment.

Some water efficiency measures that can be easily implemented in your business are:

- Install water efficiency fixtures to help increase your water efficiency, refer to WELS (Water Efficiency Labelling and Standards (WELS) Scheme, http://www.waterrating.gov.au/
- Consider installing rainwater tanks to capture rainwater runoff, and reusing it, where cost effective. Refer to https://www.sydneywater.com.au/your-business/managing-your-water-use/water-efficiency-tips.html
- Install water-monitoring devices on your meter to identify water usage patterns and leaks.
- Develop a water efficiency plan for your business.

It is cheaper to install water efficiency appliances while you are developing than retrofitting them later.

Contingency Plan Recommendations

Under Sydney Water's customer contract Sydney Water aims to provide Business Customers with a continuous supply of clean water at a minimum pressure of 15meters head at the main tap. This is equivalent to 146.8kpa or 21.29psi to meet reasonable business usage needs.

Sometimes Sydney Water may need to interrupt, postpone or limit the supply of water services to your property for maintenance or other reasons. These interruptions can be planned or unplanned.

Water supply is critical to some businesses and Sydney Water will treat vulnerable customers, such as hospitals, as a high priority.

Have you thought about a contingency plan for your business? Your Business Customer Representative will help you to develop a plan that is tailored to your business and minimises productivity losses in the event of a water service disruption.

For further information please visit the Sydney Water website at: https://www.sydneywater.com.au/your-business/managing-trade-wastewater/commercial-trade-wastewater.html or contact Business Customer Services on 1300 985 227 or businesscustomers@sydneywater.com.au.

ANNEXURE B

Endeavour Energy standard conditions for development applications dated December 2021

Endeavour Energy

Standard Conditions for Development Applications and Planning Proposals

Version 2

Standard Conditions for Submissions to Concurrences and Referrals from Local Government

Prepared by: Sustainability & Environment

December 2021

Endeavour Energy

CONTENTS

PURPOSE

The following Standard Conditions are provided to local government based on Endeavour Energy's experience with significant development applications and planning proposals. It provides an overview of Endeavour Energy believes are the issues affecting the electricity distribution network that need to be considered by councils in determining and conditioning consents.

These Standard Conditions should be referred to for advice about:

- Development Application Referral to Endeavour Energy required under *State Environmental Planning Policy (Infrastructure) 2007* (NSW), Division 5 'Electricity transmission or distribution', Subdivision 2 'Development likely to affect an electricity transmission or distribution network', Clause 45 'Determination of development applications—other development'.

45 Determination of development applications—other development

(1) This clause applies to a development application (or an application for modification of a consent) for development comprising or involving any of the following—

(a) the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower,

(b) development carried out—

(i) within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or

(ii) immediately adjacent to an electricity substation, or

(iii) within 5m of an exposed overhead electricity power line,

(c) installation of a swimming pool any part of which is—

(i) within 30m of a structure supporting an overhead electricity transmission line, measured horizontally from the top of the pool to the bottom of the structure at ground level, or

(ii) within 5m of an overhead electricity power line, measured vertically upwards from the top of the pool,

(d) development involving or requiring the placement of power lines underground, unless an agreement with respect to the placement underground of power lines is in force between the electricity supply authority and the council for the land concerned.

(2) Before determining a development application (or an application for modification of a consent) for development to which this clause applies, the consent authority must—

(a) give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks, and

(b) take into consideration any response to the notice that is received within 21 days after the notice is given.

- *Environmental Planning and Assessment Act 1979* (NSW) requires Councils:
    - in the forming of development standards have regard to requirements or standards in respect of the provision of services, facilities and amenities demanded by development; and
    - advise adjoining and nearby occupiers/owners of proposals lodged with Council , in the Council's opinion, the enjoyment of the adjoining or neighbouring land may be detrimentally affected.

It is not intended as an exhaustive list of matters for consideration. Further advice is available via:

- Endeavour Energy's website http://www.endeavourenergy.com.au .

  The website contains information for customers as well as in relation to the electricity distribution network and electrical safety.

- **General enquiries**

  Call: 133 718 (Monday to Friday - 8am to 6pm)
  Or use the email enquiry form available via the following link:

  https://www.endeavourenergy.com.au/search?query=enquiry+form .

1 Adjoining Sites

Endeavour Energy has a freehold property portfolio made up of network property required for the supply of electricity ie. for major assets such as transmission substations, zone substations and switching stations where security of tenure is paramount. It also holds non-network property which is not directly required for the supply of electricity but needed to provide accommodation for support services, ie. field service centres (FSC), offices, pole yards and telecommunication sites.

Endeavour Energy's network properties being non-habitable buildings / sites are less sensitive and comparatively less impacted by development of adjoining or nearby properties. Accordingly, as an adjoining or nearby owners and occupiers, where compatible development is proposed Endeavour Energy generally leaves the determination in regards to the environmental impact and the appropriate development controls to Council. The responses to Development Applications and Planning Proposals are therefore more focused on Endeavour Energy's role as an electricity supply authority.

Endeavour Energy's non-network sites are managed by the company in order to provide an environment that is liveable, sustainable and productive. In order to fully support the core objectives of the company, any development of adjoining or nearby properties which will have a detrimental effect on the foregoing objectives will be opposed by Endeavour Energy. The majority of the non-network sites are field service centres being essentially an industrial use are also comparatively less impacted but conversely may impact on the adjoining or nearby development.

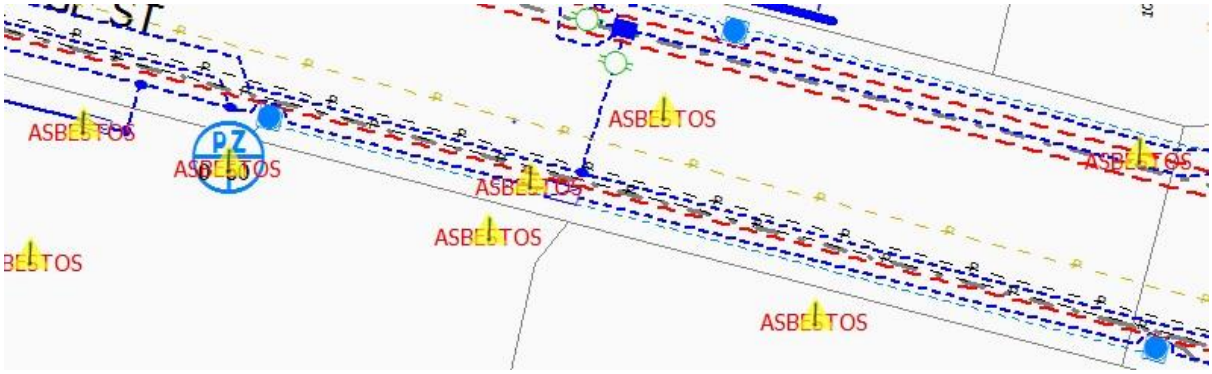
Endeavour Energy is generally opposed to any sensitive development in close vicinity of its properties which could potentially to limit its ongoing operations from the site. As the electricity network is operational 24/7/365 ie. all day, every day of the year (please refer to the below point 'Prudent Avoidance'), likewise so potentially are the FSCs.

Accordingly there is noise, vehicle emissions, light glare etc. associated with the FSC operations which are not compatible to having nearby sensitive uses eg. traffic or persons accessing or working on the site during emergencies at night etc. Endeavour Energy's experience is that despite being a long standing existing use, when surrounding areas are subsequently redeveloped, the new occupants (sometimes supported by councils) seek to restrict the ongoing use of its sites. Given the essential nature of Endeavour Energy's operations such a situation arising is unacceptable. Endeavour Energy is not responsible for any amelioration measures for any emissions that may impact on the nearby proposed development.

Endeavour Energy's Parramatta Field Service Centre located at 84-86 Macarthur Street North Parramatta has had operational issues due to the later adjoining medium density residential development. Source: Google Maps Street View.

2 Asbestos

Endeavour Energy's G/Net master facility model indicates that the site is a location identified or suspected of having asbestos or asbestos containing materials (ACM) present. 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.



Endeavour Energy's G/Net master facility model indicates that the site is a location identified or suspected of having asbestos or asbestos containing materials present.

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:

- customer meter boards;
- conduits in ground;
- padmount substation culvert end panels; and
- 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.

The picture may let someone know if they find this while digging they are dealing with a hazard. This is an example of ACM cable ducts found in Endeavour Energy's electricity network during excavation for underground works.

3 Asset Planning

Power plants typically generate electricity a long way from homes and businesses. It is transported at high voltages to bulk supply points over the transmission system operated by TransGrid.

From here Endeavour Energy transports electricity to our sub-transmission and zone substations, which usually service entire suburbs, transform electricity to mid voltage levels (11,000 or 22,000 volts). When electricity arrives at the location where it is required, distribution substations further transform the electricity to 400 or 230 volts. Underground cables and/or overhead power lines then carry this low voltage electricity to the customer connection points located on the customer's premises to service their electricity load.

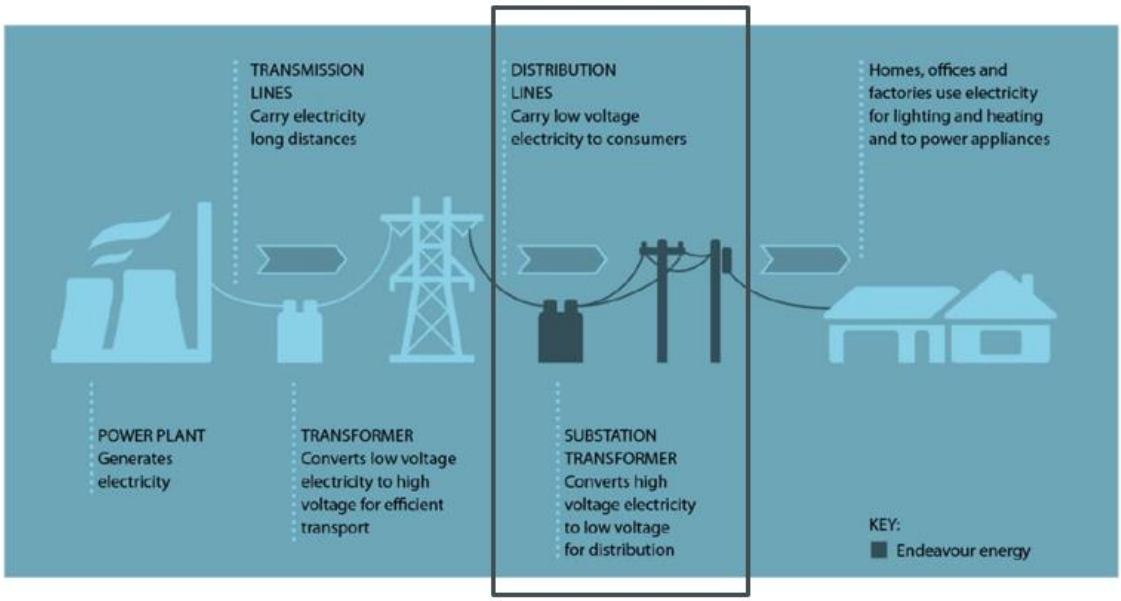
Distribution substations are divided into:

- ground mounted substations most commonly being a padmount substations installed a complete unit on a concrete foundation / plinth and usually associated with underground distribution (indicated by the symbol PS on the site plan from Endeavour Energy's G/Net master facility model) can accommodate loads from 315 kVA up to 1,500 kVA (typically 500 kVA).
- pole mounted substations where there is overhead distribution (indicated by the symbol on the site plan from Endeavour Energy's G/Net master facility model) and the substation equipment is outdoor type, mounted above ground level on a pole, have comparatively limited capacity of 16 kilovolt amperes (kVA) up to a maximum of 400 kVA.

Accordingly there is a significant variation in the number and type of premises able to be connected to a substation ie. a single distribution substation may serve one large building, or many homes.

As well as transforming voltage from high to low in a controlled manner, distribution substations also make it possible to perform the necessary switching operations in the grid (energizing and de-energizing of equipment and lines) and provide the necessary monitoring, protection and control of the network using the Supervisory Control and Data Acquisition (SCADA) system which is supported by an independent telecommunication network.

The following diagram from Endeavour Energy's Distribution Annual Planning Report December 2020 illustrates how the electricity distribution network operates in a traditional, 'one-way' service.



Source: Endeavour Energy Distribution Annual Planning Report December 2020

The electricity distribution network also provides a 'two way' service which enables customers with solar photovoltaic panels to export electricity generated into Endeavour Energy's network for supply to other customers for which the customer is credited / paid a solar feed-in tariff as determined by the Independent Pricing and Regulatory Tribunal (IPART).

4 Asset Relocation

To facilitate development, some existing electricity infrastructure may need to be decommissioned / relocated or undergrounded. of Planning Proposals often entail significant transport and pedestrian facilities involving the widening and upgrade of the roadways and installation of traffic signals. These works within the 'Public Domain' should similarly have regard to Endeavour Energy URD and asset relocation policies. and a method of supply will need to be determined to service all other existing customers

The application for an asset relocation / removal should be made to Endeavour Energy's Customer Network Solutions 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.

Applicants should engage an Accredited Service Provider (ASP) of an appropriate level and class of accreditation. 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 .

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' (including the addressing of alternative supply arrangements for any other customers supplied by the asset proposed to be removed). For details of the Accredited Service Provider (ASP) scheme please refer to the below point 'Network Capacity / Connection'.

5 Bush Fire

Bush fire prone land (BFPL) is land that has been identified by local council which can support a bush fire or is subject to bush fire attack. BFPL maps are prepared by local council and certified by the Commissioner of the NSW Rural Fire Services (RFS). All development on BFPL must satisfy the aim and objectives of RFS Planning for Bush Fire Protection 2019 (PBP). Further information is available via the following link to the RFS website.

https://www.rfs.nsw.gov.au/plan-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection/bush-fire-prone-land .

PBP contains development standards / specifications for bush fire protection measures for land use planning and designing and building of new development to ensure that is not exposed to high bush fire risk. Chapter 5 Residential and Rural Residential Subdivisions includes the following specific recommendations related to electricity services (with similar provisions also applying to Chapter 6 Special Fire Protection Purpose Developments (SFPP) and Chapter 7 Residential Infill Development.

5.3.3 Services – Water, electricity and gas

Intent of measures: *to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.*

Table 5.3c

Performance criteria and acceptable solutions for water, electricity and gas services for residential and rural residential subdivisions.

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	The intent may be achieved where:	
ELECTRICITY SERVICES	› location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	› where practicable, electrical transmission lines are underground; › where overhead, electrical transmission lines are proposed as follows: › lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and › no part of a tree is closer to a power line than the distance set out in ISSC3 *Guideline for Managing Vegetation Near Power Lines*.

Although industrial uses are not covered by Chapters 5 to 7 of NSW Rural Fire Service 'Planning for Bush Fire Protection 2019' (PBP), the aim and objectives of PBP still need to be considered and a suitable package of bush fire protection measures should be proposed commensurate with the assessed level of risk to the development. PBP provides the following advice regarding electricity services:

The following is an extract of Endeavour Energy's Company Policy 9.1.1 Bushfire Risk Management.

9.1.1 BUSHFIRE RISK MANAGEMENT

1.0 POLICY STATEMENT

The company is committed to the application of prudent asset management strategies to reduce the risk of bushfires caused by network assets and aerial consumer mains to as low as reasonably practicable (ALARP) level. The company is also committed to mitigating, the associated risk to network assets and customer supply reliability during times of bushfire whilst achieving practical safety, reliability, quality of supply, efficient investment and environmental outcomes. The company is committed to compliance with relevant acts, regulations and codes.

Accordingly the electricity network required to service the proposed development must 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 bushfire prone site.

In assessing bushfire risk, Endeavour Energy has traditionally focused on the likelihood of its network starting a bushfire, which is a function of the condition of the network. Risk control has focused on reducing the likelihood of fire ignition by implementing good design and maintenance practices. However the potential impact of a bushfire on its electricity infrastructure and the safety risks associated with the loss of electricity supply are also considered.

Particular attention is given to the design of electrical assets in areas which are susceptible to bushfire to minimise the risk of both normal and foreseeable abnormal operation or failure of the assets initiating a bush fire.

Endeavour Energy crews replacing a burnt timber pole with a concrete pole after the September 2013 bush fire at Winmalee NSW. Source: Everyday Endeavours, Staff Newspaper November 2013

Endeavour Energy's network is designed to minimise the risk of its assets initiating a bushfire. The asset management actions are focused on identifying and rectifying network defects that may result in faults that could cause fuel ignition. Endeavour Energy has well established processes for identifying such defects, for assessing the likelihood of such faults occurring and prioritising rectification. Endeavour Energy's vegetation management program and pre-summer bushfire inspection program are both examples of this commitment. However, ultimately the vegetation management work done within easements is primarily to maintain the safe and reliable operation of the electrical network rather than providing a defendable space / Asset Protection Zone (APZ) for an adjoining development / dwelling the easement area is not owned by Endeavour Energy and the slashing and low cut grass would not necessarily be part of Endeavour Energy's vegetation management work.

It is every landholder's responsibility to manage the bush fire hazards on their property. It is also for this reason that any required bushfire protection measures should be contained within the overall development and not on adjoining lands. NSW Rural Fire Service 'Planning for Bush Fire Protection 2019' indicates that a fundamental premise for APZs is that they are provided within the property in such a way that the owner / occupant will be able to maintain the area in perpetuity.

Further details of Endeavour Energy's bushfire / vegetation management policies are available on Endeavour Energy's website under 'Home>Network>Network maintenance>Keeping our network safe' via the following link:

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

The following is an extract of Endeavour Energy Directions Paper for Consultation 1 July 2019 – 30 June 2024.

Bushfire Risk

Over 85 per cent of Endeavour Energy's franchise area is bushfire prone as identified by the NSW Rural Fire Service. Endeavour Energy's franchise area includes the Blue Mountains which has been identified as one of the highest areas of bushfire risk in NSW. As a result, vegetation management is a substantive and critical activity in providing a safe and reliable service.

If we fail to properly maintain safe clearances there is an increased risk of bushfire and outages from trees coming in to contact with, or falling on, powerlines. This can have catastrophic consequences for customers and increase the strain on essential government services like Fire and Rescue NSW and the NSW Rural Fire Service who have previously noted our important role in vegetation management.

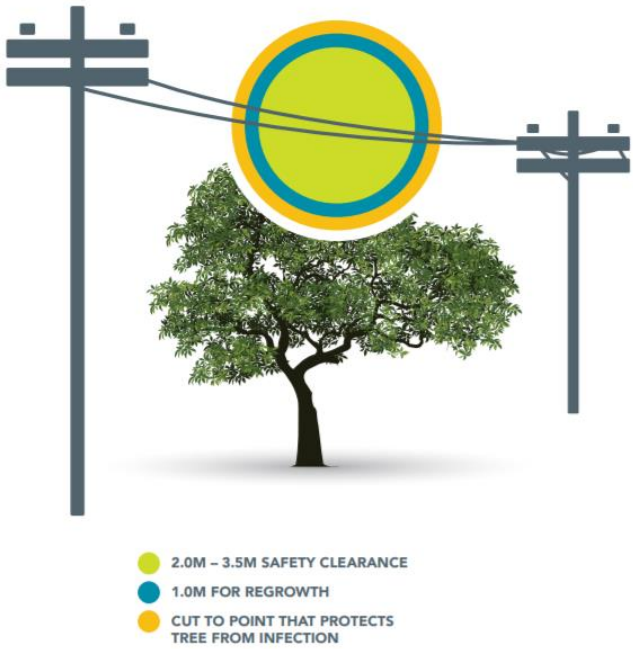
> *"Vegetation management around electricity poles, wires and infrastructure is a critical bushfire mitigation measure. Historically the NSW Rural Fire Service (NSW RFS) has been satisfied that electricity distribution businesses have been appropriately addressing bush fire risks"*
>
> – Commissioner NSW Rural Fire Service – December 2014

We have a comprehensive program of works to manage the risk of bushfires being initiated by the network. We employ leading edge radar based technology to accurately identify vegetation that is too close to the network. Our pre-summer program includes annual inspections of our assets in bushfire prone areas and associated maintenance work, vegetation management, and capital works to target specific high risk assets.

This program is one of Endeavour Energy's largest operating costs at approximately $60 million per year. To ensure we deliver value for money services we externally source this function.

Councils and customers may have different views about the frequency, the impact on streetscapes and the cost-benefit trade-off of tree-trimming. However, we are required to trim trees according to mandatory industry standards (Industry Safety Steering Committee Guideline 3 for managing vegetation near power lines). The ongoing use of the latest technology allows us to better target vegetation management programs in order to strike the right balance between the frequency, impact on streetscapes and compliance of tree-trimming.

Tree-trimming clearance requirements



6 Construction Management

As part of the construction management plan the applicant must satisfactorily address any impacts of the proposed works on Endeavour Energy's electricity infrastructure located on the site as well as to the adjoining properties. 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.

Endeavour Energy expects the applicant will need to prepare a dilapidation report to assess of the current condition of any adjoining building before any construction is done around the area and after the new building's completion to determine if any damage was caused by the excavation, demolition, or construction work.

7 Contamination

Endeavour Energy has noted that Contamination Assessments generally do 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 (which is dealt with by Endeavour Energy's Customer Network Solutions Branch as part of the application for the connection of load for the new development – please refer to the point 'Network Capacity / Connection') as potential areas of environmental concern (AEC) and associated contaminants of potential concern (COPC).

Due to the potential variability in both the nature and extent of any contamination, it is difficult to define specific remedial strategies for potential contamination associated with electricity infrastructure. As a guide only, 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 overall Environmental Management System (EMS) for the project should include an unexpected finds protocol to deal with potential contaminated land or asbestos that was not previously identified in the Contamination Assessments. In most cases this should be able to deal with any contamination related to electricity infrastructure. Nonetheless Endeavour Energy's recommendation is for appropriate consideration to be given to electricity infrastructure in the Contamination Assessments.

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.

7.1 Contamination from Endeavour Energy Sites

Endeavour Energy's management and / or remediation measures for its sites are implemented based on the presence of contaminants of potential concern that from a contamination perspective would make a site unsuitable for its required use as part of the electricity network. Based on current and historical use of a site, Endeavour Energy may undertake targeted intrusive site investigations to identify or assess concentrations of contaminants of potential concern. Should the site require significant augmentation or redevelopment, investigations would be undertaken to determine whether environmental management or remediation is required on the site. Should that occur, the site would be assessed under the appropriate land use scenario, which based on the site's current and ongoing use for electricity distribution would be for a commercial or industrial type use. Should the use of the site change, it would be assessed under the then relevant scenario.

8 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. If required the applicant will need to engage and ASP of an appropriate level and class of accreditation to undertake the electrical works. For details of the ASP scheme please refer to the below condition 'Earthing'.

If the entire existing premises are to be demolished resulting in the permanent disconnection of a customer connection point, please refer to the below 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.

9 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.

Plans must be obtained by the applicant not only to identify the location of any underground electrical or other utility infrastructure across the site, but also to identify them as a hazard and to properly assess the risk. Therefore, Duty of Care must be exercised when working around any infrastructure assets.

The plans DO NOT pinpoint the exact location of the infrastructure asset and only the presence. NEVER assume the depth or alignment of pipes and cables. Consider using cable location technologies, potholing and non-destructive digging techniques.

The expiry date of the plans can vary from each asset owner and therefore it is important to note the variations. If plans have expired, a new enquiry must be lodged to ensure current plans are always onsite.

The plans provided by the utility owners must be kept in a legible format either as a hard copy or an electronic copy so they can be easily read and understand.

If help is needed in reading plans and / or information provided, please contact the utility owners directly.

Further details are available on the Dial Before You Dig website via the following link:

https://www.1100.com.au/ .

10 Dispensations

In instances where an applicant's proposal is not compliant with Endeavour Energy's engineering documents or standards, where all other options have been exhausted and compliance cannot be achieved, the applicant must request a dispensation in accordance with Endeavour Energy's Company Procedure GAM 0114 'Granting Dispensations for Engineering Documents' which states:

2.0 SCOPE

This procedure applies to all dispensation requests for proposed deviation from the company's engineering documents. This includes dispensations from, but is not limited to, Accredited Service Provider (ASP) designs, the company's designs, and failed acceptance testing results for new and existing equipment.

The dispensation request must outline the risk to the company's ability to provide a safe, reliable and sustainable electricity supply at an optimal whole of life cost when proposing to deviate from engineering documents. The validity of the risk will be assessed and the request will be approved only if the risk is deemed acceptable. The request will be rejected if the risk is deemed unacceptable or substantial evidence is not provided to justify deviating from the company's engineering documents.

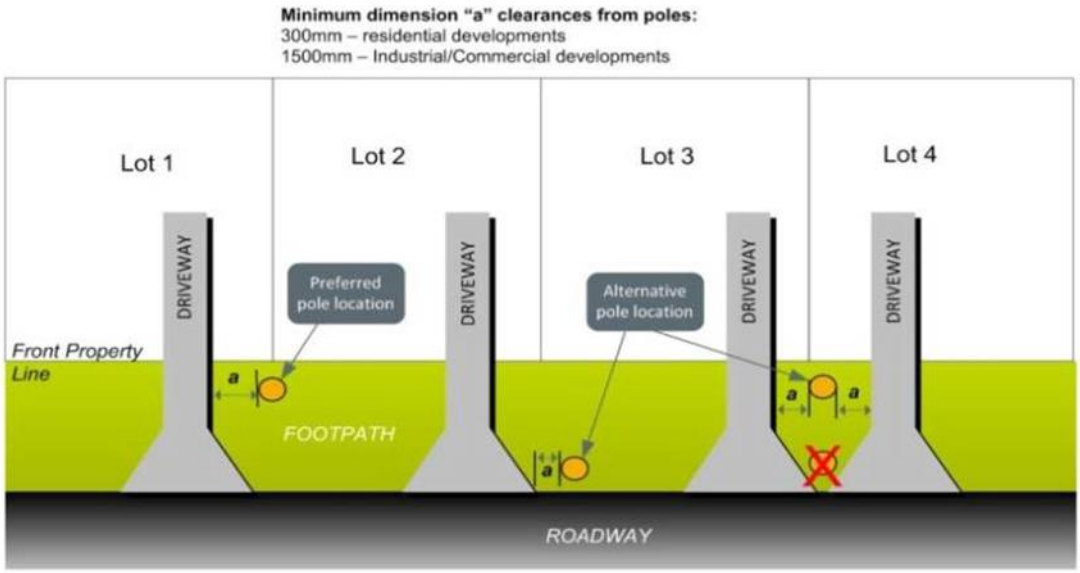
The request should be made to the relevant Endeavour Energy stakeholder eg. if it relates to an easement management matter to the Easement Officers, for an application for connection of load to Customer Network Solutions Branch etc.

11 Driveways

For public / road safety and to reduce the likelihood / protect electricity infrastructure from vehicle impact or loads, Endeavour Energy's requires adequate separation distances of driveways that would be acceptable / safe for anyone properly using the driveway. Preference is to have the maximum reasonably possible separation distances from driveways and electricity infrastructure.

However with increased density achieved with smaller, narrower, battle-axe lots and where built to side boundary development is allowed this can sometimes be difficult to achieve. The widening of landscaping provided along the side boundary and the curving of the driveway away can provide additional clearance.

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.



The minimum separation to the skirting of the proposed driveway is regarded as the minimum that would be acceptable / safe for anyone properly using the driveway (and for which depending on the circumstances appropriate protective devices may be required) and failing the foregoing an asset relocation may be required.

Notwithstanding the 300 millimetre possible minimum, Endeavour Energy's preference is for a minimum of 1 metre separation. This is also in keeping with many Councils' development controls which requires driveways to be at least 1 metre from side boundaries ie. often poles are located in line with the boundaries.

The separation required depends on the type, extent and voltage of the electricity infrastructure (some poles may have multiple overhead power lines ranging from low voltage to 132,000 volt / 132 kilovolt (kV) high voltage); setback of the electricity infrastructure from the roadway / kerb and gutter; curve of the road; the traffic type, volume and speed etc. Essentially this requires the completion of a risk assessment.

For new underground subdivisions driveways should be located a minimum of :

- 500 millimetres from low voltage pillars.
- 1500 millimetres from streetlight columns.

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.

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.

Driveways need to be appropriately located in relation to poles. Poles with transformers (pole mounted substations) may have an additional earth mat surrounding the pole and should be provided with greater separation to driveways. Repairs and maintenance to poles can occur over extended periods of time blocking driveway access. Source: Google Maps Street View.

12 Earthing

Earth wires are a person’s life-lines, conveying electricity from a faulty appliance or equipment through the wire to earth and back to the source through the neutral wires rather than through the person’s body. If a fault occurs, power will flow to the earth by the shortest and easiest path. So, if appliances or equipment is not properly earthed, the power could flow through it and then through any person touching or using it, causing serious injury or even a fatality. All electrical infrastructure is therefore earthed.

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.

Endeavour Energy is committed to ensuring that its activities and assets conform to all relevant International and Australian Standards, Energy Networks Association (ENA) Standards and NSW legislation. Endeavour Energy’s Company Policy, Network Asset Management, 9.2.5 ‘Network Asset Design’ which states the following.

5.10 System earthing

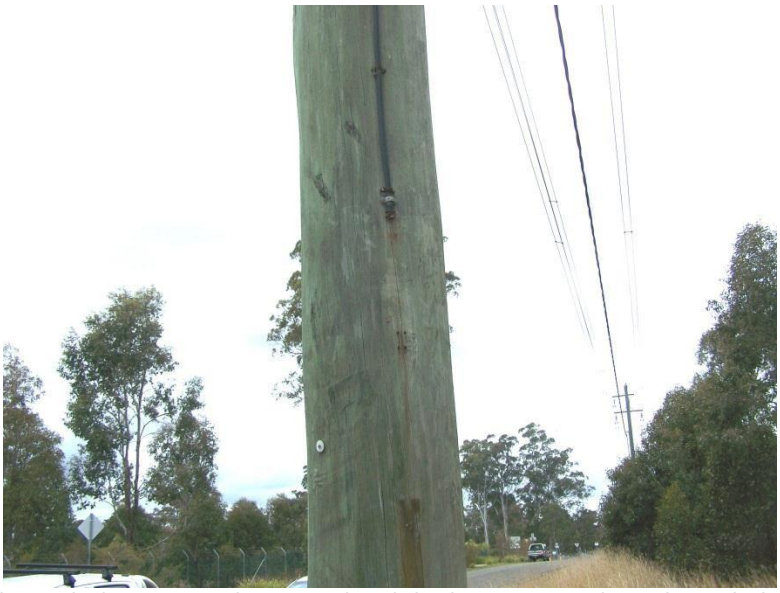
The company's network must generally be effectively earthed. However, in order to improve safety for customers and the public (by reducing earth fault current and magnitude of earth fault potential rise in the distribution systems and zone substations) consideration must be given through the planning process to the limitation of the earth-fault levels on the distribution network.

Metal structures and equipment in some cases will be livened to dangerous voltage levels as a result of an earth fault. For this reason depending on access, location and exposure levels, metal structures and equipment must be bonded to earth by permanent connections to electrodes in contact with the general mass of the earth. The hazard to human beings of electric shock means all earthing systems must be designed so that acceptable levels of safety are maintained to electrical employees and the public.

Substations have an 'earth grid' specifically designed for the site considering such factors as ground resistance etc. Depending on the situation, Endeavour Energy may need to seek the imposition of restrictions on land adjoining its electrical infrastructure, particularly in areas of high risk to the public such as:

- aquatic centres, swimming pools (in the vicinity of a zone or transmission substation the required clearance distance is typically 15-30 metres);
- schools; pre-schools and day care centres;
- play grounds;
- conductive concrete or steel poles (near bus stops, pedestrian walkways, etc); and
- conductive boundary fencing.

For this reason, 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 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.



Copper thieves cutting and taking earths from power poles means there is inadequate connection to the earth placing persons and the electricity network at risk. This example occurred in Prospect NSW part of Endeavour Energy's franchise / network area. Crime Stoppers is urging anyone with information about copper theft in their area to report it anonymously to Crime Stoppers on 1800 333 000.

Earthing systems should be designed by a suitably qualified electrical engineer / Accredited Service Provider (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'.

In particular appropriate consideration should be provided to the conductivity of the fencing near electricity infrastructure or within the easement where there is a possibility it could act as a conductor of electricity and dangerous currents may be carried along the fence. Where conductive / metal fencing is used it must be appropriately earthed eg. the by the use of isolation panels where the fence enters or exits the easement created by the use of timber posts and/or earth electrode installed adjacent to the electricity infrastructure or easement.

12.1 Special Locations

Endeavour Energy's 'Design certification checklist for ASP L3' the design must comply with Endeavour Energy's 'Earthing Design Instruction EDI 001 – Earthing design risk assessment' in which schools, pre-schools, day care centres are regarded as a 'special location' – please see the following extract of EDI 001.

> The representative contact scenarios for any risk event are as follows:
>
> e) *Special*: implies an area within close proximity to or within a premise where there is a high likelihood that shoes will not be worn and/or the risks associated with the earthing system has the potential to be exposed to a number of people simultaneously through contact with affected metalwork. Examples include schools, pre-schools, day care centres, aquatic centres, recreational swimming areas and beaches. This classification must be assessed on a case-by-case basis and may not involve a societal assessment depending on the scenario.

Applicants should check with their ASP responsible for the network connection to the site that any existing or future padmount substations required to facilitate the proposed development that the earthing has been designed to comply with the 'special location' requirements under EDI 100.

13 Easement Management

Whilst the electricity distribution network is held under various forms of property tenure, the most common is an easement which is an encumbrance on the title of land (which may be limited in width and height above or below the land) conferring a right to inspect, construct, operate, maintain, repair, renew, replace or upgrade electrical infrastructure.

Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' deals with easements and covers:
This instruction covers:

- The rights Endeavour Energy has within its own easements;
- The determination of the minimum easement size for an asset;
- The definition of controls for the safe operation of activities within easements; and,
- The definition of activities which are prohibited within easements.

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. Most activities are prohibited within the padmount substation easement. However, if any proposed works or activities (other than those approved / certified by Endeavour Energy's Customer Network Solutions Branch as part of an enquiry / application for load or asset relocation project) will encroach / affect Endeavour Energy's easements, contact must first be made with the Endeavour Energy's Easements Officers, via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or email Easements@endeavourenergy.com.au .

Details of all the proposed works or activities within the easement (even if not part of the Development Application) must be referred to Endeavour Energy's Easements Officer for assessment and possible approval provided it meets the minimum safety requirements and controls. However please note that this does not constitute or imply the granting of approval by Endeavour Energy to any or all of the proposed encroachments and / or activities within the easement.

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.

13.1 Padmount Substation Fire Restriction

If part of a building encroaches the fire restriction for a padmount substation, the applicant will need to provide Endeavour Energy's Easements with an engineer's certificate identifying that all external surfaces of the building within the fire rating zone meet the appropriate fire rating as per Endeavour Energy's terms for the restriction and in accordance with Australian Standard AS 1530 'Fire Test to Building Material – Standard'. The engineer must also specify the materials to be utilised and the fixing instructions for those materials in order to meet the stated fire rating.

Alternatively, if it can be demonstrated that the entire building (including the fascia, down pipes and guttering) is a minimum of 3 metres away from the substation plinth, then Endeavour Energy would have no objection to the proposed development. Failing the foregoing, the location / design of the part of the building encroaching the restriction area would need to be amended to be outside of the restriction area or be protected by a fire screen / wall.

Figures 46 and 47 from Endeavour Energy's Mains Construction Instruction MCI0006 'Underground distribution: Construction standards manual' explains the fire restriction and the use of screen walls.

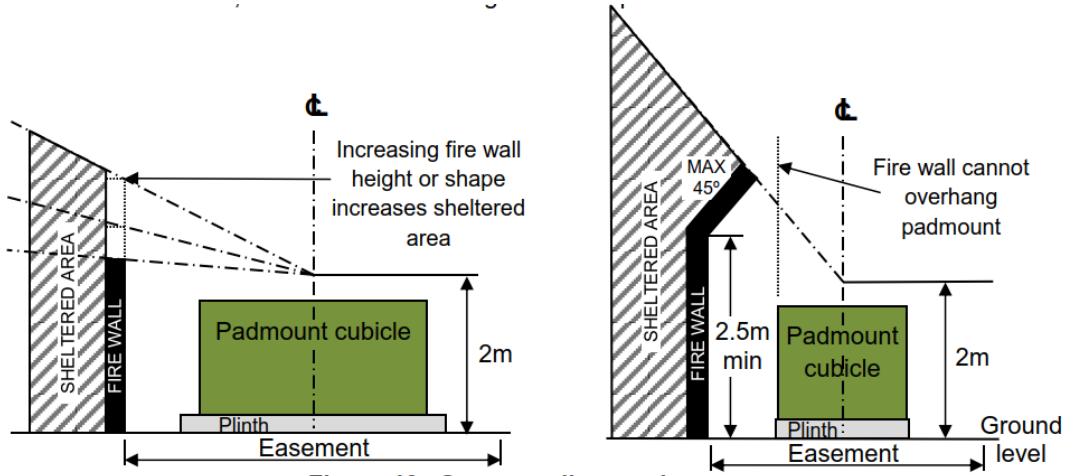


Figure 46 - Screen wall examples

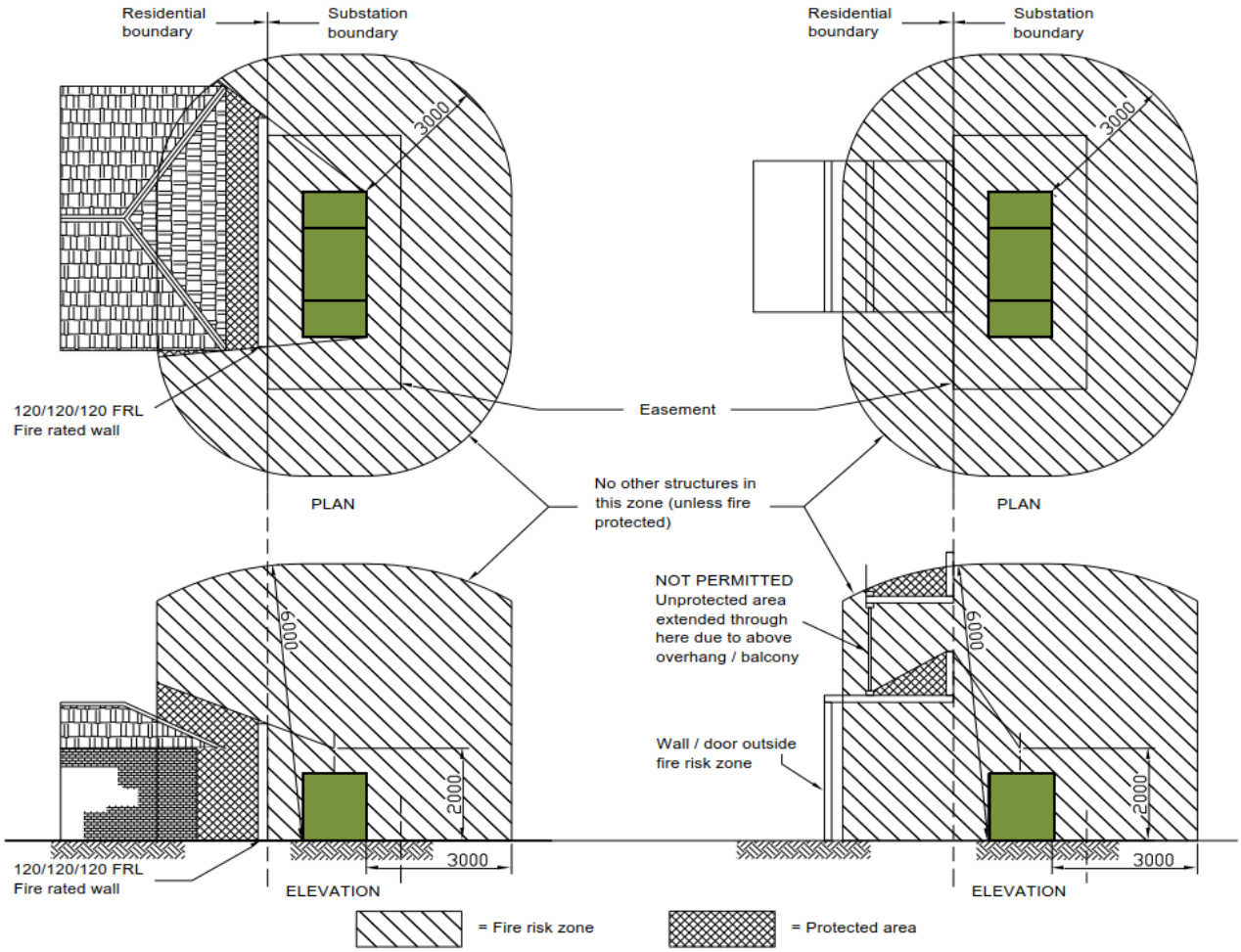


Figure 47 - Typical effect of screen walls

This 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 installations exceeding 1 kV a.c.' which provides common rules for the design and the construction of electrical power installations and also addresses a range of issues including fire risk related to substations within or near buildings (which excludes any constructions with non-fire rated materials being allowed within the fire clearance zone) and recognises requirements of the National Construction Code.

It is Endeavour Energy's experience in dealing with the fire restriction areas for padmount substations that any form of glazing (in particular opening windows) cannot achieve the required rating. In regard to the Building Code of Australia (BCA) is the grading period in minutes is for three criteria: structural adequacy, integrity and insulation. For glazing the structural stability of the product and the capacity it has to resist fire, while still acting as a support for its structure (since windows are generally not structural elements) is difficult to achieve. The issue with any openings is that if they are left open, the internal surfaces are also exposed to fire. For this reason both openings and glazing within the fire restriction site is best avoided.

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.

An electrical transformer caught alight in Sydney's south-west today. (9News)

At least 18 people were evacuated from nearby units. (9News)

Whilst fires in padmount substations are relatively rare they do occur and can represent a risk to the nearby buildings and occupants. The required fire clearances / ratings must be complied with. Above are photographs from 9 News coverage of 'Fire erupts between two apartment blocks in Sydney's south-wests' regarding a padmount substation fire at Guildford which occurred on 25 October 2021. Source: https://www.9news.com.au/national/guildford-fire-apartment-block-electrical-new-south-wales-sydney-south-west/46ff15ed-84f7-4442-9884-dc206cb6e7d0

14 Easement Release

Under Endeavour Energy's Company Policy 9.2.3 (Network) 'Property Tenure for Network Assets', the company will assess all applications for the release of easements to identify and manage risks to its network, commercial and community interests. The company may seek compensation for the extinguishment of property tenure. No easement is considered to be redundant or obsolete until it is released under this policy.

Applications for the release / extinguishment of an easement can only be made by the registered landowners of the encumbered property and are usually done either:

- As part of an application for connection of load or capital works project for a development project eg. where alternative / new network arrangements are to be put in place, which is managed by Endeavour Energy's Customer Network Solutions Branch. Endeavour Energy's Customer Network Solutions Branch will make the applicant or their ASP aware of Endeavour Energy's requirements for the release of easement. Please refer to the above point 'Network Capacity / Connection'.

- At the request of landowners where the electrical assets within the easement have been removed or it has become apparent that the easement has possibly become redundant to Endeavour Energy's future network requirements eg. no electrical assets have ever been installed in the easement. Further details are available by contacting Endeavour Energy's Property Services Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or email network_property@endeavourenergy.com.au (underscore between 'network' and 'property'). The greater amount of detail provided will assist in the assessment of the application.

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 (with appropriate consideration given to the applicant's alternative network arrangements).

15 Easement Subdivision

Endeavour Energy's preference is to have continuity of all easement types over the most direct and practicable route affecting the least number of lots as possible. Therefore, Endeavour Energy generally does not support the subdivision of easements and their incorporation into multiple / privately owned lots.

The incorporation of electricity easements into privately owned lots is generally problematic for both Endeavour Energy and the future landowners and requires additional easement management to ensure no uncontrolled activities / encroachments occur within the easement area.

Accordingly, Endeavour Energy's recommendation is that whenever reasonably possible, easements be entirely incorporated into public reserves and not burden private lots (except where they are remnant lots or not subject to development). In some Council areas this is a requirement for subdivisions as shown in the following extract of Camden Council's development control plan.

C7.2 Neighbourhood and Subdivision Design		
Electricity easements are to be incorporated in public road reserves and shall not burden private lots.	The proposed electricity easements are located within the public road reserve. No electricity easements burden the private lots.	✓

Endeavour Energy's experience is that regardless of the easement, inevitably some property owners will seek to maximise the utilisation of their land and will encroach or undertake prohibited activities within the easement. The following aerial photograph shows part of easement within the public reserve being clear but that within the private lots having prohibited buildings and swimming pools.

Overlay of approximate location of easement for 132,000 volt / 132 kilovolt Feeders No. s 930 & 931 Baulkham Hills to Carlingford from Endeavour Energy's G/Net master facility model onto aerial photograph from SIX Maps of properties located on the southern side of Meckiff Avenue, North Rocks NSW. The part of the easement to the west within Hunts Creek Reserve show no encroachments. To the east within privately owned lots there are encroachments of the easement by buildings / structures and swimming pools.

Where subdivisions of property are proposed for land in which Endeavour Energy has an easement, the following requirements must be met:

- Subdivision of the easement parallel to overhead power lines or underground cables which effectively reduce the easement width must be avoided.
- The number of crossings of easements must be minimised and crossings should be or close to perpendicular to the overhead power lines or underground cables and must be at least half the easement width beyond any pole or structure. Contiguous / ready access along the easement can be difficult not only due to fencing but also retaining walls and changes in levels which may preclude physical access.
- Unrestricted access to structures such as poles and towers or cable pits must be retained. Where subdivisions incorporate easements to the rear of the lots, if buildings are constructed from side boundary to side boundary, access to the easement is extremely restricted.
- Easements for other types of electricity infrastructure such as padmount substations or switching stations shall not be subdivided but any associated restriction or right of access etc. may encumber and adjoining lot.

Examples of poor subdivision of easements restricting access and working area around the structures Source: Google Maps Street View.

If a subdivision results in the incorporation of Endeavour Energy's easement into new or multiple lots, the easements, rights and restrictions, covenants etc. must be retained over the affected lots and in accordance with the requirements of NSW Land Registry Services (LRS).

Depending on the age of the existing easement terms and the intended use of the site, Endeavour Energy may need to include additional requirements / restrictions to be registered on titles to each of the lots to ensure it can reasonably access and manage its existing electricity infrastructure within the easement. This may apply in situations where the terms of easements reflected the use at the time of large lot non-urban changing to a multiple lot urban use. For example, old terms of easement may only provide access to the site via the easement itself compared to being able to enter the (entire) lot burdened using the most practical route to the easement.

16 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 any relevant risk and safety management plan.

If someone seriously injured or in need of urgent medical help call the Triple Zero (000) service which is the quickest way to get the right emergency service to help you. It should be used to contact Police, Fire or Ambulance service in life threatening or emergency situations.

17 Excavation

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

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 August 2018 to date (accessed 4 September 2018 at 08:54)

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.

If any excavation work affects Endeavour Energy's electricity infrastructure, prior contact must be made with 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 .

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This excavation for a basement at 6 Sorrell Street Parramatta NSW for a mixed use 8 storey development in 2015 was identified by Endeavour Energy's Regional Services North as being unsafe due to the integrity of padmount substation 7858 located on the adjoining lot being compromised and access not being available. This resulted in the 'switching out' of the substation from the network until the site conditions were again deemed to be safe.

18 Flooding

Particular attention must be given to the design of electrical assets in areas which are susceptible to flooding. The network required to service an area / development must 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

Endeavour Energy's System Control Branch Procedure NCB 0615 'Flood Response Plan' is based on electricity supply being maintained as long as practicable consistent with the safety of employees' general public and emergency services personnel. It involves rearranging the network having regard to a substation prioritisation ranking, comprised of flood risk and damage potential, to focus the flood response efforts toward areas and resources in order of highest importance.

In regard to the flood susceptibility of electricity infrastructure, overhead power lines which can be damaged by flying or floating debris, falling trees and branches, inundation by floodwater and in colder parts of the network, collected ice and snow. The main guide to the construction of overhead power lines is Australian/New Zealand Standard AS/NZS 7000:2016 'Overhead line design' which has specific as well as general guidance in regard to design of overhead power lines in flood prone land.

Underground cables are less likely to be damaged from storm events but are still susceptible to flooding and tidal surges. Saltwater, which is a very good conductor and causes electrolysis reactions with the metal conductors and can result in accelerated corrosion to the underground cables and associated infrastructure. With appropriate design electrical cables are commonly run underwater and in other hostile environments and likewise can also take into consideration potential flood events.
The main guide to the construction of overhead power lines used by Endeavour Energy are its:

- Mains Design Instruction MDI 0028 'Underground distribution network design'.
- Mains Construction Instruction MCI 0006 'Underground distribution construction standards manual'.

These documents have specific as well as general guidance applicable to the design and construction of underground cables in flood prone land.

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 distribution 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

19 Hazardous Environment

Endeavour Energy is aware that the provisions of State Environmental Planning Policy No 33—Hazardous and Offensive Development (SEPP33) in the preparation of a preliminary hazard assessment electricity infrastructure is not defined / regarded as sensitive land use. However, in these situations Endeavour Energy has sought further advice from the consultants preparing the preliminary hazard assessment on the basis that, although not a sensitive land use in the traditional / environmental sense, if the electricity infrastructure on or in proximity of the site (which also may be a potential ignition source) is damaged, the resulting outage could leave many properties / customers without power.

In these situations the applicant’s consultants have been requested to specifically address the risks associated with the proximity of the electricity infrastructure ie. detail design considerations, technical or operational controls etc. to demonstrate as required by SEPP33 that the proposed business / development is suitably located and can be built and operated with an adequate level of safety and pollution control.

Irrespective of the class / division and the quantities, any dangerous goods whether combustible and / or flammable should not be stored near electricity infrastructure and increasing the separation distance as far as reasonably possible is recommended.

In similar situations the consultants have been requested to specifically address the risks associated with the proximity of the electricity infrastructure ie. detail design considerations, technical or operational controls such as equipotential bonding between the earth, concrete driveway and fuel tanks etc. to demonstrate as required by SEPP33 that the proposed business / development is suitably located and can be built and operated with an adequate level of safety and pollution control.

Irrespective of the class / division and the quantities, any dangerous goods whether combustible and / or flammable should not be stored near electricity infrastructure and increasing the separation distance as far as reasonably possible is recommended.

Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' includes the following advice regarding substations near hazards.

> *6.3.7 Substation near hazards*
>
> Substations contain HV and LV electricity, oil, plastics, concrete and other materials. In some situations, a substation can be regarded as a hazardous source, or be susceptible to hazardous sources.
>
> Therefore, substations in or near hazardous areas will be dealt with strictly in accordance with Australian Standards and statutory requirements. The minimum distances to be maintained from hazardous locations are set out in AS 60079.10:2009. Reference will be made to AS 60079.10:2009 and any relevant statutory authority, in determining the siting of a substation when in hazardous locations. Padmount substations in or near hazardous areas, will have stainless steel cubicles as long as they comply with EDI 100 for earthing.

19.1 Fire Risk

Endeavour Energy's electricity infrastructure is potentially a source of ignition for fires. Endeavour Energy's risk control has focused on reducing the likelihood of fire ignition by implementing good design and maintenance practices. However there is still the potential for fires to occur as a result of fault currents, flashovers, fallen conductors, vehicle impacts etc.

With oil-filled equipment used in the substations there is the possibility of fires occurring eg. with padmount substations this is the reason for the inclusion of a fire restriction area. The appropriate selection, installation, maintenance and condition monitoring of the equipment used in substations is undertaken to reduce the possibility of fires and their containment.

Although the risk cannot be eliminated entirely, Endeavour Energy's aim is to reduce the residual risk of these potential hazardous events to 'As Low As Reasonably Practicable'.

Whilst, Endeavour Energy has traditionally focused on the likelihood of its network starting a fire, conversely Endeavour Energy believes that Councils (and applicants) should consider the safety risks associated with inappropriate development in proximity of electricity infrastructure that may result in damage to the network and the loss of electricity supply.

19.2 Air Quality / Dust

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 excessive / cumulative dust emissions. Although unlikely in normal circumstances and the risk is considered low, it could cause a flashover to occur on the insulators on the overhead power lines or start a fire in the substation. From Endeavour Energy's perspective it is imperative that the appropriate air quality management measures are implemented and adhered to in order to minimise any impact on the electricity infrastructure on or in the vicinity of the site.

20 Modifications

Endeavour Energy's G/Net master facility model shows enquiries and applications for contestable works projects with Endeavour Energy's Customer Network Solutions Branch for electricity supply by either:

- 'Work Polygon' indicated by the coloured highlighting and/or hatching of the lot.
- 'Developer Area' indicated by a proposed road / lot layout for a proposed subdivision.

As such, Endeavour Energy's Customer Network Solutions Branch are managing the conditions of supply with the proponent and their Accredited Service Provider (ASP). However the applicant will need to contact Endeavour Energy's Customer Network Solutions Branch (via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666) if this Development Application:

- Includes any contestable works projects that are outside of any existing approved / certified works.
- Results in an electricity load that is outside of any existing Supply / Connection Offer requiring the incorporation of the additional load for consideration. This is due to load often being based on a desktop assessment using an After Diversity Maximum Demand (ADMD) where demand is aggregated over a large number of customers providing an ADMD for the site / per lot. Depending on the actual development proposed for the site, the ADMD provided may not be sufficient ie. the increase in the number of premises or in the developable area may result in the creation of additional load; requirement for another separate customer connection point etc.

21 Network Access

It is imperative that the access to electrical infrastructure be maintained at all times. To ensure that the 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.

If Endeavour finds that a structure impedes access or presents an unacceptable level of risk, Endeavour Energy reserves the right to have the structure removed, or to remove it at the owner's expense. To ensure suitable access is available to electricity infrastructure the *Electricity Supply Act 1995* (NSW) includes the following Section 49 'Obstruction of electricity works'.

Electricity Supply Act 1995 No 94

Current version for 1 July 2019 to date (accessed 7 April 2020 at 10:49)

Part 5 › Division 2 › Section 49

49 Obstruction of electricity works

(1) This section applies if a network operator has reasonable cause to believe that any structure or thing situated 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:

(a) may serve a written notice on the person having control of the structure or thing requiring that person to modify or remove it, or

(b) in an emergency, may, at its own expense, modify or remove the structure or thing itself.

This is particularly important where there are poles or structures and changes in direction to a line route. In the event of fallen conductors or faults in underground cables, access to the poles or cable pits to restring or pull cables will be required by electricity workers with heavy vehicles, machinery and materials and is essential for restoring electricity supply.

The equipment required for pole replacements can include up to a 60 ton crane, franna crane, large elevating work platform and lifter borer.

22 Network Asset Design

Endeavour Energy's Company Policy, Network Asset Management, 9.2.5 'Network Asset Design' as one of its purposes is to establish the design principles and standards to be applied consistently across the network. The Company Policy includes the following:

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

For urban areas it provides the following additional detail.

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. \

For non-urban areas it includes the following.

5.11.1.2 Non-urban areas

Extensions to the existing overhead 11kV and 22kV network and conductor replacements / augmentations must be underground. Where underground reticulation is not practical overhead construction can be used. The choice of overhead construction must be bare wire for the following circumstances:

- areas that are not substantial treed;
- long gully crossings;
- SWER lines;
- joint use 132, 66 or 33kV lines; and
- distribution lines with transmission construction and located in an easement.

All other overhead constructions must be CCT or NMSHVABC.

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

5.11.2 Transmission and sub-transmission

Transmission and sub-transmission lines will be must overhead construction unless environment, community and/or planning instrument considerations require an underground solution.

The Company Policy also indicates that 'Customers may elect or may be required by local council to install underground reticulation'. Councils may seek the enforcement of underground cables policy as part of their detailed planning and design guidelines in their Development Control Plans to support the planning controls in the Local Environmental Plan.

As well as improving the reliability of supply, and improved aesthetics a major consideration for increasing the proportion of underground power is the reduction of traffic hazards with poles traditionally placed in close to the kerb lines which increases the risk of vehicular impacts and potential road fatalities.

23 Network Connection

Applicants should not automatically assume that the presence of electricity infrastructure in the locality and / or nearby similar development means that adequate supply is immediately available to facilitate their proposed development.

The electricity distribution network generally provides a single customer connection point (indicated on the site plan from Endeavour Energy's G/Net master facility model by the blue rhombus ◇) for each developable lot for the provision of electricity supply for a basic low voltage connection service where the total maximum demand is no greater than 100 amperes 230 volts (single phase) or no greater than 63 amperes 400 volts (three phase).

Applications for connection of load for a single dwelling or up to four strata units are usually capable of direct connection to the existing low voltage network. Such applications can be completed online and permission to connect may be provided immediately if it complies with the above requirements.

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 Customer Network Solutions 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/ .

To ensure an adequate connection, the applicant may need to engage an Accredited Service Provider (ASP) 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 .

The availability of additional electricity supply to a development is based on a wide range of factors eg. the age and design of the network; the number and type of distribution substations required to transform high to low voltage to supply customers / developments; other development in the locality utilising previously spare capacity within the local network; the progress of nearby / surrounding sites including electricity infrastructure works; the size and rating / load on the conductors and voltage drop (which can affect the quality of supply particularly with long conductor runs) etc.

Depending on these factors, in some circumstances the electrical infrastructure may need to be extended or upgraded to accommodate additional electrical load resulting from a development. However the extent of any works required will not be determined until the final load assessment is completed. Any work required to enable supply of the load in line with the requirements of the *Electricity Supply Act 1995* (NSW) is deemed to be 'contestable works' and should be undertaken by an ASP of an appropriate level and class of accreditation.

As part of the application for connection of load Endeavour Energy's Customer Network Solutions Branch as well as determining the method of supply requirements will also determine the funding arrangements. Depending on the circumstances not all the works may be customer funded or constructed and Endeavour Energy may supply materials, fund or construct works, make a capital contribution or seek reimbursements from the customer eg. for the use of spare ducts which Endeavour Energy has made a capital contribution as part of other nearby works.

For more complex connections, advice on the electricity infrastructure required to facilitate the proposed development can also be obtained by submitting a Technical Review Request to Endeavour Energy's Customer Network Solutions 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.

Endeavour Energy is urging applicants /customers to engage with an Electrical Consultant / ASP 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.

Questions about connections services can be made by completing Enquiry Form available via the following link and submitted to cicadmin@endeavourenergy.com.au or speak to a Customer Service Representative on 133 718.

https://www.endeavourenergy.com.au/contact-us/general-enquiry .

23.1 Facilitating Subdivision

As a facilitating subdivision for the orderly subdivision and development of land the usual requirement to provide a separate customer connection point for each lot within the subdivision may be waived with the resulting lots to be identified / released as residue lots.

Accordingly the notification of arrangement letter issued by Endeavour Energy's Customer Network Solutions Branch will identify the lots as residues and are being released unsupplied.

The further proposed subdivision to create developable lots will be subject to Endeavour Energy's normal customer connection procedure and policies.

23.2 High Voltage Customers

As a high voltage customer the 'High Voltage Operational and Maintenance Protocol' between Endeavour Energy and the customer regarding the provision of high voltage supply to the site will specify a 'Load of Customers Installation' which is adequate for the then / Customer's current requirements. The Protocol generally also states the following:

'Should any further increase in loads be required, contact should be made with Endeavour Energy's Customer Network Solutions Branch, who will inform you of the requirements in this regard'.

The Protocol also identifies where Endeavour Energy's responsibility terminates (normally at the pole or pillar on the road verge from which supply is taken) in respect of:

- ownership of high voltage equipment;
- switching operations; and
- maintenance of equipment.

However, high voltage customer connections must be a single customer site. Multiple occupant developments such as subdivisions, shopping centres, factory units, distribution centres, etc. are not entitled to high voltage connections. Accordingly, should this change, the site will no longer be eligible for a High Voltage Connection Service. Please refer to the below point 'Network Capacity / Connection.

23.3 Distribution Substations

As distribution substations require incoming supply at 11,000 volts / 11 kilovolts (kV), in areas with only low voltage supply the 11 kV high voltage supply will need to be extended from the closest existing feeder to the site. However, feeders are also limited in capacity and in some instances a new dedicated feeder/s from the closest zone substation to the site will be required.

Although there are numerous diversity factors applicable for any given type of connection, installation (ie. residential, commercial, industrial) and other factors, for typical installations and usual equipment loads are provided in the Australian / New Zealand Standard AS / NZS 3000:2018 Electrical Installations (known as the Electrical Wiring Rules) as updated from time to time.

Endeavour Energy's general requirements is for distribution substation to be at ground level and have direct ready access from a public street (unless provided with appropriate easements for the associated underground cables and right of access) and must not be located within 6 metres of road intersections or bends to reduce the risk of possible vehicle impact damage.

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 Construction or Subdivision Certificate / commencement of works.

Endeavour Energy's distribution substations in newer / urban / underground areas consist mostly of padmount substations (also known as kiosk substations). Typically, they are a green or brown coloured box to blend into their surroundings, these structures are connected by underground cables. They can accommodate loads from 315 kVA up to 1,500 kVA (typically 500 kVA) ie. there is a significant variation in the number and type of premises able to be connected to a substation.

Padmount substations are converters of electricity, reducing the high voltages for street lighting and to the end user whilst low voltage pillar boxes are distribution junction points. These structures also mean underground cables are nearby. Digging activities and planting of trees or shrubs should not occur near them.

As an example of the type of development that may require the provision of a padmount substation, Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' includes the following requirement for substations in urban residential development.

4.4 SUBSTATIONS FOR URD

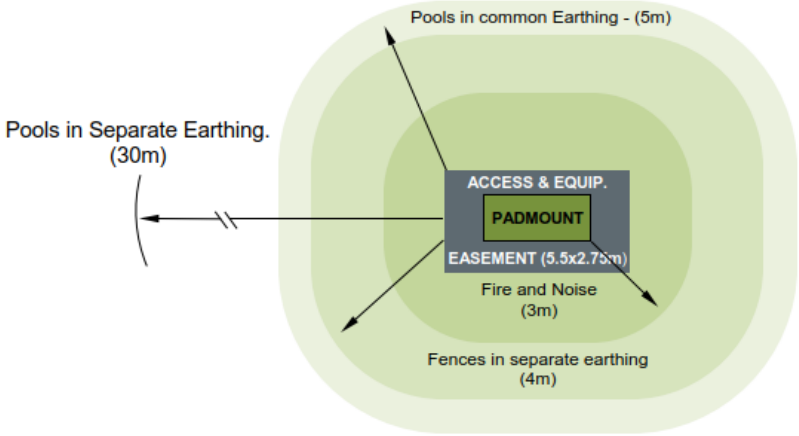
Substations in URD's must be padmounts, 500 kVA must be the standard size for transformers. 315 kVA transformers must be installed where the capacity of a 500 kVA transformer cannot be adequately utilised by this and adjacent developments and the deferment of expenditure is economical.

From Endeavour Energy's Mains Design Instruction MDI 0030 'Method of calculating voltage drop in low voltage mains', the After Diversity Maximum Demand (ADMD) Schedule for new URD development areas in Western Sydney in a gas area 6.5 KVA with 90 % of the transformer capacity allows for a maximum of 69 small dwellings for a 500 kVA padmount substation (or 43 for a 315 kVA).

The majority of Endeavour Energy's padmount substations are held under easement. 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.

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.

The restrictions for padmount substations were introduced on a case for case basis from 2003 before becoming standard in 2009. Whilst some existing padmount substations may not have these restrictions, in the redevelopment of any site with an existing padmount substation, for safety reasons the new restrictions should also be applied.

Older / non-urban / above ground areas of the network utilising pole mounted substations have comparatively limited capacity of 16 kilovolt amperes (kVA) up to a maximum of 400 kVA. Pole mounted substations need to be located in an area that is clear of overhead obstructions and the immediate area surrounding the pole should provide a firm, level base with sufficient space to safely erect an extension ladder.

Pole mounted substation no. 914 in Blaxcell Street, Guildford NSW has 79 customer connection points servicing 119 premises in an urban context which is at the upper end of the number of premises able to be serviced. In contrast pole mounted substation no. 26132 in Baaners Lane Little Hartley NSW in a non-urban context only services a single rural property. Source: Google Maps Street View.

23.4 Indoor Substations

Traditionally Endeavour Energy's preference has been for the utilisation of padmount substations. 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.

Developers have consistently opposed the imposition that such indoor substations place on their developments, but indoor substations have usually taken up development space equivalent to a few car parking spaces and in comparison to padmount substations, being integrated into the building they are an aesthetic improvement and also address issues related to fire rated construction and avoiding the need for the use of fire / screen walls.

For new developments particularly within central business districts where zero and minimal building setbacks are allowed (and which given their size makes the provision of the easements and restrictions for a padmount substation difficult to achieve on site), Endeavour Energy's recommendation is for the distribution substation to be an indoor substation (also known as a chamber substation).

Whilst indoor substations are predominantly utilised for commercial / office type development, in May 2017 Endeavour Energy's Mains Design Instruction MDI 0028 'Underground distribution network design' was amended to allow certain types of urban multi residential load (UML) developments to utilise indoor substations where a padmount substation is not practicably possible.

As with the installation of underground reticulation, Councils may seek the enforcement of an indoor substations policy as part of their detailed planning and design guidelines in their Development Control Plans to support the planning controls in the Local Environmental Plan.

As shown in the following extract of Google Maps Street View this site at 32 Castlereagh Street Liverpool utilises an indoor substation due to the zero building setback with the low voltage overhead power lines also having been undergrounded to provide the required safety clearances to the building.

Indoor substation at 32 Castlereagh Street Liverpool. Source: Google Maps Street View.

In comparison, as shown in the following extract of Google Maps Street View is of a site at 18 Copeland Street Liverpool required the installation of a fire wall next to the padmount substation to avoid the creation of restrictions on the adjoining site the development. Whilst meeting the fire rating requirements etc. from an aesthetics perspective this is not an attractive outcome.

Fire wall constructed for padmount substation at 18 Copeland Street Liverpool. Source: Google Maps Street View.

24 Protected Works

In cases where Endeavour Energy does not have an easement over electricity infrastructure on a site, they are usually 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 is in place (please refer to the condition for 'Easement Management') and in accordance with the minimum easement widths specified in Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights',

For overhead power lines, this easement width in some circumstances may not be warranted ie. depending on the span (the longer the span the greater the sag and blowout of the overhead power lines), type of conductor, access, property type and use etc. However if the easement width cannot be reasonably provided, as a minimum any building or structure (including fencing, signage, flag poles etc.) whether temporary or permanent must comply with the minimum required safe distances / clearances (please refer to the condition for 'Safety Clearances').

Protected works often occur in non-urban / rural areas (where in the past the policy was not to obtain easements due to the lower number of customers and the associated network risks)

The applicant should note the following requirements of Endeavour Energy's 'Land Interest Guidelines for Network Connection Works, Provision of Network Connection Services'.

5.0 REGISTERED LAND INTERESTS REQUIRED WHEN SUBDIVIDING LAND

5.1 Urban Requirements

Endeavour Energy will require the registration of Land Interests for:

a) all new transmission, high voltage and low voltage Network Assets; and
b) all existing transmission, high voltage and low voltage Network Assets located within the Customer's land.

5.2 Non-urban Requirements

Endeavour Energy will require the registration of Land Interests for:

a) all new transmission, high voltage and low voltage Network Assets;
b) all existing transmission Network Assets located within the Customer's land;
c) all existing high voltage Network Assets located within the Customer's land; and
d) all existing low voltage Network Assets that will be used to supply any adjoining land outside the subdivision.

6.0 REGISTERED LAND INTERESTS REQUIRED WHEN NOT SUBDIVIDING LAND

6.1 Urban Requirements

Endeavour Energy will require the registration of Land Interests for:

e) all existing Network Assets that will be used to supply a new Network Asset.

25 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 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 a guide, reference should be had to Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' Table 1 – 'Minimum easement widths'.

25.1 Sensitive / Special Uses

In regard to the proximity of sensitive / special uses such as schools, pre-schools, day care centres etc. near electricity infrastructure, Endeavour Energy's Sustainability & Environment Branch has provided the following advice.

> *As far as Network Environment Assessment Section is aware there are no restrictions in legislation that stop schools, pre-schools, day care centres being placed next to electricity infrastructure.*
>
> *In regard to the NSW Planning & Environment 'Child Care Planning Guideline' August 2017, besides Part 3.6 'Noise and air pollution' referring to substations as a 'noisy environment', there is no specific requirement under the site selection and location criteria to consider proximity to electricity infrastructure, although arguably a child care centre and electricity infrastructure are not a compatible use.*
>
> *Prudent avoidance measures must however be implemented. Prudent avoidance was a policy recommended by former Chief Justice of the High Court of Australia, Sir Harry Gibbs, as a result of an inquiry he conducted into community needs and high voltage transmission lines including issues in relation to EMF back in 1991. The findings in the Gibbs report are consistent with subsequent inquiries and are still relevant today.*

Prudent avoidance is defined as doing what can be done without undue inconvenience and at modest expense to avert the possible risk to health from exposure to new high voltage transmission facilities. In practical terms, this means designing new transmission and distribution facilities having regard to their capacity to produce EMFs, and siting them having regard to the proximity of houses, schools and the like.

Although the Gibbs report was particularly aimed at electricity distributers to consider when placing their infrastructure, and bearing in mind that there are schools, pre-schools, day care centres adjacent to our infrastructure in various locations right across our franchise area, it is nonetheless Endeavour Energy's recommendation it that such 'sensitive uses' are not built adjacent to major electricity infrastructure.

Should such a development proceed, the design of the schools, pre-schools, day care centres should also consider prudent avoidance measures such as any rooms which the children will occupy (class rooms, play areas, sleeping rooms, eating areas) be arranged such that they are on the side of the site/building which is furthest away from the electricity infrastructure.

There is scientific consensus that health effects have not been established but that the possibility cannot be ruled out. Accordingly, if there are any concerns regarding the location of the schools, pre-schools, day care centres in proximity to the electricity infrastructure, in order to make an informed conclusion, the applicant may need to commission an independent review to provide an overall assessment including electric and magnetic field measurement and advice. Applying a precautionary approach early on in the design process will hopefully result in the adoption of prudent avoidance principles benefitting the eventual development of the site.

Endeavour Energy is able to provide estimated EMF levels from comparable electricity infrastructure and having regard to concept designs which can then be used to model the possible impact. Further details are available by contacting Endeavour Energy's Substation Primary Design Section via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or email earthingenquiry@endeavourenergy.com.au .

Although not part of Endeavour Energy's electricity network, the applicant should consider wiring the new building and locating high electricity consuming devices away from areas occupied by children.

25.2 Noise

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. Overhead power lines can produce an audible sound or buzz as a side effect of carrying electricity. The sound can be louder if there is increased moisture (during rain, fog, frost etc.) or pollutants in the air. The sound usually occurs at the poles at the insulators supporting the power lines and increase at higher voltages.

Endeavour Energy's substations are not a '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 ie. a substation is generally located and designed to not result in the emission of offensive noise. As a guide / target 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.

The Environment Protection Authority EPA 2013/0127 Noise Guide for Local Government, in Part 3 Noise management principles, includes a reference to *State Environmental Planning Policy (Infrastructure) 2007* (NSW). Whilst not directly applicable to 'Division 5 Electricity transmission or distribution', the similar standard as that required for rail corridors and roads and traffic should be imposed on any new development.

If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:

(a) in any bedroom in the building—35 dB(A) at any time between 10 pm and 7 am,

(b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

Acoustic assessments should consider substations required to facilitate the proposed development as a potential mechanical / plant noise source.

25.3 Electric and Magnetic Fields (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. Among those international agencies that provide guidelines for acceptable EMF exposure to the general public, the International Commission on Non-Ionizing Radiation Protection in 2010 established a level of 2,000 milligauss (mG). Endeavour Energy recognises that timely additional research is unlikely to prove the safety of power-line EMF to the satisfaction of all.

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. As mentioned above, this includes a commitment to a policy of prudent avoidance as endorsed by the ENA with regard to the location of assets and electric and magnetic fields.

26 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. Please find attached copies of 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:

https://www.endeavourenergy.com.au/safety .

Endeavour Energy provides safety advice to the building industry, councils or any other organisation or individuals working near our overhead or underground network. Enquiries for parts of the network which are not subject to easements can be made by completing the attached Request for Safety Advice form and emailing it to Construction.Works@endeavourenergy.com.au . Enquiries related to electricity infrastructure located within an easement should be directed to Endeavour Energy's Easements Officers by email Easements@endeavourenergy.com.au .

27 Removal of Electricity

Approval for the permanent disconnection and removal of supply must be obtained from Endeavour Energy's Customer Network Solutions 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'.

28 Safety Clearances

Where the electricity distribution network utilises overhead power lines, it partly relies on the public road reserve and road / front building setbacks to provide access and safety clearances. In areas where the electricity network is designed on the basis of low density residential development with typically minimum front building setbacks ranging from 4.5 to 10 metres, a rezoning to increases density / dwellings per hectare is often achieved by allowing for reduced and sometimes zero setbacks as well as then encroachments / projections of balconies and awnings into the front building setback (or in some mixed-use developments the awnings extent over the footpath) the required clearances cannot be maintained and causes issues with the network.

As a minimum any building or structure (including fencing, signage, flag poles etc.) whether temporary or permanent must comply with the minimum safe distances / clearances for voltages up to and including 132,000 volts (132 kV) as specified in:

- Australian/New Zealand Standard AS/NZS 7000 – 2016: 'Overhead line design' as updated from time to time.
- 'Service and Installation Rules of NSW' which can be accessed via the following link to the Energy NSW website:

  https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules .

These distances must be maintained at all times and regardless of the Council's allowable building setbacks etc. under its development controls. As a guide only please find attached a copy of Endeavour Energy Drawing 86232 'Overhead Lines Minimum Clearances Near Structures'. Factors such as the span (the longer the span the greater the sag and blowout of the overhead power lines), type of conductor, access, property type and use etc. will impact on the minimum clearances.

Different voltages are kept at different heights, the higher the voltage, the higher the wires are positioned on the pole. Similarly, the higher the voltage, the greater the required building setback.

Overhead powerlines with high voltage, low voltage and service connections at different levels on the poles. This example is in Marayong NSW part of Endeavour Energy's franchise / network area. Source: Google Maps Street View.

If there is any doubt whatsoever regarding the safety clearances to the overhead power lines, the applicant will need to have the safety clearances assessed by a suitably qualified electrical engineer / Accredited Service Provider (please refer to the above point 'Network Capacity / Connection'. This will require the provision of a detailed survey plan showing the location of the conductors to enable the assessment / modelling of the clearances for which there are software packages available. If the safety clearances are inadequate, either the parts of the building encroaching the required clearances or the overhead power lines will need to be redesigned to provide the required clearances.

Even if there is no issue with the safety clearances to the building or structure, ordinary persons must maintain a minimum safe approach distance of 3.0 metres to all voltages up to and including 132,000 volts / 132 kV. Work within the safe approach distances requires an authorised or instructed person with technical knowledge or sufficient experience to perform the work required, a safety observer for operating plant as well as possibly an outage request and/or erection of a protective hoarding.

Endeavour Energy's recommendation is that whenever reasonably possible buildings and structures be located and designed to avoid the need to work within the safe approach distances for ordinary persons eg. not having parts of the building normally accessible to persons in close proximity of the overhead power lines; the use of durable / low maintenance finishes. Alternatively, in some instances the adoption of an underground solution may be warranted ie. particularly for low voltage which can be more readily (in shorter distances) and comparatively economically be undergrounded.

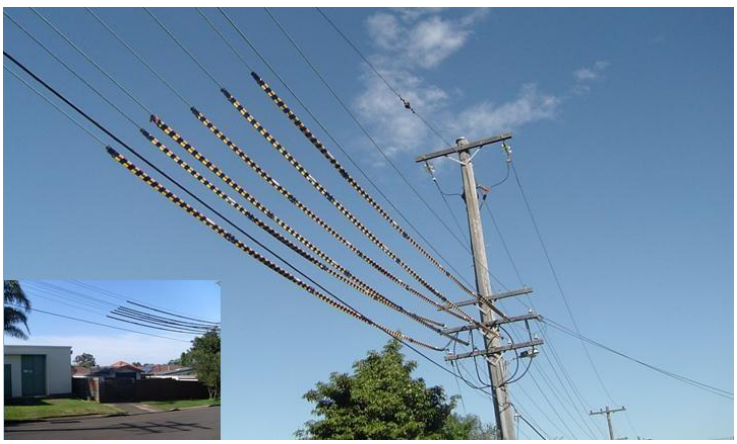
Consideration must be given to WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006' which includes the following requirements for work near low voltage overhead power / service lines.

TABLE 4

Approach distances for work near low voltage overhead service lines

Ordinary Persons (m)				
Hand held tools	**Operation of crane or mobile plant**	**Handling of metal materials (Scaffolding, roofing, guttering, pipes, etc)**	**Handling of non-conductive materials (Timber, plywood, PVC pipes and guttering, etc)**	**Driving or operating vehicle**
0.5	3.0	4.0	1.5	0.6

In addition the developer / builder should consider 'tiger tailing'/matting the low voltage overhead service lines to provide a distinct visual of the location of overhead construction ie. these are still not regarded as insulated conductors and safe approach distances need to be maintained. as shown in the following photograph.



'Tiger Tails' are used primarily as a visual indicator or for mechanical protection from electrical wires. They are not to be used as insulating material and will not provide full protection from live electricity. This example is of tiger tails installed by Endeavour Energy on overhead power lines at Ermington NSW as part of a risk management for work on a nearby Distribution Substation No. 20981.

28.1 Scaffolding

For any scaffolding, depending on the width of the working platform and the distance of the conductors from the boundary, consideration may need to be given to the 'Work Near Overhead Power Lines Code of Practice 2006', Section 6.5 'Control measures for erection and dismantling of scaffolding near overhead power lines up to and including 33kV' an extract of which follows.

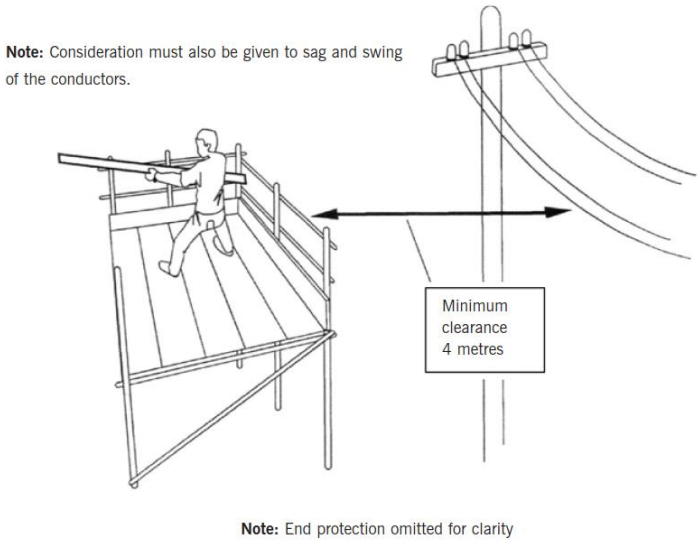
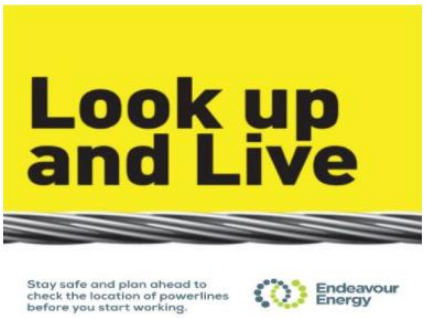


Figure 10 – A 4 metre approach distance applies in any direction where metallic scaffold is erected, used or dismantled near overhead power lines.

The use of scaffolding near overhead power lines may require the isolation of the network and the use of a hoarding which can be a significant cost and time to organise.

28.2 Look Up and Live



Before undertaking work on a site with overhead power lines, the location of powerlines can be checked with the free Look Up and Live app which is available via the following link:

https://www.arcgis.com/apps/webappviewer/index.html?id=5a53f6f37db84158930f9909e4d30286 .

The Look up and Live map is an interactive geospatial map that has been developed to display the electricity networks of various distributors including Endeavour Energy. It is a simple worksite planning tool which provides information on powerline safety and allows specific information to be obtained from Endeavour Energy concerning how to minimize the risk of contact while working in proximity to the electricity network.

28.3 'Awning' Overhead Power Lines

In some older urban areas of the electricity distribution network may have low voltage overhead 'awning' power lines where the conductors are in troughs / ducts fixed to the awnings / shop fronts.

Example of 'awning' overhead power lines coming from a low voltage pillar on the road verge rising to through a duct and then through or above the awnings to the customer connection points for the premises. Source: Google Maps Street View.

With the low voltage overhead 'awning' power lines, before commencing any activity their exact location must be identified. If any of the foregoing external works involves the exposing of the power lines within the awning and the undertaking of works within the safe approach distances, it requires an electrically authorised (500 mm) or instructed person (1,000 mm) with technical knowledge or sufficient experience to perform the work required. The applicant may need to seek advice from an Accredited Service Provider (ASP) of an appropriate level and class of accreditation for the undertaking of any such works. For details of the ASP scheme please refer to the above condition 'Network Connection'.

28.4 Pole Mounted Substations

Endeavour Energy Mains Design Instruction MDI 0031 'Overhead line design' includes the following clearance zone for pole mounted substations.

9.0 SUBSTATIONS, AUTO-RECLOSERS, SECTIONALISERS, VOLTAGE REGULATORS AND ENCLOSED SWITCHES

9.1.2 Equipment hazard and fire zone

As part of the design, allowance is to be made for a three metre horizontal clearance zone around pole mounted substations, regulators, reclosers, sectionalisers and enclosed switches to minimise the effects of failure of any equipment and manage ongoing noise in accordance with Figure 13.

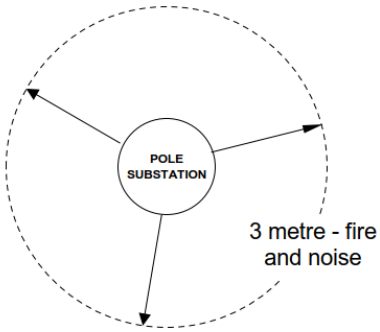


Figure 13 – Fire and noise separation

Pole mounted substations, regulators, reclosers, sectionalisers and enclosed switches may contain hazardous materials. Additional requirements apply to environments containing explosive gas atmospheres. Where applicable these provisions must comply with the requirements of AS/NZS 60079.

29 Security / Climb Points

Endeavour Energy's Substation Design Instruction SDI524 'Fencing and Perimeter Security at Zone and Transmission Substations, and Switching Stations' states the following requirement in relation to the prevention of unauthorised access by any person to a substation by the creation of 'climb points'.

5.11 Perimeter management

Consideration shall be given to the balance between screening with manufactured objects or plants, and the security benefits of uninhibited visibility to staff and the general public.

To prevent people from concealing themselves or aiding their activities, vegetation shall not screen the entire length of the substation perimeter.

Vegetation that could provide a climbing point, and all objects, including equipment and stores, shall not be located within 2000mm of either side of the intruder resistant perimeter fence or intruder resistant barrier.

Accordingly, Endeavour Energy's usual requirement is to have a minimum clear area / buffer of 2 metres from the fence with 3 metres preferred, and then depending on what the climb point is, it could increase to 4 metres. Where a permanent structures / objects is constructed within these clearances, Endeavour Energy may raise the height of the substation fence.

Zone substations typically have a security weldmesh fence, the height and finish eg. may be topped with razor wire, depending upon the nearby existence of climb points and the clearance of vegetation within 3m of the fence. Whilst Endeavour Energy has no control over the development on the adjacent land, the construction of a structure that constitutes a 'climb point' would require an increase in the height of the substation fence.

Endeavour Energy's Seven Hills Zone Substation is an 'outdoor' design. Note height of fencing due to adjacent 'climb point' created by the seating and awning.

30 Service Conductors

A component of Endeavour Energy's electricity distribution system are the service lines from the street to the customer's connection point / electrical installation dedicated to the supply of electricity to the site. In older / above ground areas of the network this is typically an overhead service line coming from a pole on the road verge going to a point of attachment where the mains are terminated on a customer's building, pole or structure.

Low voltage overhead service conductors encroaching adjoining properties in older / above ground parts of the network can be an issue for the redevelopment of 'brownfield' areas. These service mains are generally 'legacy assets' but are also 'Protected Works' and cannot be removed to rectify the encroachment – unless it is done so with the agreement of the benefited property owner and an alternative low voltage customer service is provided at the applicant's cost. Conversely, if the adjoining site was to be redeveloped, the encroachment would need to be rectified by and at the cost of the adjoining owner.

Clauses 2.2.2 'Service Route' and 3.2.4 'Crossing of Adjoining Property' of the Service and Installation Rules of NSW state that service mains or consumer's mains crossing an adjoining property must have a suitable easement. Endeavour Energy generally requires this easement to adopt the standard terms in Schedule 8 of the *Conveyancing Act 1919* (NSW) and benefit the lot being serviced (an inter-allotment easement appurtenant to the land). As Endeavour Energy's G/Net master facility model only shows easements benefiting Endeavour Energy, these are not shown on the site plan from Endeavour Energy's G/Net master facility model. To verify the existence of such an easement a title search would be required.

Whilst Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure' requires a minimum easement width of 9 metres for low voltage overhead power lines ie. 4.5 metres to both sides of the centreline of the conductors, Endeavour Energy's 'Mains Design Instruction MDI 0031 'Overhead distribution: Design standards manual' allows a lesser 6 metre easement width for certain types of conductors.

MDI 0031 Overhead distribution: Design standards manual

3.16 Easements

Where Endeavour Energy overhead lines cross private property it will be necessary for the designer to ensure that the line route is protected by a registered easement. The minimum width of this easement shall be in accordance with the requirements in MMI 0015 and the table below.

3.16.1 Standard easement widths

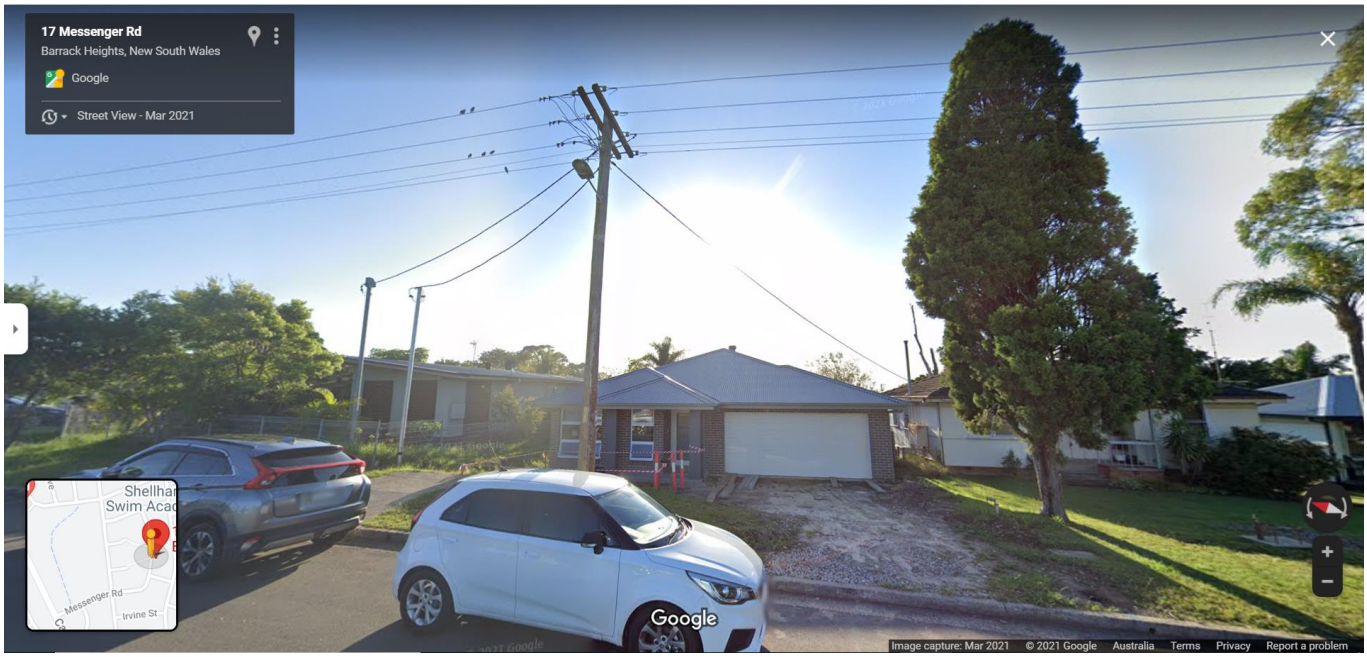
Overhead system		
Aerial bundled conductors	230/400V	6m
Aerial bundled conductors (NMS)	11kV – 22kV	6m
CCT – vertical construction	11kV – 22kV	6m
Bare conductor and CCT - horizontal construction	400V – 22kV	9m

ABC = Aerial Bundled Cables CTT = Covered Conductor Thick

Given the difficulty in obtaining easements, the solution to the encroachment is usually the adoption of an alternative network design involving either an underground solution or a customer owned / private pole. In accordance with the Service and Installation Rules of NSW, Clause 3.7.2.1 'Private Posts/Poles' a private post/pole must be installed within 1 metre of the front property street alignment.

The Service and Installation Rules of NSW can be accessed via the following link to the Energy NSW website:

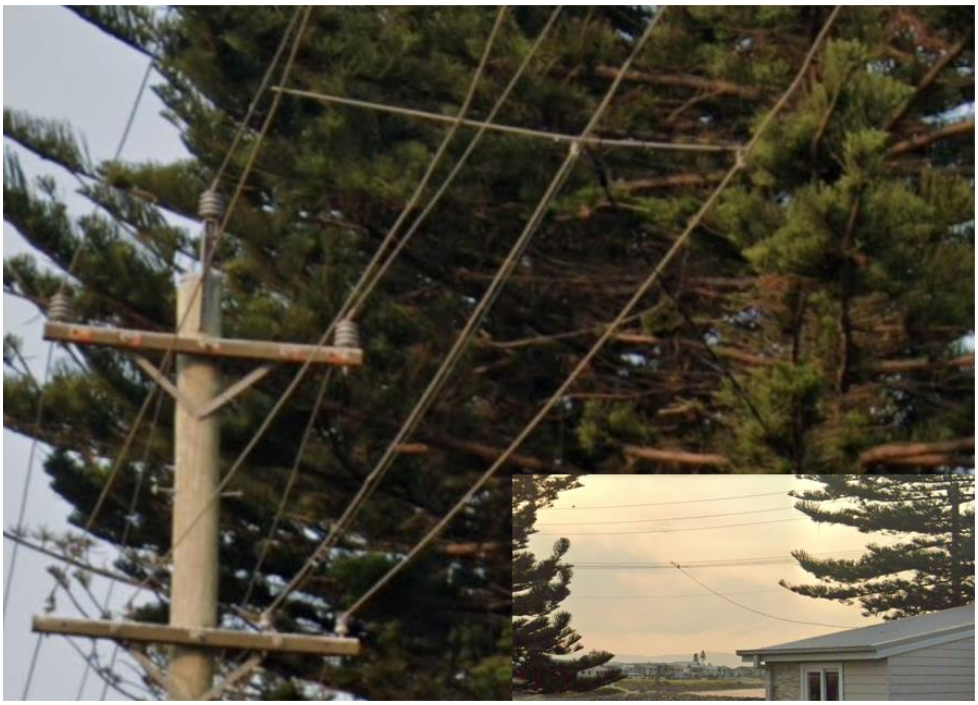
https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules .



The low voltage overhead service conductor to the older dwelling on the right encroaches the adjoining property. The newer dwelling to the left utilises a private pole to avid encroaching the adjoining property. The newly constructed dwelling also utilises a private pole possibly also utilised for temporary builder's supply and as cables will not impede the front building setback and also avoid the need for a point of attachment bracket usually required to be fixed to a rafter or fascia. Source: Google Maps Street View.

30.1 Mid Span - Suspended Service Conductors

The 'Service and Installation Rules of NSW' under Clause 3.2.4 'Crossing of Adjoining Property' indicates 'A private pole should be installed to avoid a suspended service. A mid span / suspended service is only permitted as a last resort'. Mid span / suspended services are also generally 'legacy assets' and not permitted for new development.



The mid span / suspended low voltage overhead service conductor for an existing dwelling avoids the nearby trees. The new development of the site will likely need to utilise an extended low voltage overhead service conductor coming from the pole on the road verge to a customer owned / private pole located within 1 metre of the front boundary. Source: Google Maps Street View.

31 Solar / Generation

Endeavour Energy allows connection of up to 8 kilowatts (kW) total panels to a 5 kW inverter or up to 40 kW total panels to a 30 kW inverter. If the applicant's connection requirements are other than these, an application for a micro embedded generator connection service will be required.

The connection of small and medium embedded generators with a capacity of between 30 kilowatts (kW) and 5 megawatts (MW) may affect other Endeavour Energy customers connected to the electricity network. A detailed technical review of endeavour Energy's network's capacity to transfer the generation energy along with analysis of the generator's protection schemes and quality of supply considerations must therefore be undertaken prior to a permission to connect to Endeavour Energy's network being issued. Further details are available by contacting Endeavour Energy's Customer Network Solutions 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 > Your energy> Our services> Our connection services > Small and medium embedded generator connection service' via the following link:

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

32 Streetlighting

Endeavour Energy recognise that lighting roads, pedestrian crossings and pathways helps to keep pedestrians and motorists safe during times of inadequate natural light.

With the increase in both vehicular and pedestrian traffic resulting from the overall development occurring in the area, even if the existing streetlighting is already 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 .

32.1 Street Awnings

With zero building setbacks and street awnings extending over the footpath, consideration must be provided to the possible impacts on the existing streetlights. This may result in the reduction of light levels by having a shadowing effect. To rectify this additional under awning lighting may be required to ensure the visual requirements of pedestrians and motorists are maintained.

The design of the awning must take into consideration the positioning of the existing lighting infrastructure and must facilitate the safe working environment. Streetlight columns and poles must not pass through awnings. As a guide a minimum of 300 mm clearance is required around poles or streetlight columns to facilitate inspection and maintenance.

The awning may restrict access for the installation and removal of the streetlight column, fixing of streetlight faults for which access will be required for all lighting infrastructure including lamps, columns, supply cabling, pillars and pits. Maintenance staff will require safe access both for themselves and their vehicles and equipment purposes eg. from an elevated work platform (EWP) vehicle to change the lamps. Failing the foregoing, an asset redesign / relocation may be required.

The street awning is inappropriately constructed around the streetlight column. Source: Google Maps Street View.

33 Sustainability

Greenhouse gas emissions from Australia's energy sector continue to decline due to gradual decarbonisation of the grid. Endeavour Energy is also committed to reducing greenhouse gas emissions and helping customers save on their energy consumption and costs through new initiatives and projects to adopt sustainable energy technologies.

This commitment involves network demand management solutions (also known as a non-network option) being investigated and implemented where cost to either permanently defer network investment or temporarily defer investment to achieve the optimal timing and utilisation of network investments whilst meeting regulatory, statutory obligations, stakeholder and customer expectations. This will include consideration and potential adoption of new technologies and innovative approaches that can provide those solutions.

Demand management solutions generally involve a specific or linked network element, such as a zone substation, or broad based targeted solution – where a network area, such as a broader distribution area, has been forecast to exceed network capacity limitations within the area.

Notwithstanding the solutions such as the use of controllable loads, embedded generation and network tariff options that promote the efficient utilisation of network assets by signalling the economic cost of network congestion can also apply to individual customers eg. by saving energy around the home when and how heating or cooling, cooking, lighting etc. that involves the use of smart meters, batteries and solar panels to enable customers to generate, store and sell electricity into the grid as well as integrating electric vehicles into the network.

Accordingly Endeavour Energy encourages all development to adopt sustainable energy initiatives. For details of Endeavour Energy's sustainable energy initiatives or on Endeavour Energy's website under 'Home > Modern grid > Sustainability' via the following link:

https://www.endeavourenergy.com.au/ .

Green light for Net Zero Strategy

Kiama Council has given the green light to switch all remaining local street lights to LED, a key element of their Net Zero Strategy. Council has endorsed a proposal by Endeavour Energy to upgrade the remaining 951 non-LED street lights in the municipality.

The completion of light-emitting diode (LED) street lighting upgrade by Kiama Municipal Council will reduce emissions by 310 tonnes of carbon emissions a year [382,225 kilowatt-hours (kWh)].Source:https://www.nationaltribune.com.au/green-light-for-net-zero-strategy/

34 Swimming Pools

Electricity and water are a potentially dangerous combination and needs to be treated with caution.

For Endeavour Energy's purposes the separation required from electricity infrastructure to a swimming pool includes the 'pool zone' being 'arms reach' or 1.25 metres from the water edge, as referred / defined in Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations' as updated from time to time. The Standard also requires the construction of a bonded earthing system to meet the requirements of equipotential bonding all the metal / conductive components to create substantially the same electrical potential, so that, under fault conditions, the difference in potential between simultaneously accessible exposed and extraneous conductive parts will not cause electric shock.

This is due to parts of the swimming pool having the potential to be a conductor of electricity that can function as a path for stray current which as it seeks to complete the circuit, it could travel through to the water in the swimming pool. This includes but is not limited to coping / paving, rail / decks, steps, diving boards, pumps, filters etc.

The separation / restrictions for swimming pools near padmount substations is detailed in the above condition 'Easement Management'.

Swimming pools are prohibited in all types of easements. Even if a property does not have an easement, there may be electricity infrastructure on a site which are protected works (please refer to the above point Protected Works') as well as adjacent to the site in public roadways and other adjoining properties. Irrespective, the required safety clearance zone must be provided.

Swimming pools potential could occur in any land zone and in addition to private pools on residential lots can be for various other uses eg. as part of an apartment complex / common area, recreation centres, hotels, sales and display etc. For these types of uses often with reduced building setbacks, this potentially places a swimming pool in closer proximity to electricity infrastructure.

Special consideration needs to be provided to the positioning of swimming pools in:

- Front yards.
- Corner lots with reduced building setbacks to the secondary road frontage.
- Adjoining zone and transmission substations.

Before and After. This swimming pool in Endeavour Energy's network area at Middleton Grange NSW had to be modified to comply with the restriction for the padmount substation on the use of land in relation to swimming pools.

35 Telecommunications

Endeavour Energy has significant telecommunications infrastructure between their control centres, substations and other key electricity network infrastructure for Supervisory Control and Data Acquisition (SCADA) applications, communications to our Field Service Centres asset monitoring systems and high-speed protection packages can also be effected.

Factors including environmental factors (topography, direct signal strength, radio frequency interference, proposed transmitter type, receiver type etc) affect the operation of the telecommunications systems. Accordingly telecommunications facilities need to be clear of surrounding obstructions such as buildings to reduce 'dead spots' and allow the radio base station to effectively cover its intended range / path (typically a direct line of sight between two radio base stations located on towers or elevated topographical features).

Telecommunications are likely to be affected if a building or development is in the line of sight between sending and receiving antennae or within a zone of the line of sight of these antennae. Where a potential exists for interference to line of sight links, an obstruction analysis will need to be undertaken to ensure that there is no impact on Endeavour Energy's telecommunications facilities.
Mitigation measures may require an establishment of an exclusion zone or relocation or redesign of the development causing the interference. Failure to do so would require Endeavour Energy to modify or relocated its existing telecommunications infrastructure eg. by installation of a directional antennae to reroute the existing signal; installation of an amplifier to boost the signal, and / or utilisation of onsite optical cable to reroute the original signal. All of these will involve a significant impact on Endeavour Energy's telecommunication facilities, cost and potential safety risk until the matter is rectified.

36 Vegetation Management

Endeavour Energy recognises the importance of plants and vegetation in helping to maintain the environmental balance and mitigate some of the negative impacts and social consequences of urbanization eg. the creation of 'urban heat islands' and need for green / canopy cover to help offset the absorption and retention of heat. However, as an electricity distributor this also needs to be balanced against the critical need to manage the risks of vegetation intrusion to the electricity network that can cause:

- public safety incidents such as electrocution, or damage to a person's property;
- fire starts and the risk of bushfires that have devastating impacts including loss of human life and large-scale property destruction;
- restrict access for installation maintenance and repair of electricity infrastructure;
- reduce light levels from streetlights which can impact on crime prevention and road and pedestrian safety; and
- electricity supply interruptions which can also impact not only electricity customers but also other critical infrastructures and result in significant economic and social consequences.

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.

Sydney's weather of storms and high winds can cause trees and branches to touch and short out the network or fall onto and damage overhead power lines. Heavy rain and flooding can also damage the electricity network. Many blackouts are caused from trees and shrubs damaging power lines and other network assets, especially during storms and periods of high winds.

Always treat fallen power lines as 'alive' and keep 8 metres away from them. Any trees, branches or other debris can also become 'alive' if they contact the damaged power lines. Source: Endeavour Energy 'Alive and Dangerous' brochure.

The central activity is to clear vegetation and remove identified hazard trees that are in close proximity to electricity lines and to safely dispose of cut vegetation in accordance with Endeavour Energy's environmental obligations.

Poor tree selection and placement near overhead power lines in Moss Vale NSW in Endeavour Energy's franchise area.

Endeavour Energy regularly inspect and clear vegetation around electricity infrastructure. This not only includes tree trimming to overhead power lines but also ground clearing eg. for underground cable works or access tracks. As well as power, the infrastructure includes earthing cables (to allow a leaking/fault current to flow into the grounding system and be properly dissipated) and pilot cables (carrying protection signals or communications between substations). The poles may also carry data and telecommunications cables for other authorities / carriers.

The cost of vegetation management is a significant cost element in the company's operating budget (and the network charges to its customers). Endeavour Energy is constantly looking to improve its vegetation management practices to enable better maintenance, resulting in fewer faults and fewer outages of shorter duration and reducing costs.

The planting of large trees in the vicinity of electricity infrastructure is therefore not supported by Endeavour Energy. Suitable planting needs to be undertaken in proximity of electricity infrastructure. Only low growing shrubs not exceeding 3.0 metres in height, 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 (at least the same distance from overhead power lines as their potential full grown height) and even with underground cables, be installed with a root barrier around the root ball of the plant.

Endeavour Energy's recommendation is that consideration be given to the removal of the existing street that are of nil to low ecological and the proposed new trees be replaced with an alternative smaller planting to ensure appropriate clearances are maintained whilst minimising the need for future pruning. Alternatively, the minimum clearances for vegetation as required by the 'Service and Installation Rules of NSW' must be allowed for which can accessed via the following link to the 'Service and Installation Rules of NSW' can be accessed via the following link to the NSW Planning, Industry & Environment website:

> https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules .

Whilst trees growing into the safety clearance zones for overhead power lines is the focus of Endeavour Energy's vegetation management program, while trees and underground cables often coexist well together, it is also important to keep trees a safe distance away from the cables to prevent the root system from growing around and possibly into the cable ducts the lines. The tree could be seriously damaged if roots have to be cut to dig up and repair underground cables.

37 Other

38 References

Conveyancing Act 1919 (NSW)
Electricity Supply Act 1995 (NSW).
Electricity Supply Amendment (Protection of Electricity Works) Act 2006 (NSW)
Environmental Planning and Assessment Act 1979 (NSW).
Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)
Protection of the Environment Operations Act 1997 (NSW)
State Environmental Planning Policy (Infrastructure) 2007 (NSW)
State Environmental Planning Policy No. 33 — Hazardous and Offensive Development (1992) NSW
ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Electricity Infrastructure Industry Safety Steering Committee September 2012
Camden Council Development Control Plan 2011
NSW Planning & Environment 'Child Care Planning Guideline' August 2017
NSW Rural Fire Service 'Planning for Bush Fire Protection 2019'
NSW Government 'The Gibbs Report, Inquiry into Community Needs and High Voltage Transmission Line Development 1991'
NSW Streets Opening Coordination Council 'Guide to Codes and Practices for Streets Opening'
Energy Networks Association (ENA) 'Electric & Magnetic Fields – What We Know'
Australian Standard AS 1530 'Fire Test to Building Material – Standard'
Australian Standard AS2067: 2016 'Substations and high voltage installations exceeding 1 kV a.c.'
Australian Standard AS 2601—2001: 'The demolition of structures'
Australian Standard 2890 'Parking Facilities'
Australian/New Zealand Standard AS/NZS 7000: 2016: 'Overhead line design'
Australian/New Zealand Standard AS/NZS 3000:2018 'Electrical installations'
Australian / New Zealand Standard AS/NZS 1158: 2010 'Lighting for roads and public spaces'
Endeavour Energy Company Policy (Network) 9.1.1 – Bushfire Risk Management
Endeavour Energy Company Policy 9.2.3 (Network) 'Property Tenure for Network Assets'
Endeavour Energy Company Policy (Network) 9.2.5 – Network Asset Design
Endeavour Energy Company Procedure GAM 0114 - Granting Dispensations for Engineering Documents
Endeavour Energy's Branch Procedure (System Control) NCB 0615 'Flood Response Plan'
Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights'
Endeavour Energy Mains Design Instruction MDI 0028 'Underground distribution network design'
Endeavour Energy Mains Design Instruction MDI 0031 'Overhead line design'
Endeavour Energy Mains Construction Instruction MCI 0006 'Underground distribution construction standards manual'
Endeavour Energy Substation Design Instruction SDI524 'Fencing and Perimeter Security at Zone and Transmission Substations, and Switching Stations'
Endeavour Energy Earthing Design Instruction EDI 001'Earthing design risk assessment'
Endeavour Energy Drawing 86232 'Overhead Lines Minimum Clearances Near Structures'
Endeavour Energy Form FPJ7006 'Technical Review Request'
Endeavour Energy Form FPJ4015 'Application for the Relocation / Removal of Electrical Network Assets'
Endeavour Energy Form FPJ4603 'Permission to Remove Service / Metering by Authorised Level 2 Accredited Service Provider'
Endeavour Energy 'Alive and Dangerous'
Endeavour Energy 'Directions Paper for Consultation 1 July 2019 – 30 June 2024'
Endeavour Energy 'Distribution Annual Planning Report December 2020'
Endeavour Energy 'High Voltage Operational and Maintenance Protocol'
Endeavour Energy 'Land Interest Guidelines for Network Connection Works, Provision of Network Connection Services'
Energy NSW 'NSW Public Lighting Code 2019'
Energy NSW 'Service and Installation Rules of NSW'
Environment Protection Authority EPA 2013/0127 Noise Guide for Local Government