Department of Climate Change, Energy, the Environment and Water

Our ref: DOC24/107393

Andrew Watson

DA Coordinator

Key Sites and Regional Assessments

Department of Planning, Housing, and Infrastructure

Email: Andrew.Watson@planning.nsw.gov.au

CC: Fadi.Shakir@planning.nsw.gov.au

Subject: Bradfield City Centre Master Plan Aboriginal Cultural Heritage Advice

Dear Andrew,

Thank you for the opportunity to comment on the planning proposal for the Bradfield City Centre Master Plan under *State Environment Planning Policy (Precincts – Western Parkland City) 2021*. The site is 215 Badgerys Creek Road, Bradfield NSW 2556 (Lot 3101 DP 1282964).

The following comments have been devised after review of documentation provided with the planning proposal:

State and local heritage considerations under the *Heritage Act 1977*
As delegate of the Heritage Council

The subject site is located in the immediate vicinity of the State Heritage Register (SHR) listed 'Kelvin' (SHR 00046), located at 30 The Retreat, Bringelly. The Statement of Significance for Kelvin identifies that the homestead complex, comprised of a range of buildings, landscape items including numerous mature trees, driveways, fencing and entrances has historical significance for its *"ability to demonstrate the pastoral development of Bringelly* ...and its ability to demonstrate *"the principles of 19th century farm estate architecture, planning and design."*

In addition to the demonstrated associated, aesthetic, technical, rarity significance, Kelvin also enjoys significant view corridors to the east towards Thompson's Creek and South Creek, as well as distant rural views to the north.

Given the proximity of the proposed Bradfield City Development to the State Listed item, it is considered that there is a potential for impacts to the items setting arising from the development of the study area. The main area of concern relates to the change of the neighbouring setting from rural to townscape affecting both the surrounding character and potentially impact long range views to and from Kelvin.

The mitigation measures and recommendations included within the Statement of Heritage Impact prepared by Extent Heritage and are considered to be appropriate and should be adopted.

- Any new development should consider the SHR heritage item, Kelvin which is located in the immediate vicinity. Consideration should be given to the height, bulk, scale and material of new buildings. Recessive colours, adequate setbacks, the use of open space and landscaping are ways which the impacts to this heritage item can be mitigated. This consideration is important for the Stage 4 area of the Master Plan, which is the closest to the SHR Item (noting not the subject of this Master Plan application).
- It is recommended future development includes a transitional area between the heritage item and new development to ensure development is of a scale and character suitable to the heritage significance of Kelvin. Transitional areas should consider the topography and ensure buildings have a lower FSR and building height to minimise potential adverse impacts arising from overshadowing, scale and massing.
- It is recommended that a Photographic Archival Recording be undertaken for the site prior to any changes being made to record the existing site.
- There is the opportunity to develop a Heritage Interpretation Strategy for this project. This will ensure a holistic approach towards to the interpretation implementation so that the significant values heritage in the vicinity, ranging from various themes including natural, Aboriginal, colonial, and twentieth-century heritage, are appropriately represented and enhance each other cohesively. The Strategy would typically be subject to internal and external consultation to guide the final implementation.
- In regard to the management of historical archaeological remains an Unexpected Finds Procedure should be in place prior to the commencement of ground works.

Aboriginal cultural heritage considerations under the *National Parks and Wildlife Act 1974*

HNSW have reviewed Appendix U Bradfield City Centre Master Plan Application Aboriginal cultural heritage assessment report (ACHAR) prepared by Extent Heritage (2023) provided in support of this proposal. HNSW agree with the ACHAR conclusions that an Aboriginal Heritage Impact Permit (AHIP) is required to authorise harm to the Aboriginal sites identified in the ACHAR.

When submitting an ACHAR in support of an AHIP application, please ensure that it meets the requirements of the guidelines https://www.heritage.nsw.gov.au/assets/Uploads/files/Guide-to-Investigating-Assessing-and-Reporting-on-Aboriginal-Cultural-Heritage-in-New-South-Wales.pdf

General Comments

Prior to finalisation of the proposal, Council should be satisfied that all necessary heritage assessments have been undertaken and that any impacts have been sufficiently addressed. Council's assessment should include, but not be limited to, a search of the State Heritage Inventory (https://www.heritage.nsw.gov.au/search-for-heritage/search-for-nsw-heritage/) and the Aboriginal Heritage Information Management System (https://www.heritage.nsw.gov.au/protecting-our-heritage/record-aboriginal-sites/).

If you have any questions, please contact Alison Lamond at alison.lamond@environment.nsw.gov.au or heritagemailbox@environment.nsw.gov.au or on 0419 762 918.

Yours sincerely

Nicole Davis

Nicole Davis

Manger Assessments

Heritage NSW

Department of Climate Change, Energy, the Environment and Water

As Delegate of the Heritage Council of NSW

As Delegate under National Parks and Wildlife Act 1974

15 March 2024

Our Ref: ID 2328

4 March 2024

Department of Planning, Housing & Infrastructure
Locked Bag 5022
Parramatta NSW 2124

email: aerotropolis.masterplans@dpie.nsw.gov.au
CC: shelly.stingmore@one.ses.nsw.gov.au

Bradfield City Centre Master Plan

Thank you for the opportunity to provide comment on the Bradfield City Centre Master Plan (the Plan) for 215 Badgerys Creek Road, Bradfield. It is understood that the Plan seeks to refine the Aerotropolis Precinct Plan to deliver approximately 10,000 residential dwellings and 20, 000 jobs up to and beyond 2056.[1] We note that the proposed development is for a mixed-use urban centre that will include significant transport infrastructure, residential, recreation, education and research, cultural, retail, commercial and industrial uses.[2]

The NSW State Emergency Service (NSW SES) is the agency responsible for dealing with floods, storms and tsunami in NSW. This role includes, planning for, responding to and coordinating the initial recovery from floods. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, particularly the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW.

In summary, we recommend:

- consideration of the NSW Flood Prone Land Policy as set out in the Flood Risk Management Manual 2023 (the Manual) and supporting guidelines, including the Support for Emergency Management Planning. Key considerations relating to emergency management are outlined in Attachment A.
- undertaking additional modelling to consider the full range of flood risk to the site including modelling up to the Probable Maximum Flood (PMF) level, as well as considerations for climate change scenarios in respect to onsite flooding.
- seeking advice from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding the impact of the proposed development on flood behaviour for adjacent and downstream areas.

[1] Western Parkland City Authority. 2023. Bradfield City Centre Master Plan Application - Planning Report. section 1.3 The Proposal, Page 2-3.
[2] Western Parkland City Authority. 2023. Bradfield City Centre Masterplan. Section 6 Land Use, Page 44-45.

STATE HEADQUARTERS
93 - 99 Burelli Street, Wollongong 2500
PO Box 6126, Wollongong NSW 2500
P (02) 4251 6111
F (02) 4251 6190
www.ses.nsw.gov.au
ABN: 88 712 649 015

- considering the impact of flooding on the transport infrastructure and people using it, up to and including the PMF.
- ensuring all proposed sensitive uses, including schools, childcare facilities, Emergency Services and Medical Facilities are located above the PMF extent.
- pursuing site design and stormwater management that reduces the impact of flooding and minimises any risk to the community. Any improvements that can be made to reduce flood risk will benefit the community.
- ensuring users of the development, including workers during the construction phase and future residents are made aware of their flood risk, for example through site inductions, signage and other flood information tools.
- including the provisions for a NSW SES facility within the Aerotropolis due to the proposed increase in population and associated increase in flood and storm risks, in consultation with NSW SES.

You may also find the following Guidelines, originally developed for the Hawkesbury Nepean Valley and available on the NSW SES website useful:

- Reducing Vulnerability of Buildings to Flood Damage
- Designing Safer Subdivisions
- Managing Flood Risk Through Planning Opportunities

Please feel free to contact Claire Flashman via email at rra@ses.nsw.gov.au should you wish to discuss any of the matters raised in this correspondence. The NSW SES would also be interested in receiving future correspondence regarding the outcome of this referral via this email address.

Yours sincerely,

Nicole Hogan
Assistant Commissioner- Director Emergency Management
NSW State Emergency Service

ATTACHMENT A: Principles Outlined in the Support for Emergency Management Planning Guideline[3]

Any proposed Emergency Management strategy should be compatible with any existing community Emergency Management strategy.

Any proposed Emergency Management strategy for an area should be compatible with the evacuation strategies identified in the relevant local or state flood plan or by the NSW SES. As per the Liverpool City Flood Emergency Plan, evacuation is the primary Emergency Management Strategy[4].

Decisions should be informed by understanding the full range of risks to the community.

Decisions relating to future development should be risk-based and ensure Emergency Management risks to the community of the full range of floods are effectively understood and managed.

We note that the concept plan proposes to retain, where possible, the exiting wetlands and dams and maintain green corridors along Thompsons Creek and Moore Gully.[5] The concept plan suggests that the *"design integrates key water management requirements including riparian corridors (..) and an integrated design approach to water quality, water reuse and flood detention requirements."*[6]

The site appears to be impacted by minor flooding mainly along Moore Gully as frequently as 5% Annual Exceedance Probability Events (AEP), with flood depths up to 0.5 meters[7], and parts of the site flooded with depths up to 1.5 meters in a Probable Maximum Flood (PMF) event.[8] The comparison conducted between the 1% AEP existing conditions and post-development flood impacts suggests that flood hazards are predicted to remain between H1 and H3 along Moore Gully and within the Bradfield City Centre site boundary.[9] However, we note that modelling was not conducted up to PMF events as part of this flood impact assessment.

---

[3] NSW Government. 2023. Principles Outlined in the Support for Emergency Management Planning Guideline

[4] Liverpool City Flood Emergency Sub Plan, Endorsed April 2023, Section 5.8, Page 18

[5] Western Parkland City Authority. 2023. Bradfield City Centre Master Plan. Page 143 -145

[6] Western Parkland City Authority. 2023. Bradfield City Centre Master Plan. Page 144 -145

[7] Advisian. 2022. Wianamatta South Creek Catchment Flood Study – Existing Conditions. Figure 5.25

[8] Advisian. 2022. Wianamatta South Creek Catchment Flood Study – Existing Conditions. Figure 5.41

[9] Western Parkland City Authority. 2023. Bradfield City Centre Master Plan Application - Flood Impact Assessment. Page 21

We understand post-development landform will include culverts to alleviate local ponding and the implementation of a stormwater drainage network to cater for ponding and flows along the proposed roadways and mitigate the flood level and flow velocity increases onsite and off-site.[10]

Development of the floodplain does not impact on the ability of the existing community to safely and effectively respond to a flood.

The ability of the existing community to effectively respond (including self-evacuating) within the available timeframe on available infrastructure is to be maintained. It is not to be impacted on by the cumulative impact of new development.

Decisions on development within the floodplain does not increase risk to life from flooding.

Managing flood risks requires careful consideration of development type, likely users, and their ability respond to minimise their risks. This includes consideration of:

- Isolation – There is no known safe period of isolation in a flood, the longer the period of isolation the greater the risk to occupants who are isolated.
- Secondary risks – This includes fire and medical emergencies that can impact on the safety of people isolated by floodwater. The potential risk to occupants needs to be considered and managed in decision-making.
- Consideration of human behaviour – The behaviour of individuals such as choosing not to remain isolated from their family or social network in a building on a floor above the PMF for an extended flood duration or attempting to return to a building during a flood, needs to be considered.

Risks faced by the itinerant population need to be managed.

Any Emergency Management strategy needs to consider people visiting the area or using a development. Consideration should particularly be given to the flood risk of the Moore Gully Waterfront, including the awareness of flood risk of visitors to the area.

Ongoing community awareness of flooding is critical to assist effective emergency response.

The flood risk at the site and actions that should be undertaken to reduce the potential risk to life should be clearly communicated to all site users, for example through signage and emergency drills, during and after the construction phase, for the life-span of the development.

[10] Western Parkland City Authority. 2023. Bradfield City Centre Master Plan Application - Flood Impact Assessment. Section 6.4 Recommendations, Page 22-23

Because of the significant proposed increase in population in Bradfield and the broader aerotropolis, any emergency management precinct should include the NSW SES, as a part of planning to reduce residual risk.

Green Building Council Australia

Building a sustainable future

18 March 2024

Department of Planning, Housing and Infrastructure
Government of New South Wales
4 Parramatta Square
12 Darcy Street
Parramatta NSW 2150

Via: wsamasterplan.assessments@dpie.nsw.gov.au

Re: Bradfield City Centre Master Plan

Green Building Council of Australia (GBCA) welcomes the opportunity to provide feedback on the Bradfield City Centre Master Plan (Master Plan) developed by the Western Parkland City Authority (the Authority).

We support the Authority's vision of a future of net zero footprints and smarter ways for people, the environment, and business to thrive together. GBCA is a partner in the Net Zero Cities Cooperative Research Centre which studying Bradfield City environments as one of three global exemplars in Australia.

We commend the commitment to create a city of healthy, resilient, and sustainable buildings and places and to seeking accreditation for a 6 Star Green Star Communities rating throughout future design and delivery phases. Green Star is a leading, robust, internationally recognised sustainability rating tool for buildings and communities. It sets industry-agreed best practice benchmarks for an extensive range of sustainability elements for buildings and communities.

GBCA's purpose is to lead the sustainable transformation of the built environment. We do this primarily through our core functions:

- We rate the sustainability of buildings, fitouts and communities through Australia's largest national, voluntary, holistic rating system – Green Star.
- We educate industry, government practitioners and decision-makers, and promote green building programs, technologies, design practices and operations.
- We advocate policies and programs that support our vision and purpose.
- We collaborate with our members and other stakeholders to achieve our mission and strategic objectives.

Green Star is Australia's most widely used sustainability rating system for the design, construction and performance of buildings (including social infrastructure), fitouts and communities. Originally gaining use in the CBD office market, 20 years of Green Star has seen certifications to expand to a wide array of project types, from industrial to office, education to art galleries, sports stadiums to critical social infrastructure such as libraries, civic buildings and train stations. At the heart of the development of the Green Star rating system (first released in 2003) was a commitment to providing industry-agreed best practice benchmarks and to combat greenwashing through a robust, independent verification process. Green Star aims to transform the built environment by:

- reducing the impact of climate change
- enhancing our health and quality of life
- restoring and protecting our planet's biodiversity and ecosystems
- driving resilient outcomes for buildings, fitouts, and communities
- contributing to market transformation and a sustainable economy.

Nationally, buildings account for half of Australia's' electricity use and almost a quarter of its emissions. However, buildings also present some of the lowest cost emission reduction opportunities. We encourage state and territory governments to establish nationally harmonised, long-term zero-carbon ready building strategies with interim, science-based targets that will help them to achieve their own emissions reduction targets as well as support Australia's obligations under the Paris Agreement.

Use of rating tools for third party verification
GBCA commends the use of the Green Star rating and certification system as an assessment tool for demonstrating compliance against the objectives and standards established in the Master Plan. Green Star certified buildings are on a trajectory of decarbonisation that will see all new buildings and fitouts operating at net zero by 2030 and is well positioned to support the ambitions of the Plan to target net-zero carbon emissions by 2030.

Green Star Buildings is especially designed to deliver assets that don't just meet the expectations of today but are also future ready and will withstand evolving customer demands, regulatory requirements and increased scrutiny against greenwashing. Designed for the Australian market with input from industry, some of the ways in which Green Star can help to ensure that projects achieve sustainability objectives include:

- **Consistency with net zero emissions goals**
  Green Star is on a trajectory to ensure all new buildings and fitouts cut greenhouse gas emissions from their operations by no later than 2030.

- **An 'off the shelf' set of best practice criteria**
  Green Star provides guidance on what is best practice in sustainable design and development through a set of technical criteria. It also provides a set of targets and a common language that can help all project stakeholders to work together more effectively.

- **Requires third-party assurance**
  Green Star is supported by a robust certification process and third-party assessment, enabling certified projects to share sustainability achievements with confidence.

- **Delivery of intended outcomes**
  The rigour of an independent certification process ensures that sustainability features committed to at the outset of a project are less likely to be 'managed out' as the project progresses. Cost-cutting and substitutions can erode the quality of the final outcome, but a commitment to achieve Green Star certification minimises this risk.

- **Certainty through minimum expectations**
  Green Star sets a range of minimum expectations that must be achieved by all projects, such as energy use and emissions. This assures consistency in sustainability outcomes for Green Star rated projects.

- **Market acceptance and penetration**
  With more than 4500 certifications across Australia, project proponents can leverage industry expertise and awareness among the development community.

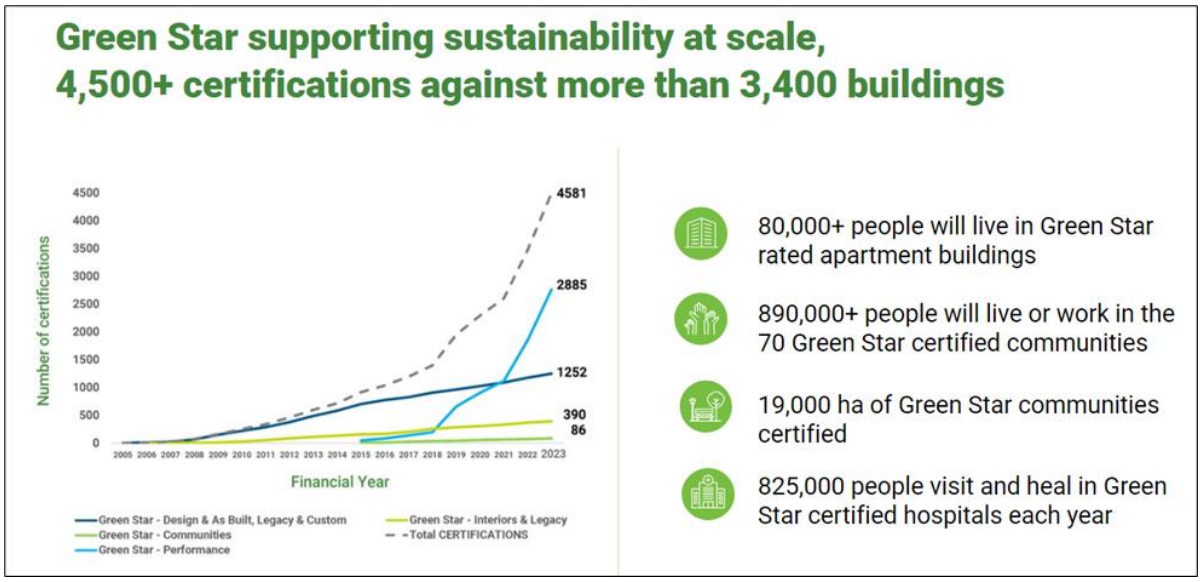


Figure 1 Green Star impact

The Green Star rating tools sets Minimum Expectations that must be targeted by all projects looking to achieve a Green Star rating. The Minimum Expectations aim to ensure all Green Star rated buildings meet a basic definition of a green building (energy efficient, water efficient, good healthy spaces, built responsibly, and on sites that are not highly sensitive areas). We request ongoing and close dialogue with the GBCA to ensure alignment with the Green Star certification process.

Green Star is aligned with a range of Australian and international reporting frameworks such as Climate Active, Global Real Estate Sustainability Benchmark, UN Sustainable Development Goals, Task-force for Climate Related Financial Disclosure among others. Green Star Buildings meets all of the impact categories under the EU Taxonomy on Sustainable Finance and complies with all the requirements for Green Bonds, Green Loans, Social Bonds and Social Loans. Certification with Green Star can help to attract investment for assets or support governments with issuing their own green/social/sustainability-linked bonds.

Last week the GBCA announced a landmark international partnership to unlock power of sustainable finance on a global scale with UK-based Building Research Establishment and the U.S. Green Building Council. This is an industry-first, international alliance to unlock the sustainable finance needed for the built environment to play its role in meeting global climate goal and to ensure that investors, property owners, developers and governments have the information they need to enact transformational change in the built environment. It underpins the critical role that verification and certification schemes play in supporting Environmental, Social and Governance reporting.

GBCA looks forward to further engagement on the Bradfield City Master Plan and related projects. Please reach out to Shay Singh, Senior Policy Manager Policy and Government Relations, via email at shay.singh@gbca.org.au to arrange further consultation.

Yours sincerely

D. Rooney

Davina Rooney
Chief Executive
Green Building Council of Australia

19 March 2024

Department of Planning, Housing and Infrastructure
4 Parramatta Square, 12 Darcy Street
Parramatta NSW 2150

Sydney Water comments on the Bradfield City Centre Master Plan (Western Sydney Aerotropolis)

Thank you for the opportunity to provide comments on the draft Bradfield City Centre Master Plan.

The Bradfield City Centre Master Plan, which sits within the Aerotropolis Core precinct, seeks to refine the Aerotropolis Precinct Plan by delivering approximately 10,000 residential multi dwellings and 20,000+ jobs up to and beyond 2056, providing increased open space and green space, improving connectivity and legibility, identifying, and retaining significant views and sustaining the importance of Connections with Country, within this part of the precinct.

Sydney Water understands the Master Plan includes the following:

- Site specific development controls including height of buildings, floor space distribution, street layout, street wall height and setbacks, for the Master plan area only.
- Design excellence strategy
- Exempt and complying development provisions
- Amendments to the following:
    - State Environmental Planning Policy (Precincts- Western Parkland City) 2021 (Western Parkland City SEPP),
    - Western Sydney Aerotropolis Precinct Plan
    - Western Sydney Aerotropolis Development Control Plan Phase 2 (Phase 2 DCP)

Sydney Water provides the following key points below, to ensure we can provide prudent and efficient servicing, with supplementary information noted in **Appendix 1 and Appendix 2** attached.

Growth Data

Sydney Water supports government-backed growth initiatives within our area of operations and endeavours to provide services in a timely and prudent manner that delivers cost effective water and wastewater infrastructure whilst not impacting our current customer base economically, environmentally, or unduly impacting current service levels.

Sydney Water receives housing supply forecasts from the DPHI EPLUF team for growth precincts, including the Aerotropolis Core. These forecasts provide an anticipated annual breakdown of dwelling numbers. As per our previous response to an earlier form of the Master Plan, Sydney Water requests a **detailed annual breakdown of indicative dwelling numbers** for the Bradfield City Centre Master Plan specifically, in a similar format to those provided by the EPLUF team.

We understand that these numbers are subject to change, however, this data is crucial for Sydney Water to deliver the correct services at the correct time for the precinct. Annual breakdown data assists Sydney Water with planning, staging and delivery of trunk infrastructure, and will also be critical to assist with our servicing strategy once development via the complying development pathway occurs in the Bradfield City Centre.

Sydney Water is also seeking this annual breakdown as the numbers referred to in the Master Plan are proposing to take up a significant volume of the overall dwellings proposed for the whole Aerotropolis Core precinct and, in some documentation, it is still not clear if the growth precinct or the Master Plan area are being referred to.

To achieve this, WPCA should provide the data in the format previously requested and communicate and lodge relevant feasibility or application cases with Sydney Water through their Sydney Water Account Manager.

Complying development

Sydney Water thanks the WPCA for considering our earlier comments on the exempt and complying development provisions (as listed in Appendix 1). To clarify, complying development in this instance refers only to the list in Appendix 1 and will still require a Sydney Water Building Plan Application or Section 73 application to progress connections. Furthermore, trade waste conditions may apply, and additional stormwater requirements would be issued as part of the Section 73 process.

As this is a new area to be serviced by Sydney Water and, as such, early intelligence on development types and demand is critical to assist us in planning for and supporting business cases to develop services in a timely manner, we therefore still recommend early engagement directly with Sydney Water via the feasibility and account manager processes. Robust growth data is required to manage and monitor proposed growth and uptake in this area.

We understand that complying development provisions will apply only to existing approved buildings on land in the MU1 Mixed Use Zone or the ENT Enterprise Zone in the Bradfield City Centre suffice they meet the criteria noted in Appendix 2. Any initial developments not meeting the above criteria should go through the concurrence and referral process. Sydney Water notes the requirements under Section 78 of the Sydney Water Act to ensure early notification of any impactful development.

Future complying development under draft Bradfield City Centre Master Plan will likely require a Sydney Water Section 73 certificate depending on the proposed change of use.

Water and Wastewater Servicing

- Drinking water servicing for the Aerotropolis Core has been identified as being in the Concept Planning and Design and Deliver stages in Sydney Water's Growth

Servicing Plan 2024-2029, with an anticipated delivery date of FY2026-2028 for initial staged services.

- Wastewater servicing for the Aerotropolis Core has been split into two catchments and is identified as being in the Design and Deliver stage and Concept Planning stages in Sydney Water's Growth Servicing Plan 2024-2029, with an anticipated delivery date of FY 2026-2028 for initial staged services.

Stormwater

Ongoing consultation between Sydney Water and WPCA is progressing for coordination of stormwater infrastructure assets to service the Bradfield City Centre.

Whilst not confirmed, the proponents' requirements for stormwater services for the master plan will likely be informed by the following:

- Land will be required for regional stormwater infrastructure. Land to be acquired for this infrastructure was identified in the Land Reservation Acquisition Map in State Environmental Planning Policy (Precincts – Western City) 2021. However these land areas have been adjusted in consultation with Sydney Water via the masterplan process.
- Other land will also be required for trunk drainage which will not be acquired. Regional Stormwater Scheme Plans, currently under preparation, will identify the land required in more detail. Please continue to liaise with Sydney Water to determine how your master plan may be affected. The proposed realignment and rehabilitation of Moores Gully will form part of this trunk drainage system and must be progressed in consultation and design approval from Sydney Water.
- The master plan must respond to the relevant stormwater requirements in the Western City Precincts SEPP and the Regional Stormwater Scheme and must not preclude the efficient delivery of regional stormwater infrastructure.
- As part of future development, the proponent will need to design and deliver multifunctional stormwater infrastructure including trunk drainage channels, bioretention systems, treatment wetlands and stormwater harvesting ponds to the satisfaction of Sydney Water.
- The stormwater management system for the master plan must be designed such that future development will have the ability to meet NSW Government waterway health objectives through a combination of on-lot and on-street measures and connection to the Regional Stormwater Scheme. Your master plan should be designed in consideration of the following:
    - The site coverage and permeability targets established in the Aerotropolis Phase 2 Development Control Plan (DCP);
    - Design of streets to accommodate necessary stormwater infrastructure including Wianamatta Street trees in accordance with the requirements of the Aerotropolis Phase 2 DCP and Sydney Water design specifications;
    - Connection to the Regional Stormwater Scheme including potential for delivery of regional stormwater infrastructure as mapped in the Western Parklands SEPP, Aerotropolis Precinct Plan and IWCM Strategy.
- Prior to the regional integrated stormwater scheme being operational the masterplan area will likely be required to implement interim stormwater servicing arrangements. These should be designed in consultation with Sydney Water and may include the need for a local stormwater harvesting scheme that utilises the third pipe network.

Next Steps

- WPCA to provide a detailed annual breakdown of indicative dwelling numbers for the Bradfield City Centre Master Plan specifically, in a similar format to those provided by the DPHI EPLUF team.
- WPCA and future developers are encouraged to continue early engagement directly with Sydney Water via cases raised through Water Servicing Coordinators. This early engagement will assist with the delivery of prudent and timely services.
- As the regional stormwater authority for the initial precincts within the Western Sydney Aerotropolis, including Badgerys Creek, Sydney Water requests continuing early engagement with WPCA and the Department. For stormwater discussions and concerns, please contact westernsydney@sydneywater.com.au.

The development servicing advice provided is not formal approval of our servicing requirements and is based on the best available information at the time of referral. Detailed requirements for water, wastewater, recycled water, and stormwater, including any potential extensions or amplifications, will be provided once developments are referred to Sydney Water for a Section 73 application. The provision of stormwater services to future development and the granting of a Section 73 Certificate will also be conditional upon the delivery of the infrastructure by Sydney Water and other developers.

It is important to note that this information can evolve over time in tandem with the progression of other development projects in the catchment, changes within the local systems and receiving works. This is particularly important in systems with limited capacity. Furthermore, Sydney Water does not reserve or hold capacity for proposed developments, regardless of whether the area has been rezoned or not. To ensure accuracy and alignment with current conditions, it is best to approach Sydney Water for an updated capacity assessment particularly if an approval letter is more than 12 months old.

Sydney Water looks forward to continuing engagement with WPCA and the Department in the delivery of the Bradfield City Centre and the Western Sydney Aerotropolis. If you would like to discuss any of the above matters with us, please contact urbangrowth@sydneywater.com.au.

Yours sincerely,

Cassie Loughlin
Manager Growth Planning & Commercial Frameworks

Enclosed: Appendix 1 and 2

Sydney Water Corporation ABN 49 776 225 038
1 Smith Street, Parramatta, NSW 2150 | PO Box 399, Parramatta, NSW 2124
Telephone 13 20 92 **Media (24/7)** 8849 5151 **sydneywater.com.au**

Appendix 1

Exempt Development

Amendments are proposed to Part 4.6 of the Western Parkland City SEPP to make changes to the development standards for the following types of exempt development within Bradfield City Centre:

- temporary events signs
- tents, marquees, or booths for community events or used for filming purposes and private functions
- stages or platforms for private functions or used for community events.

Complying Development

Under the Bradfield Master Plan, it is proposed to allow change for use for specified purposes in relation to an existing approved building on land in the MU1 Mixed Use zone or the ENT Enterprise Zone in Bradfield City Centre as complying development subject to the development standards set out in this Bradfield City Centre Master Plan. The Master Plan would allow for change of use to already approved buildings for the following uses:

- amusement centres
- boat building and repair facilities
- commercial premises
- community facilities
- depots
- entertainment facilities
- function centres
- health consulting rooms
- industries
- information and education facilities
- local distribution premises
- medical centres
- recreational facilities (indoor)
- storage premises,
- vehicle body repair workshops
- vehicle repair stations
- veterinary hospitals
- warehouses or distribution centres
- waste or resource transfer stations

Appendix 2 – Sydney Water comments

Document	Section	Page No.	Subtype	Comment Type	SWC Comment
Appendix H - Utility Infrastructure and Servicing Report	Appendix 1	53	Servicing Strategy Wastewater – drawing	General Comment	Trunk wastewater to be provided by Sydney Water on the south-eastern side of Thompsons Creek (i.e., the opposite side the development). Discharge to this location is not shown on the Wastewater Servicing Strategy plan currently. Further discussion may be required regarding this.
Appendix H - Utility Infrastructure and Servicing Report	6.1.7 Wastewater Forecast Demand	30	Table 12 – Estimated Average Dry Weather Flow (ADWF) Including BASIX (L/s)	Clarification	High density commercial wastewater demand is calculated assuming a demand rate of 0.08 EP/m^2, which equates to 800 EP/Ha. The data appears to be 10 times higher than what is recommended in WSA code. As per our comments in the response, further information is required on the growth data, staging and demands.
Appendix H - Utility Infrastructure and Servicing Report	7 Utility Service Corridor	48	Clearance requirements with other utilities	General Comment	Sydney Water's horizontal and vertical clearance requirements with other utilities is clearly documented in the WSAA Water and Sewer codes. Additional information such as tree planting offsets can be found in Sydney Water's BOA Guidelines. it is not clear from the documents submitted that these clearance requirements have been met and further discussion with be required to resolve this
Appendix CC - Circular Economy (Waste and Services Report)	5 Technical Approach/ Framework	27	5.1 Embedding circular economy into Bradfield City Centre	Recommendation	SWC recommends that Circular economy principles need to be strongly aligned with carbon reduction benefits, that is, the more waste that is avoided, the less emissions that are generated in landfill. This places a greater emphasis on seeing these targets delivered.

Western Sydney Airport

14 March 2024

Ms Kirsten Fishburn
Secretary
Department of Planning, Housing and Infrastructure
Locked Bag 5022
Parramatta NSW 2124

cc: Paul O'Sullivan – Chairman WSA Co Ltd
Simon Hickey – CEO WSA CO Ltd

Dear Kirsten,

Bradfield Master Plan Public Exhibition

Thank you for the opportunity to comment on the Bradfield Master Plan.

Western Sydney International (Nancy-Bird Walton) Airport (WSI) will unlock the aviation capacity essential to support Sydney's continued growth and economic development as Australia's global city.

As the catalyst for growth, the airport will also generate significant socio-economic benefits across Western Sydney that will make a tangible difference to the lives of communities across the region.

WSI is already a significant economic driver, generating jobs and stimulating economic growth in Western Sydney and the surrounding areas. More than $400 million has been spent with Western Sydney businesses since the start of construction in 2017. Currently more than 50% of the airport's workforce of around 3500 people are residents of Western Sydney. When international and domestic passenger and air cargo operations begin in late 2026, the airport will create tens of thousands of direct and indirect employment opportunities. These jobs will not only be in aviation-related sectors but also in construction, hospitality, transportation, and various support services.

Airports are proven city shapers, creating jobs and attracting investment and development from both the public and private sector. The development of Bradfield City Centre can leverage the global connectivity of a major international airport and yield remarkable results for the local economy.

Smart, sustainable urban development that leverages proximity to the global connectivity of a major international airport can yield remarkable results for the quality of life of surrounding communities. Schiphol Airport in Amsterdam, Incheon Airport in South Korea and Changi Airport in Singapore are some of the smart sustainable cities being designed to harness the socioeconomic opportunities. That's the ultimate vision for the Western Sydney Aerotropolis and we have a compelling responsibility to do everything possible to see it realised.

The realisation of the socio-economic benefits of the airport requires strong strategic planning and a clear vision for Bradfield and the aerotropolis. WSI supports the vision for Bradfield as a new

Western Sydney Airport

metropolitan city centre and global hub of industry and innovation, which along with the airport can, drive the broader growth of the aerotropolis.

The development of Bradfield must ensure that residential and logistics development is appropriately balanced with smart, sustainable, future-focussed industries like advanced manufacturing, defence, aerospace, research, health, and education. This will underpin the ongoing availability of the high-quality, local jobs that are essential to ensuring Bradfield delivers holistic liveability to its residents. This will require an ongoing commitment by governments to ensure the positive economic benefits of the airport through economic uplift and job creation are maximised.

WSI has reviewed the Master Plan and supporting documentation and studies and has identified a number of matters for further consideration in the finalisation of the Master Plan. These matters include aviation safeguarding and future transport connectivity and are detailed at **Attachment A**.

WSI looks forward to continuing its collaborative working relationship with the Western City Parkland Authority and Department of Planning, Housing and Infrastructure to deliver long term economic, environmental and social outcomes for the Bradfield City Centre and wider aerotropolis.

If you have any questions, please contact WSI's Executive Manager – Land Planning and Approvals, Kirk Osborne at kosborne@wsaco.com.au.

Yours sincerely

Scott MacKillop
Chief Corporate Affairs Officer

Western Sydney Airport

Attachment A – Matters for consideration

WSI has reviewed the Master Plan and supporting documentation and studies and has identified a number of matters for further consideration in the finalisation of the Master Plan. The comments seek to maximise opportunities for the airport, Bradfield and the broader aerotropolis, balanced with safeguarding the long-term airport operations. These matters include aviation safeguarding and future transport connectivity.

Airport Safeguarding

Protected Airspace

Airport Safeguarding is imperative to the success of WSI, which will consequently bring significant benefit to Bradfield City Centre.

In relation to the proposed building heights, WSI notes that the Precinct Planning for the Aerotropolis considered protected airspace (e.g. the Obstacle Limitation Surface) as one of several factors in determining appropriate building heights. While this has been carried through in the master planning for the city centre, the supporting studies also note that consideration to additional height may be considered for gateway buildings, subject to compliance with Procedures for Air Navigation Services – Aircraft Operations (PANS OPS). However, there are other protected airspace surfaces such as the OLS that will need to be considered and assessed.

Any proposal for long term intrusions into protected airspace will need to be separately assessed and determined under Commonwealth legislation in accordance with the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996*. The *Airports Act 1996* covers any intrusions into prescribed airspace, which could include:

a. constructing permanent structures, such as buildings, into the protected airspace;
b. temporary structures such as cranes protruding into the protected airspace; or
c. activities causing non-structural intrusions into the protected airspace such as air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.

Given the Master Plan enables variations to the maximum height limits, the site-specific planning controls in Aerotropolis Development Control Plan (DCP) should be amended to require early consultation with WSI. For any development that proposes to impact on protected airspace or the safe operation of the airport, a detailed aviation impact assessment for such development would be required. The Master Plan (or DCP) should also note that long term intrusions into the PANS-OPS cannot be approved under the Commonwealth legislation.

Wildlife Management

WSI acknowledges that the Parkland Priority Areas identified within the Aerotropolis Development Control Plan is one of the key government commitments in delivery of the Western Parkland Vision; and that the Bradfield City Centre, being within the Aerotropolis Core, is a significant contributor to delivering that vision.

Notwithstanding, there is still a balance required in safeguarding the airport against wildlife attraction to minimise aircraft strike and delivering on the government's key commitments for canopy cover and a blue and green grid.

Given the proximity of the Bradfield City Centre to the Airport, WSI requests the opportunity for further consultation to discuss measures to mitigate or manage wildlife attraction. This could include engagement during the design process for future open space (including the public pavilion and swimming facilities), landscape design, green roofs and basin design.

WSI would also like the opportunity to consider the future major events to be held in public open spaces to ensure there are appropriate mitigation measures in place to minimise wildlife attraction.

It is noted that Bradfield City Centre will connect to the Aerotropolis regional stormwater network that will be managed and maintained by Sydney Water. WSI have previously engaged with Sydney Water, particularly on the stormwater basin design and minimising wildlife attraction. WSI would welcome further engagement with the Western Parkland City Authority regarding future applications for Bradfield and the design of these basins.

Transport and Connectivity

WSI supports the vision for a connected, globally competitive city. Bradfield City Centre has the opportunity to seamlessly integrate with WSI and become a complimentary future focus area for business, tourism, social engagement and recreational activity.

Direct and efficient services to WSI are important to maximise connectivity and encourage the use of public transport from the early stages of the airport's operation and the initial stages of the Bradfield development. We believe that opportunity exists to bring forward the delivery of road and public transport infrastructure and services to ensure efficient and frequent connections to 24/7 airport. There is also an opportunity for active transport links to provide connections between the airport Bradfield.

The frequency and efficiency of the Metro and rapid bus services in particular, is critical to achieve the transport vision for Bradfield and surrounding areas and WSI recommends that the proposed frequency services be reviewed to enable travel behaviours that maximise the use of public transport.

WSI also noted that some of the network modelled, and bus routes detailed in the Transport Management Accessibility Report show the use of the northern section of Badgerys Creek Road into the long term. WSI has for several years advocated for the construction of the Eastern Ring Road to support the growth of the aerotropolis and the airport. Use of Badgerys Creek Road (BCR) within the airport site as part of the long-term street hierarchy and traffic network should not be relied upon.

It should be noted that from around 2028, WSI will target closing BCR (north of Badgerys Creek to private vehicles. WSI will consult with the Australian and NSW governments and Liverpool Council in relation to a closure date for the road. Further consultation will be required in relation to alternative access routes, particularly regarding the timing of the construction and opening of the proposed Eastern Ring Road.

Department of Climate Change, Energy, the Environment and Water

Your ref: EF23/13739
Our ref: DOC24/89203

Mr Fadi Shakir
Senior Planning Officer
Department of Planning, Housing and Infrastructure
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2150

15 March 2024

Dear Mr Shakir

I refer to the letter of 5 February 2024 inviting comments from the Biodiversity, Conservation and Science Group (BCS) on the draft Bradfield City Centre Master Plan (Western Sydney Aerotropolis).

BCS has reviewed the Planning Report, draft Master Plan and other supporting documents and provides the attached advice and recommendations in relation to biodiversity, flood risk, stormwater management and waterway health.

In summary, the attached advice raises issues regarding:

- inconsistencies in the biodiversity assessment and the assessment of impacts on biodiversity values
- the adequacy of the flood impact assessment
- additional information required to ensure the proposed water sensitive urban design for the Master Plan area can achieve the required waterway health targets.

Please contact Richard Bonner, Senior Conservation Planning Officer, by email at richard.bonner@environment.nsw.gov.au should you have any queries regarding this advice.

Regards

S. Harrison

Susan Harrison
Senior Team Leader Planning
Greater Sydney Branch
Biodiversity, Conservation and Science Group

BCS detailed advice on the draft Bradfield City Centre Master Plan (Western Sydney Aerotropolis)

Biodiversity Assessment

BCS has reviewed the Biodiversity Strategy and Impact Assessment (BSIA) report (Appendix M of the Master Plan Application Planning Report [Master Plan Report]) and notes:

- the majority (113.72 ha) of the Master Plan area (114.6 ha) is biodiversity certified under the *Biodiversity Conservation Act 2016* (BC Act)
- no clearing of existing native vegetation (ENV) within the (0.88ha) non-certified area(s) is proposed
- 6.60 ha of validated (and biodiversity certified) ENV within the proposed Ridge Park and the regional parkland south of Moore Gully is intended to be conserved
- 20.6 ha of native vegetation (including 2.16 ha of validated (and biodiversity certified) ENV) will be cleared by development proposed under the Master Plan
- 12.47 ha of native vegetation (including 6.60ha of validated (and biodiversity certified) ENV) occurs within areas proposed to be open space.

BCS provides the following advice on the BSIA report. It should be noted that BCS is unable to advise of the adequacy of the field surveys as the relevant GIS shape files detailing where random meanders took place were not available when this advice was prepared.

Development footprint and assessment of biodiversity impacts

BCS supports the intention to retain and enhance native vegetation within Ridge Park and the riparian zone associated with Moore Gully by excising it from the development footprint. It is noted, however, that the development footprint in the BSIA does not include stormwater/integrated management structures proposed in the Master Plan (Master Plan, p.35, p.144-5). In addition, BCS notes areas of ENV intended for protection have already been impacted by temporary access roads and will be further impacted by the provision of 'recreation infrastructure' such as pathways, barbeque areas and a swimming hole (Master Plan, p. 128-9, p.148-9). While the BSIA acknowledges 'minor impacts' to native vegetation will occur within proposed open space areas, BCS questions the assertions that this vegetation *'is being primarily retained or enhanced'* and will *'retain much of their existing characteristics and functionality'* (BSIA, p. 53).

BCS also questions whether the impacts on biodiversity values from clearing native vegetation and realigning Moore Gully to enable the proposed stormwater and other infrastructure has been adequately assessed. This include areas of *'minor encroachment into vegetated buffer'* and *'offset of encroachment into vegetated buffer'* which are noted in the Master Plan but not discussed in the BSIA or Master Plan (Master Plan, p. 144). It also includes potential impacts to large areas of Key Fish Habitat (KFH) which the BSIA recommends should be avoided noting that any impacts within the 50m KFH buffer would require liaison the Department of Primary Industries and the Natural Resources Access Regulator (BSIA, p.89).

BCS recommends these matters be addressed in a revised biodiversity assessment prior to finalising the Master Plan.

Location and status of Moore Gully

The location of Moore Gully differs between the Master Plan and BSIA. A comparison of Figure 1 (Master Plan, pp. 26-7) with Figure 2 (BSIA, figure 5) illustrates these differences:

- the red ovals show Moore Gully joining Thompsons Creek at different locations
- the blue ovals show Moore Gully following a different path
- the black ovals show Moore Gully following a different path, with the tributary joining Moore Gully at different locations
- the red arrows shows Moore Gully is located closer to protected ENV in the Master Plan than in the BSIA.

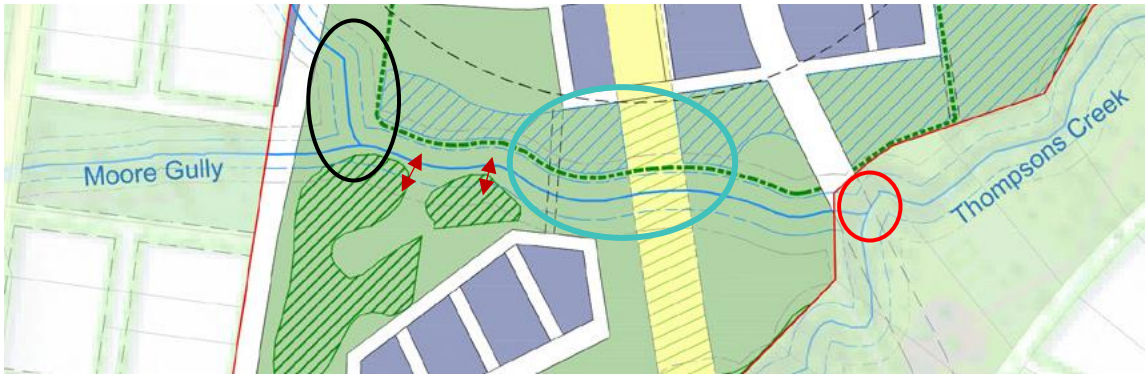


Figure 1: Moore Gully section from Master Plan (pp. 26-7)

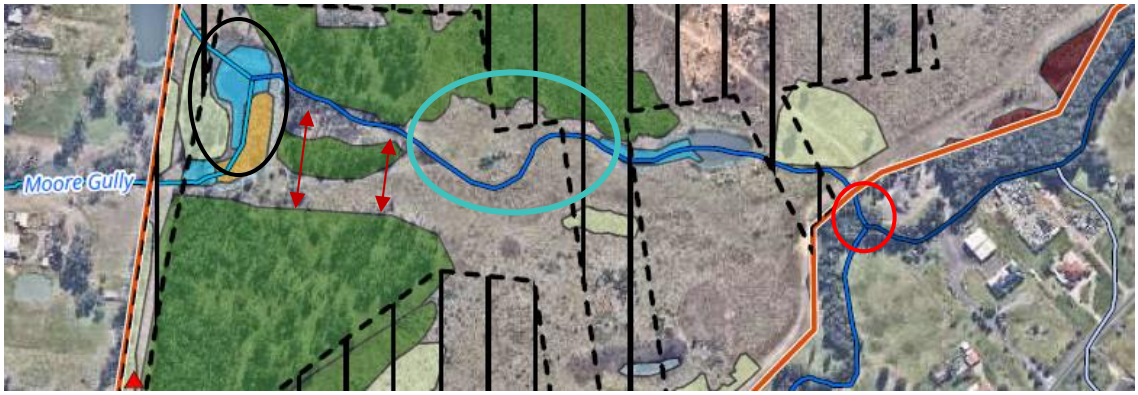


Figure 2: Moore Gully section from BSIA (Figure 5)

BCS also notes the aquatic assessment of Moore Gully in the BSIA uses the Water Management (General) Regulation Hydro Line spatial data (BSIA, p. 41; see also Figures 3 and 4).

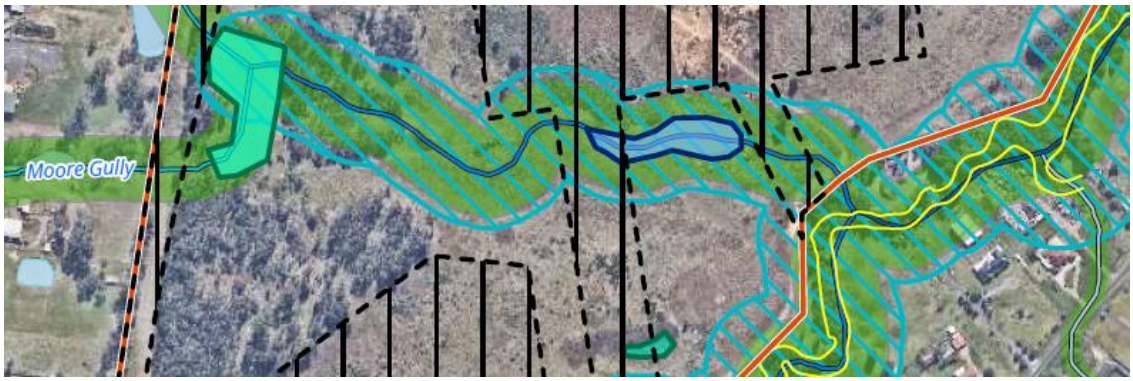


Figure 3: Moore Gully section from BSIA (Figure 6)

Figure 4: Moore Gully as shown by the Water Management (General) Regulation Hydro Line spatial data, accessed 29 February 2024, see https://water.dpie.nsw.gov.au/licensing-and-trade/controlled-activity-approvals/waterfront-land-e-tool/hydro-line-spatial-data

BCS concludes the BSIA has considered the current location of Moore Gully and not the realignment location proposed in the Master Plan.

BCS also notes discrepancies between the BSIA and Master Plan in relation to the status of Moore Gully. The BSIA advises: *'Vegetation is supported along the length of Moore Gully due to the presence of shallow water and soil moisture held within the channel zone even within discontinuous sections. The waterway is interrupted by two large man-made dams, likely constructed around existing ponds. While the channel form is discontinuous in sections, the concept of a bed and bank (forming a channel or channel zone) is still applicable. The bed and banks of Moore Gully falls within the low point of the landscape and contains a wetted area that is evidenced by the presence of shallow surface water, aquatic and wetland vegetation. The centreline of this wetted area aligns well with the hydroline mapping for the study area, with the hydroline representing the centreline of the channel zone (Figure 6)'* (BSIA, p.41). The Master Plan, however, advises, *'Moore Gully, which has no defined channel or bank is proposed to be realigned slightly to the south to provide adequate space for stormwater basins (multi-use wetlands) and usable recreation areas'* (Master Plan, p. 120).

Moore Gully is a Strahler order 4 watercourse, which would require a 40m riparian corridor on each side if it was being assessed under the *Biodiversity Assessment Method* (DPIE 2020). The BSIA discusses requirements for a 40m buffer (on both sides of the watercourse) under the *Water Management Act 2000* and advises '*Moore Gully is classed as a laterally unconfined, discontinuous channel, chain of ponds system in the NSW River Styles database (DPIE 2021), with a high level of confidence indicated for this assessment. The database also describes the system as being in moderate condition with a high recovery potential. The field investigation supports this assessment with Moore Gully presenting as a moderate condition, chain of ponds system. These ponds are linked by preferential flow paths along a discontinuous channel that supports aquatic and wetland vegetation.*' (BSIA, p. 40)

BCS recommends the location and status of Moore Gully be clarified prior to finalising the Master Plan. A revised biodiversity assessment should be prepared to consider any proposed realignment of Moore Gully (in addition to any other changes proposed in a revised Master Plan).

Potential presence of Elderslie Banksia Scrub Forest within Master Plan area

The Greater Sydney Local Land Services (GSLLS) recently advised BCS of the potential presence of Elderslie Banksia Scrub Forest (EBSF) within the Master Plan area. EBSF is a listed as critically

endangered under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999*. Very little is known about this community, including its distribution. Its significance is reflected in the following statement made in the Commonwealth conservation advice that '*All remaining patches are considered critical to the survival of this ecological community. Even degraded patches that retain the characteristics of the ecological community need protecting'*, see https://environment.gov.au/biodiversity/threatened/communities/pubs/145-conservation-advice.pdf

GSLLS have advised EBSF may be exist in or near the area shown in the red oval in Figure 5.

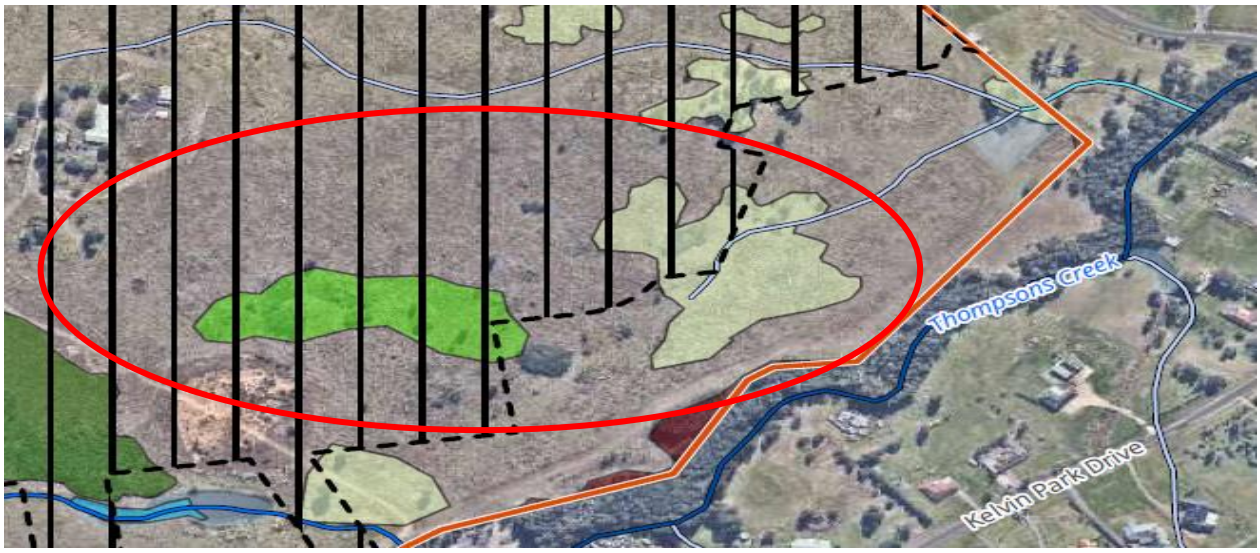


Figure 5: Potential location of EBSF shown on figure 5 from BSIA

BCS notes this location is mapped as low and moderate condition PCT 849 (Cumberland Plain Woodland), with the remaining area containing no native vegetation. BCS is also aware of recently discovered patches of EBSF at Menangle Park, where it occurred alongside CPW, River-flat Eucalypt Forest, Swamp Oak Floodplain Forest and Freshwater wetlands. These are the same or similar vegetation communities as those within the Master Plan area.

BCS understands the former Hawkesbury-Nepean Catchment Management Authority (HNCMA [now GSLLS]) undertook rapid flora assessments of the area and recorded *Banksia integrifolia*, *Banksia marginata*, *Daviesia acicularis* and *Gonocarpus teucrioides* in the open heathland which is indicative of potential EBSF. HNCMA considered this mix of species highly unlikely to be planted as there are no records of *Gonocarpus* in local propagation for the period, and it is unlikely to naturalise. BCS notes these species are not listed in the BSIA and no figures are given showing where the study area was traversed for vegetation surveys (as noted above, BCS has not reviewed the GIS shape files detailing where random meanders for the field surveys took place). BCS also notes that EBSF is listed in Appendix 3 (Protected Matters Search Tool Output) of the BSIA.

Given the highly threatened status of EBSF and its potential to occur at the site, BCS recommends the area within Figure 5 be surveyed to verify the vegetation communities present. If EBSF is confirmed, measures should be taken to avoid and mitigate impacts in a revised Master Plan.

Assessment of *Marsdenia viridiflora subsp. viridiflora* - endangered population

The BSIA is not clear on whether *Marsdenia viridiflora subsp. viridiflora* - endangered population occurs within the Master Plan area. The BSIA advises:

- '*… Marsdenia viridiflora subsp. viridiflora … was observed during the field assessment. Four individuals were observed in a cluster along a fence line, located immediately adjacent to the north-west boundary of the study area (Figure 5). Individuals do not occur within the study area'* (BSIA, p. 30).
- '*The Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion within the study area supported the several Marsdenia viridiflora subsp. viridiflora individuals, listed as an Endangered population under the BC Act. Locations of the recorded threatened flora species are provided in Figure 5'* (BSIA, p. 32).

- '*Recorded on site during the field investigations undertaken as part of the current assessment. Areas of PCTs 725, 835, 849 and 1800 represent potential habitat for this species'* (BSIA, p. 46).

BCS notes Figure 5 of the BSIA shows this endangered population on the boundary of the Master Plan area, outside of the development footprint. However, as noted above, details of likely threatened entities indicate the species is located within the Master Plan area (BSIA, p.46). BCS recommends the presence of this endangered population be clarified in a revised BSIA.

With regards to mitigating impacts for this species, the BSIA recommends *'individuals should be protected through No-Go zones …'* if future works in the area are required (BSIA, p. 87). BCS considers it should be a requirement that these individuals are protected in the long term. There should also be a requirement for their in-situ protection, and for the use of buffers to minimise potential indirect impacts. Expanding the ENZ in this area would assist to achieve this.

Regarding the BSIA recommendation that options for the relocation of individuals be investigated, BCS advises that translocations are generally not appropriate for mitigating impacts from development as they are generally complex and historically have a high rate of failure.

Improving Master Plan biodiversity outcomes

While acknowledging the need to address the issues raised above in a revised BSIA, BCS recommends a reconfigured Master Plan that excludes stormwater and other infrastructure from the vegetated areas north and south of Moore Gully would achieve a better biodiversity outcome (see red circled area in figure 6).

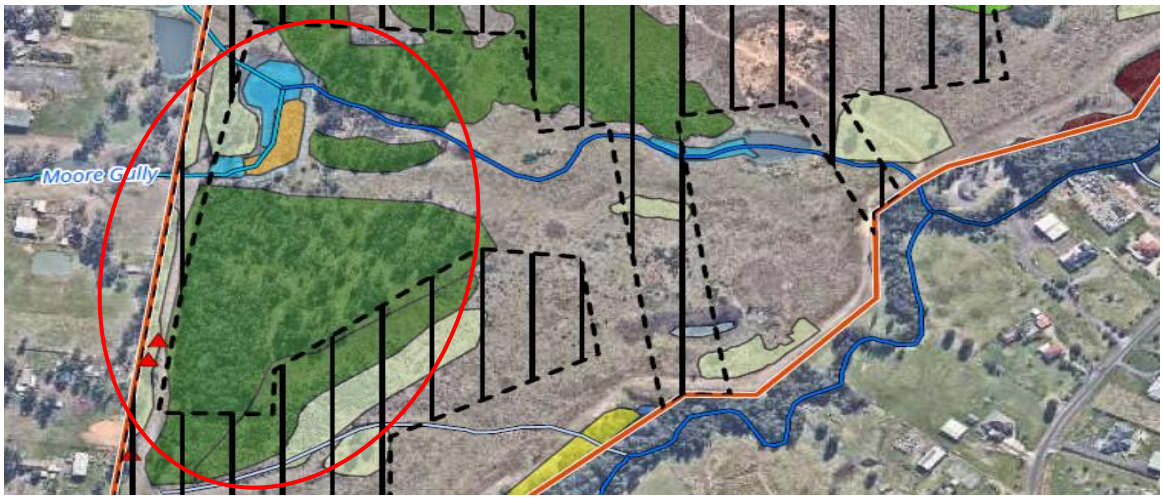


Figure 6

In addition to ENV, this area includes patches of coastal freshwater lagoon (PCT 781) and coastal freshwater wetlands (PCT 1071). This terrestrial and aquatic vegetation is critically endangered or endangered under the BC Act and in high or moderate condition forming an important riparian buffer for Moore Gully. Protection of these areas would enable a range of contiguous, threatened vegetation communities, and their associated habitats to occur within a relatively confined part of the Master Plan area.

BCS also recommends the proposed mixed land use area in the southwestern corner of the Master Plan area be reconsidered due to the likely indirect impacts from subsequent development on the directly adjoining areas of ENV proposed for retention. At the very least, an appropriate buffer between should be in place to minimise indirect impacts on the ENV.

Flood Risk Assessment

BCS has reviewed the Bradfield City Centre Master Plan Application flood impact (risk) assessment (FIRA) prepared by Advisian and advises it does not adequately address the flood planning Master Plan Requirements (MPR14).

As advised by BCS in July 2023, MPR14 requires consistency with the Flood Risk Management (FRM) Manual and the Flood Impact and Risk Assessment – Flood Risk Management guideline LU01.

BCS highlights that excluding the full range of flooding is inconsistent with the NSW Flood Prone Land Policy and the Manual, the Flood Risk Management Guidelines, the Western Sydney Aerotropolis Development Control Plan 2022 (DCP) and the Ministerial Direction 4.1.

The following points emphasize the requirements of considering the full range of flooding:

- The Flood Prone Land Policy requires the full range of risks to existing and future development be addressed. The risks associated with the full range of flooding, up to and including the probable maximum flood (PMF), need to be considered.
- The principles of the Manual requires the consideration of the full range of flood risk as explicitly discussed throughout.
- The Flood Risk Management Manual Flood Impact and Risk Assessment Guideline provides advice that the consent authority can consider in scoping the flood impact studies related to development. It primarily requires that these studies provide an understanding of the full range of flood risk. To achieve this, flood behaviour would be examined for a range of events. Typical events examined include the 10%, 5%, 1%, 0.5% or 0.2% AEP and PMF.
- The DCP (clause 2.5.1 Flood Management – Objectives) require development to consider the full range of flood risk up to the PMF. The provisions of the DCP were developed to enable the NSW Government to consider the potential impacts due to flooding in land use planning for the Aerotropolis.
- Ministerial Direction 4.1 which requires development of flood prone land to be consistent with the NSW Flood Prone Land Policy and the principles of the Manual.

BCS recommends the FIRA be revised to accord with the Flood Risk Management Manual Flood Impact and Risk Assessment Guideline (2023). The revised FIRA should:

- outline existing flood behaviour and flood risk for the full range of events
- identify the constraints that flood places on the land (floodways, flood storage, flood hazard and emergency response issues) determined for several events, typically 5%, 1%, 0.2% or 0.5% AEP and PMF
- identify developed flood behaviour, risk and constraints. The developed scenario should include the information available at this stage of the Master Plan which may include proposed development with any key details of the final proposal, including development type and density, changing runoff characteristics, infrastructure and proposed modification to waterways or floodplain landform or vegetation
- identify the impacts of the proposed development on the flood behaviour and on flood risk to the existing community
- identify the impacts and risks of flooding on the development and its users
- identify how these impacts can be managed to minimise the growth in risk to the community due to the development. This includes details of any management measures to be implemented to minimise the impacts and risks posed to the existing and future community due to development
- provide an assessment of the residual impacts (that management measures cannot address) on and off the site.

The reporting and deliverable requirements of the FIRA should be guided by Appendix A of the Flood Impact and Risk Assessment Guideline.

Stormwater management and waterway health

BCS notes from the Integrated Water Cycle Management Plan (IWCMP) prepared by AECOM and the Master Plan that no functional design drawings for the water sensitive urban design (WSUD) systems appear to have been submitted with the application material. This has made a review of the proposed stormwater solution challenging as several design details are not clear.

Waterway Corridors and Trunk Drainage

There are several streams identified in the Sydney Water Stormwater and Water Cycle Management Study 2021 (Sydney Water Study) and Aerotropolis Precinct Plan for retention that are not shown in the Master Plan.

The DCP requires that Strahler Order 2 watercourses (and Strahler Order 1 watercourses with a catchment larger than 15 hectares) be reinstated as a naturalised creek/drainage line with an appropriate vegetated riparian zone.

BCS recommends the location of all existing streams within the Master Plan area be reviewed together with the existing catchment area for each stream. The review should then consider the streams shown in the Master Plan which may need to be amended to ensure:

- All streams required to be retained by the DCP are retained.
- The location and size of waterway corridors and trunk drainage conceptually accords with the DCP requirements. BCS notes that trunk drainage may be relocated slightly to integrate into the Master Plan, however, drainage widths must be retained.

This issue must be addressed prior to finalisation of the Master Plan to ensure waterway corridors are preserved within the proposed layout.

MUSIC Model

There are various features of the MUSIC model, and therefore the proposed stormwater strategy, which conflict with the MUSIC Modelling Toolkit-Wianamatta (Toolkit) and the Sydney Water Study:

- The use of diversions in the MUSIC model requires further explanation - a sketch diagram in conjunction with the requested functional design drawings would assist.
- Very large bioretention systems, requiring multiple cells, are included in the model. A robust system of flow distribution will be required for such a system and it is suggested that a sediment basin will be required at the upstream end of the wetland/bioretention systems to manage flow distribution as well as coarse sediment removal.
- Nutrient removal has been adopted in Gross Pollutant Traps and may only be where confirmed through Stormwater Quality Improvement Device Evaluation Protocol verification.
- No stormwater harvesting and reuse is proposed. This is inconsistent with the Sydney Water Study which has specific targets for supplying harvested stormwater from precinct-scale systems.
- Many of the wetland parameters are inconsistent with the Toolkit. For example, P7 wetland has 31,000hr residence time, surface area at 17% of catchment and average depth of 0.18m. These parameters are not considered capable of delivering a functional wetland system.

BCS recommends further information, including diagrams, be provided to explain the use of flow diversions/secondary drainage links within the MUSIC model and other rationale for the modelling choices. In addition, the MUSIC model and strategy should be revised to ensure consistency with the Toolkit and Sydney Water Study.

This issue must be addressed prior to finalisation of the Master Plan to ensure adequate space is provided for WSUD elements in the proposed layout.

Impact on land outside the Master Plan area

The proposed stormwater management arrangements differ significantly to those identified in the Sydney Water Study. While some of these systems are rearrangements of the systems envisioned by Sydney Water within the Master Plan area, other systems will have impacts and implications beyond the Master Plan boundary.

This particularly relates to the system for Precincts 8 and 9 which are outside the Master Plan area, and the system for Precinct 10 which drains in a different direction to that envisioned in the Sydney Water Study.

BCS recommends additional information be provided detailing how the system associated with Precincts 8 and 9 can be delivered in conjunction with the Master Plan, since it sits outside the Master Plan area. It is noted that as the system shown in Figure 11 of the IWCMP is in a different

location to that envisioned by the Sydney Water Study - acceptance of this will be required from the affected landowner. It is also critical that the proposed stormwater management arrangements be endorsed by Sydney Water.

This issue must be addressed prior to finalisation of the Master Plan to ensure adequate space is provided for WSUD elements in the proposed layout and that the stormwater infrastructure on which the Master Plan relies is able to be delivered.

Staging

The staging plan provided in the Infrastructure Delivery Strategy prepared by the Western Parkland City Authority does not include any stormwater management infrastructure in Stage 1.

BCS recommends a revised staging plan which includes the stormwater infrastructure required to support the delivery of stage 1 be prepared.

This issue must be addressed prior to finalisation of the Master Plan to ensure stormwater infrastructure is provided to support each development stage at the required time.

Strategy Concept Designs

No preliminary civil engineering plans or functional design drawings are provided for the stormwater systems. It cannot therefore be confirmed that the proposed systems can be accommodated within the space allocated within the Master Plan layout.

BCS recommends preliminary civil designs which include functional design information as defined by the *Technical guidance for achieving Wianamatta–South Creek stormwater management targets* (DPE, 2022) (earthworks, levels, batters, treatment areas, volumes based calculated based on earthworks, etc) for the end-of-line systems be prepared. Sydney Water should be consulted to confirm the preliminary civil designs are acceptable.

This issue must be addressed prior to finalisation of the Master Plan to ensure adequate space is provided for WSUD elements in the proposed layout.

Precinct Plan Amendments

Several the figures in the Planning Report, which are intended to replace the Aerotropolis Precinct plan figures, do not properly reflect the stormwater treatment systems proposed in the IWCMP for the North-West and South of the site.

They also do not show the proposed changes to stormwater infrastructure external to the site in the North-East corner.

BCS recommends the relevant figures in the Planning Report be revised to ensure consistency with the proposed stormwater infrastructure shown in Figure 11 of the IWCMP.

This issue must be addressed prior to finalisation of the Master Plan to ensure the proposed plans are consistent and show accurate information.

End of Submission

11 March 2024

Kiersten Fishburn
Secretary
Department of Planning, Housing and Infrastructure
4 Parramatta Square
12 Darcy Street
Parramatta NSW 2150

Dear Ms Fishburn,

Draft Bradfield City Centre Master Plan

I refer to the draft Master Plan prepared by Western Parkland City Authority (WPCA) which provides a framework for future development within the Bradfield City Centre. Our submission focuses on open space and parklands within the Master Plan, consistent with our vision for Greater Sydney to be a city of connected parklands.

Greater Sydney Parklands (GSP) supports the Master Plan, and considers it will assist in achieving our vision and implementing the NSW Government's *50 Year Vision for Greater Sydney's Open Space and Parklands*. Particularly, the delivery of world class parklands, green corridors to connect people and places and tree canopy targets aimed at minimising urban heat will contribute to a sustainable, liveable, green and cool Sydney.

GSP notes that the Master Plan addresses a range of issues in relation to open space and parkland within the city centre. Comments on several of these matters are outlined below.

Design excellence of parklands

The Master Plan provides a design excellence delivery strategy which proposes an architectural design competition in accordance with the Draft Government Architect's Design Excellence Competition Guidelines 2018.

GSP supports a design excellence process for open space. The design review panel process required by s4.31 of the Precincts SEPP is considered appropriate to ensure design excellence of the parklands. If a design competition process continues to be pursued, GSP would welcome the opportunity to be involved in the preparation of the design competition brief and the jury.

An important part of design excellence is ensuring that the park meets community requirements. In our management of parks we have found community engagement to be critical and this is reflected in our endorsed Consultation and Engagement Framework that we use to guide all community engagement.

Funding for open space and infrastructure delivery strategy

The Infrastructure Delivery Strategy notes approximately $16m of works in local open space and approximately $360m for the regional park, including the 7.1ha located within the Master Plan area. The land and works costs associated with this open space is intended to be offset against required contributions, with works to be delivered by WPCA.

Greater Sydney Parklands | Phone: 02 9895 7500 | Fax 02 9895 7580
Level 1, 6 Parramatta Square, 10 Darcy Street, Parramatta NSW 2150 | PO Box 3064, Parramatta NSW 2124

While funding for initial delivery of open space is addressed, sustainable funding for ongoing operational, maintenance and asset renewal requirements also needs consideration to ensure any future manager or landowner of the open space can ensure the continued high quality of the parklands.

Multi-functional events space

The major events space forms part of the regional park. The Master Plan should consider the impact of lighting, noise and access into the regional park associated with the events space on the adjacent uses and built form. While the Master Plan proposes delivery of the events space in later stages, the incorporation of base infrastructure early should be considered.

Given GSP's experience in delivery major events in parklands, we would welcome the opportunity to provide further advice on considerations such as emergency vehicle access, provision of servicing and maximising sightlines to the stage as the design for the events space is progressed.

I note it is intended to allow temporary major events to be held as exempt development in a similar way to major events held at Darling Harbour, The Rocks, Sydney Olympic Park or Barangaroo. GSP strongly supports this proposal to ensure the park can be activated as intended.

Amendments to Land Reservation Acquisition map

The proposed regional park boundaries on the Land Reservation Acquisition Map are not clear in the south-east corner of the site.

As currently proposed, it appears the regional park boundary results in small areas north-west of Thompsons Creek that could be inefficient to manage for the future landowner or manager. Furthermore, it is proposed to remove open space for the purposes of a north-south road which will split the local open space. Connected areas of open space provide a better outcome for the community and the future manager. Other options should be explored to ensure larger more contiguous areas of open space are delivered..

We look forward to continued collaboration with WPCA and the Department to ensure sustainable, high quality public open spaces and best practice management of parklands. If you have any questions, please do not hesitate to contact Paula Tomkins, Senior Manager, Open Space Planning at paula.tomkins@gsp.nsw.gov.au or on 0418 967 392.

Yours sincerely,

Callantha Brigham
Director Strategy, Design and Delivery

NSW GOVERNMENT

Greater Sydney Parklands | Phone: 02 9895 7500 | Fax 02 9895 7580
Level 1, 6 Parramatta Square, 10 Darcy Street, Parramatta NSW 2150 | PO Box 3064, Parramatta NSW 2124

Sydney's Parkland Councils
The Parks

4 March 2024

www.theparks.nsw.gov.au
contact@theparks.nsw.gov.au

Mr Ben Gresham
Manager, Place and Infrastructure, Central (Western) team
Western Parkland City
Planning & Land Use Strategy | Department of Planning, Housing and Infrastructure
4 Parramatta Square, 12 Darcy Street
Parramatta NSW 2150

Via the Submissions Portal

Dear Ben,

Submission to the draft Bradfield City Centre Master Plan- 215 Badgerys Creek Road, Badgerys Creek

Thank you for the opportunity to make a submission to the exhibition of the draft Bradfield City Centre Master Plan. Given the available timeframe, it was not possible to gain formal endorsement from all eight member Councils for this submission and so it should be noted that a submission that has been endorsed by The Parks' Councils will be provided once it is finalised.

The Parks' Councils commend the NSW Government's ambition for Bradfield City Centre as a transformative development project for Western Parkland City and NSW. The economic and employment opportunities created by the Western Sydney Airport will be a key driver for Western Parkland City's future, with the new City Centre having an influence well beyond its boundary. It is therefore important to ensure the City Centre and broader infrastructure planning is undertaken in a way that benefits the entire Western Parkland City.

The Parks Councils are broadly supportive of the Master Plan and acknowledge the extensive work required to prepare the Master Plan and other exhibition documents. We also understand that the Technical Assurance Panel (TAP) has included some representatives from The Parks member councils, and that this panel has played an important role in progressing this planning.

Considering the limited time for review of the Master Plan, this high-level submission focuses on strategic matters, in particular the spatial, social and economic relationship of Bradfield City Centre to the eight Local Government Areas comprising the Western Parkland City. Recommendations are provided under six key headings, reflecting a number of key strategic areas of concern that are raised by The Parks Councils:

1. Need for more effective consultation on draft Master Plan
2. Vision, objectives, and relationship to Western Parkland City
3. Economic strategy and impact
4. Transport infrastructure and connectivity
5. Infrastructure delivery and land acquisition, and
6. Residential function and affordable rental housing provision.

Prior to finalising the draft Master Plan, we request that further discussions are held with The Parks' Councils to consider the matters raised in our submission further, and for the Department of Planning, Housing and Infrastructure to propose how these matters will be addressed.

1. Need for more effective consultation on draft Master Plan

The Master Plan and associated documentation includes detailed information, development controls and statutory plan amendments that require considered review, however, the formal consultation for the draft Master Plan is limited to a 28-day exhibition period. Given the substantial volume and length of documents being exhibited, the complexity of matters to be considered, and the scale of the proposal for a major City Centre rather than an individual site DA, this has not provided local government, community members and other stakeholders sufficient time to give due consideration to and add value to the draft Master Plan.

Recommendation: It is recommended an extension to the exhibition period of an additional 60 days be granted to enable all stakeholders the opportunity to comment on the draft Master Plan and detailed documentation provided. It is also recommended that further detailed technical briefings are held to work through the various elements of the draft Master Plan with The Parks' Councils.

2. Vision, objectives and relationship to the Western Parkland City

The Parks' Councils commend the draft Master Plan vision's intent, including the aspirations for a city of culture, creativity and innovation. A focus on connection to country, diversity and aspirations for net zero are also welcomed.

However, we are concerned that the vision and objectives are insufficiently detailed and lack a sense of 'being in place'. Instead, the precinct is being considered as a self-sustaining ecosystem, with weak focus on the essential connectivity, whether social, economic or physical, to the wider Western Parkland City and Sydney.

The draft Master Plan vision should be expanded to reflect the inter-relationship between Bradfield City Centre and the broader Western Parkland City, and in particular the need for the City Centre to be physically, economically and socially connected to existing communities and Strategic and Metropolitan Centres. Including recognition of a connected Western Parkland City in the Master Plan vision would assist to inform the approach to connections and inter-relationships in the broader draft Master Plan and ongoing planning for the City Centre and for the urban structure of the Western Parkland City.

The Western Sydney International Airport and Aerotropolis Precinct have been promoted by State and Federal Government as a once-in-a generation transformational opportunity for the economy and employment in Western Sydney. As a key component of achieving this intent, this role for the City Centre should be emphasised further in the vision. Stronger articulation of the role of Bradfield City Centre in contributing to the transformation of the economy and Western Parkland City-located employment generation as well as benefiting existing communities, socially and economically, is required. This should be a key objective of the draft Master Plan and be clearly outlined in the draft Master Plan through provisions that will ensure that this transformational intent is achieved.

Bradfield City Centre cannot be planned in isolation to its geographical context and without consideration of the complementary and/or strategically significant roles and functions of the existing Strategic and Metropolitan centres inherent in a polycentric Western Parkland City. This focus on complementary roles is currently missing from the draft Master Plan and the attached economic strategy. Further opportunities should be taken before finalising the draft Master Plan to discuss the relationship of Bradfield in this context, as well as specifically how the draft Master Plan responds to the Economic Development Strategy currently being developed collaboratively by The Parks Councils and WPCA.

Recommendation: It is recommended that the Bradfield City Centre vision and objectives be expanded to better recognise the fundamental importance of connectivity with the surrounding areas and wider Western Parkland City. The relationships between Bradfield and Western Parkland City in the context of a polycentric city structure requires further exploration including demonstration of how the City Centre will be complementary to and contribute to the growth and development of other metropolitan centres.

A new or revised objective should be included to recognise the role of the City Centre in transformational employment generation, in particular in providing knowledge intensive employment opportunities for existing communities as well as for future growth.

3. Economic strategy and impact

The economic strategy and impact assessment accompanying the draft Master Plan notes that the City Centre provides the capacity for 20,000 –24,000 jobs in the long-term as well as approximately 15,000-23,000 additional residents. The Parks Councils has a number of key concerns arising from review of the economic studies that have been used to support the draft Master Plan and these are identified below:

Land uses - The draft Master Plan proposes the City Centre as the key anchor centre for the development of the Aerotropolis Growth Area and for the wider Western Parkland City. Land uses in the SEPP and the draft Master Plan related to this economic role are the Enterprise Zone (part) and the Mixed-Use zone. The uses proposed include: advanced manufacturing, defence and aerospace, research and development, high technology industry, education, creative industries, business incubators as well as a range of residential, retail and community facility uses. As such there is a mix of residential and non-residential land uses in the City Centre, appropriate for the living and working environments that attract knowledge intensive employers and workers.

The supporting studies state that the specialised nature of employment in the City Centre in the early stages of development, focusing on research and advanced manufacturing, will mean that Penrith, Campbelltown and Liverpool metropolitan centres will retain their competitive advantage for regional retail provision, as well as location of community and civic facilities during this early development stage. In considering retail land use and planning, there is no modelling provided of the expected scale of retail development in the City Centre, or the impacts of this floorspace on other centres in the Western Parkland City, including other metropolitan and strategic centres. The lack of retail modelling at a regional scale and analysis of impact should be addressed prior to endorsement of the draft Master Plan, as the economic impact does not appear to have been investigated. For example, there may be a need to consider the staging of major retail development for the City Centre

in the early stages of development, to ensure this scale does not exceed retail servicing of the Aerotropolis Precinct and its gradual population growth in the retail catchment.

Evidence base - The projections used for the economic analysis in the Economic Strategy and Impact Assessment accompanying the draft Master Plan are based on the Place Infrastructure Compact (PIC) that was completed in 2020, and the TZP19 projections by TFNSW (also 2020). These reflect DPE population projections from 2019, which have since been updated. There is no explanation in the economic study on why these out-of-date projections, pre-COVID, are being relied on for the economic analysis of the draft Master Plan, and it is suggested that draft Master Plan consideration of impact should be based on updated assumptions that more accurately reflect current conditions and forecasts.

The Parks' Councils made submissions to the PIC when exhibited in December 2020/January 2021. The Councils' submissions should be considered in this context. The utilised PIC projections are stated as being based on a 'thriving aerotropolis scenario' which apparently assumes greater proportions of growth in GPEC and the South West are redirected to the Aerotropolis Precinct to the detriment of the adjoining LGAs in the Western Parkland City. The growth assumptions of this PIC scenario need to be further tested in the current context, particularly in the short and medium term, to ensure these are realistic in the current and projected economic environment, also considering recent changes to planning policy directions that include a greater focus in Greater Sydney on consolidation around existing transport infrastructure. This will be particularly important to consider the realistic staging of infrastructure to support growth.

Protecting jobs capacity – The analysis of the capacity GFA and industry classification for floorspace in the City Centre suggests that 20-24,000 jobs can be accommodated. This is consistent with the PIC and common planning assumption projections. The supporting economic study states that this is based on the draft Master Plan provision of 693,000 square metres of additional non-residential floorspace by 2056.

The development controls in the draft Master Plan, specifically the Mixed-Use zone, do not currently ensure that this amount of non-residential floorspace will be provided as part of future development. Further, the draft Master Plan proposes a reduction in land previously earmarked for non-residential, reducing the area of land previously subject to the business and enterprise land use zone.

Greater certainty that there is protection for the achievement of employment related land use and jobs in the Bradfield City Centre should be incorporated into the draft Master Plan standards, due to the transformational importance for employment that the City Centre is required to play. It should be noted that the important role of the utilisation of government land to drive jobs growth was recognised in the City Deal and remains a key focus for Councils.

Realistic staging of growth - The economic analysis shows that the proposed growth rate for the City Centre to achieve the 20-24,000 jobs by 2056 will require an average annual growth rate (after the initial establishment phase) of approximately 8% (peaking at 13.9%). These average annual growth rates appear to be unrealistic, as this exceeds the peak periods for the growth of the economically highly successful Macquarie Park, which saw average annual growth rates of between 4.5% and 6.2% between 1996-2011. In addition, these higher growth rates would need to be sustained over a long period of time, much longer than was achieved at Macquarie Park or any other major centre in Sydney.

The supporting economic study for the draft Master Plan also cautions that this 'full' employment development is likely to be very long term and not likely to occur by

2056. Consequently, there is nothing in the economic strategy or draft Master Plan to demonstrate how the employment targets will be achieved by 2056. The projections relied upon were completed pre-Covid (using TZ-19 and PIC forecasts of likely employment and population) and should be revised to consider conditions.

The draft Master Plan should provide a clear staging plan and evidence to support the staging for the growth of the City Centre and identify the longer-term horizon for employment and jobs growth that is more realistic for the targets to be reached. A realistic understanding of the growth of the City Centre will be important to allow for coordination with, and optimisation of investment in infrastructure delivery.

Transition of land uses - A key element of the draft Master Plan's economic study is that the draft Master Plan needs to allow a transition of early land uses to higher order land uses over the long-term as the City Centre matures. This is an important planning principle for the development of the draft Master Plan and associated development standards. However, there does not appear to be planning and development control mechanisms built into the draft Master Plan that would ensure this transition.

This is particularly concerning with the blanket approach to Mixed Use zone that has been applied, that will allow for high density strata-title residential, which is likely to remain the highest and best use at least in the early stages of development. Once developed, it will be highly unlikely that this form of residential use will be transitioned to higher intensity or employment related uses for many years. Ensuring the draft Master Plan addresses this key issue of transition will be important before it is finalised as the time period could be 30-50 years for maturing of the City Centre to occur.

There appears to be no requirement set out in the development controls for retail and commercial floorspace beyond a requirement for non-residential ground floors in parts of the draft Master Plan area. It is questioned whether this will deliver the desired mixed-use outcomes and commercial office space desired to achieve the transformational employment role for Bradfield.

Recommendation: It is recommended that the draft Master Plan includes provisions to protect the jobs capacity of the City Centre, ensuring that there will be protection mechanisms long-term for a capacity of at least 700,000 square metres of employment floor space to allow for 20,000 to 24,000 jobs.

It is also recommended that the evidence base relied on for the growth and staging of the City Centre be reviewed to ensure The Parks' Councils' feedback on the PIC has been considered, and be updated to include current assumptions regarding forecast growth, to be used to prepare a realistic staging plan that reflects that the timing for meeting the employment targeted will not be achieved by 2056 (as per the studies supporting the draft Master Plan). This realistic staging will be important to inform infrastructure investment coordination and optimisation.

It is also recommended that retail gravity modelling be undertaken to understand the economic impact of the proposed City Centre on other metropolitan and strategic centres in the Western Parkland City, and appropriate provisions included in the draft Master Plan that consider the implications of this impact.

Finally, it is recommended that the draft Master Plan include provisions to ensure that the transitioning of land use can be achieved as the City Centre matures, particularly relating to how the Mixed-Use Zone will be regulated to achieve this transition.

4. Transport infrastructure and connectivity

The material supporting the draft Master Plan states that the labour force for the employment in the City Centre, especially in the earlier stages of development, will need to come from outside the centre and local area and from across the Sydney metropolitan area. This is particularly the case with the employment envisaged being knowledge-intensive and highly specialised in nature.

Therefore, the connectivity to the City Centre is a key element in the success of the draft Master Plan and it is critical to build-in strong regulatory relationships between the stages of development of the City Centre tied to the provision of key transport infrastructure and services to the Western Parkland City. The integration of this sub-regional connectivity and establishment of infrastructure and services for a dispersed labour force to access the City Centre as part of the draft Master Plan will be important prior to the draft Master Plan being finalised.

For the City Centre to be successful it will require substantial investment in district-level transport infrastructure, including significant public transport investment and both state and regional road network expansion. It is unclear from the draft Master Plan how it will ensure the impact off-site related to the scale of a Metropolitan City Centre development have been adequately addressed as part of any approval of the draft Master Plan.

The transport focus in the draft Master Plan is on internal networks and the proposed Western Sydney Airport Metro line from St Marys to the Bradfield City Centre. The termination of the line at the Aerotropolis means that quality non-road public transport solutions are only available for communities to the north of the Airport. Yet public transport connectivity to the City Centre is seen as key to reducing congestion and to meeting the precinct's net-zero aspirations. It is clear that a broader relationship needs to be established where the draft Master Plan shows how it will address off-site impacts, with the extension of the existing Metro network south and the provision of bus rapid transit ways to better connect the Bradfield City Centre to communities in Campbelltown, Liverpool and Penrith and other centres across the Western Parkland City. Fundamentally, we would like to see a 360 degree lens applied to the masterplan and instead of a purely north-facing focus include some consideration of better connecting the South West and the significant growth areas south of Bradfield through the construction of a metro from Campbelltown/Macarthur to the airport. Furthermore, there should be consideration beyond these existing commitments to the next stage of connections that will be essential through Fairfield to Parramatta and through the Illawarra to Port Kembla. This is an important requirement for the City Centre to be successful, be integrated into the Western Parkland City and consequently unlock economic opportunities. One early step to contribute to achieving this would be to ensure development controls include requirements for Green Travel Plans for all trip-generating development types.

Connections along Fifteenth Avenue to Liverpool and to the east to Kemps Creek and to Austral, where approximately 30,000 new homes are being built, are vital to ensure residents of these areas can easily access Bradfield City Centre by public transport and private vehicle. The draft Master Plan road network must also address connections to surrounding sites and major corridors including Fifteenth Avenue, Bringelly Road and the Northern Road and funding mechanisms need to be identified now to ensure this occurs.

Traffic congestion is already a significant problem in the Western Parkland City and in the Liverpool LGA surrounding the airport and town centre sites. Unless addressed, the cumulative impacts of population and employment growth in the Aerotropolis, surrounding growth areas, and across the Western Parkland City and airport employment precincts, combined with the increased traffic caused by the airport, will put enormous pressure on the existing road networks, causing even greater congestion, further delays, pollution and reducing economic productivity.

Recommendation: A stronger focus in the draft Master Plan on how the City Centre will connect to its immediate and wider context via road improvement works and public transport is required to address mobility, access to employment and traffic congestion impacts off-site. It is recommended that the draft Master Plan approval links addressing off-site connectivity issues to development of the site over the long term and expand its attention to external impact from such a major new City Centre development.

5. Infrastructure delivery and land acquisition

Contributions plans - Development within the Bradfield City Centre will be subject to local infrastructure contributions under local contributions plans prepared by Council as well as State Infrastructure Contributions in accordance with the Aerotropolis Special Infrastructure Contributions Area. However, it is noted that a contributions plan for the Aerotropolis has not been finalised, making it difficult to comment on the infrastructure provisions in the draft Master Plan, or whether sufficient funding to address the City Centre will be available.

Under the draft Master Plan, any public works outside of the State or local contribution planning framework is to be provided by the proponent or developer in agreement with the future asset owner via a Voluntary Planning Agreement (VPA), but terms for VPAs are yet to be agreed. Lack of information in the masterplan about the level of investment in transport infrastructure, in particular public transport investment and expansion of both state and regional roads also contribute to difficulties in this area.

The planning report and the draft Master Plan itself have insufficient focus on mechanisms for local infrastructure delivery, land acquisition for infrastructure and funding including open space, roads, water and stormwater infrastructure. One particular concern is the shifting of costs for trunk drainage from Sydney Water to Liverpool City Council. Such matters require resolution at this master planning stage and should not be deferred to Voluntary Planning Agreements.

Social infrastructure -The draft Master Plan and accompanying social infrastructure strategy set out social and cultural infrastructure requirements for 2056, yet only indicative locations are provided for a number of facilities and no timing or funding commitments are provided. For example, the draft Master Plan seeks to amend the Precinct Plan to remove the ‘education’ land use area, for a future school site. There is a concern that this could lead to a delay or lack of provision of schools in the City Centre, or the relegation of the school site to a site less suitable and further from public transport options.

The acquisition of land for essential utilities and social infrastructure should occur early in the development process and it is imperative that funding mechanisms and locations for this infrastructure are secured before the draft Master Plan progresses. It is critical that Bradfield does not place even greater burdens on the already stretched and under-resourced facilities and services within the Western Parkland City.

The Western Parkland City already experiences significant disadvantages in the provision of social and cultural infrastructure, so it is vital that Bradfield City Centre not only meets its own infrastructure needs but actually contributes to address the wider shortfall in the Western Parkland City.

Recommendation: It is recommended further ongoing discussions with utility and service providers are held, including Sydney Water, Department of Education, Department of Health, together with Liverpool City Council prior to finalising the draft Master Plan and infrastructure delivery strategy. Locations and funding commitments, including early acquisition of land for key infrastructure must be secured, including schools and the community health centre. The impact of the proposed new population on existing infrastructure in the Western Parkland City, especially community health and social services must be further considered, ensuring that the City Centre is not only self-sufficient, but assists in addressing wider shortfalls of infrastructure provision in surrounding areas.

It is also recommended that the school site be acquired early, to secure a strategic site for educational facilities, but also to allow for education facilities to be a catalyst for the early growth of the City Centre.

6. Residential function and affordable rental housing provision

The incorporation of residential land use and Mixed Use zone land in the draft Master Plan is an important element in the creation of a vibrant and successful centre. The proposed GFA for residential land uses in the Draft Master Plan is proposed as being 565,000 square metres, which is proposed in the study supporting the draft Master Plan to deliver 6647 dwellings and a resident population of 15,288 (noting that there is a variety of numbers in the material supporting the draft Master Plan including 10,000 dwellings and a higher resident population). The other dwelling numbers do not appear to have been calculated from the proposed floorspace analysis in the draft Master Plan.

The draft Master Plan sets out a maximum building height of 17- 60 metres and FSR of up to 3.5:1, which will help to achieve compact development and contribute to housing diversity in the Western Parkland City through providing medium and high-density housing. It is recommended that building heights and likely overshadowing of the public domain including parks are reviewed to ensure amenity of these spaces, as it appears they do not meet solar access requirements.

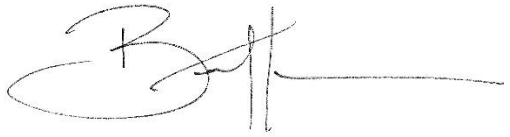
The provision of 30% of dwellings as affordable rental managed in perpetuity by the community housing sector for very low-, low- and moderate-income households is supported as this will locate affordable rental housing in an area with good job and public transport access. The delivery of this affordable housing component of the draft Master Plan should also be clearly incorporated as a part of the development controls to ensure that this is delivered. This affordable housing should be provided in perpetuity.

Recommendation: It is recommended that a review of building heights adjacent to public open spaces is required to ensure that minimal overshadowing of public spaces occurs, and that amenity is maintained.

It is also recommended that clear provisions are written into the Master Plan development controls and legislative framework setting out the 30% requirements for affordable housing, provided in perpetuity.

Thank you again for the opportunity to make a submission. Please feel free to contact our Executive Director Joanna Kubota on 0422 265 554 or joanna.kubota@theparks.nsw.gov.au or myself on 0402 883 840 or ben.taylor@wollondilly.nsw.gov.au should you have any questions or would like to discuss these matters and The Parks' recommendations further.

Yours sincerely,



Ben Taylor
Chair, The Parks General Managers' Group,
Chief Executive Officer, Wollondilly Shire Council

23 February 2024

Contact: *Stuart Little*
Telephone: *0436 948 347*
Our ref: *D2024/12010*

Mr Kieran Thomas
Director – Regional Assessments
Department of Planning, Housing and Infrastructure
Locked Bag 5022
PARRAMATTA NSW 2124

Dear Mr Thomas,

Exhibition of Bradfield City Centre Masterplan (Western Sydney Aerotropolis)

Thank you for your letter of 5 February 2024 advising WaterNSW of the public exhibition of the Bradfield City Centre Masterplan and supporting documents.

The Masterplan area lies approximately 9 km south of the Warragamba Pipelines and 7 km west of the Upper Canal Corridor. WaterNSW has no land or assets in the vicinity of the Masterplan area.

For later development proposed on the site that is not State Significant Development (SSD), water supply works approvals may be required from WaterNSW such as for temporary dewatering purposes.

WaterNSW has no further comment to make on the Masterplan.

If you have any questions regarding this letter, please contact Stuart Little at stuart.little@waternsw.com.au.

Yours sincerely

ALISON KNIHA
Environmental Planning Assessments & Approvals Manager

Department of Primary Industries
Department of Regional NSW

Our ref: C24/74
Your ref: EF23/13739
1 March 2024

Department of Planning, Housing and Infrastructure
Attn: Keiran Thomas
4 Parramatta Square, 12 Darcy Street,
Parramatta NSW 2124

Re: Exhibition of Bradfield City Centre Master Plan (Western Sydney Aerotropolis)

Dear Keiran,

Thank you for your referral dated 5 February 2024 seeking comment on the proposal from DPI Fisheries, a division of NSW Department of Primary Industries on the proposed works stated above.

DPI Fisheries is responsible for ensuring that fish stocks are conserved and that there is no net loss of key fish habitats upon which they depend. To achieve this, DPI Fisheries ensures that developments comply with the requirements of the FM Act (namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the Act, respectively), and the associated *Policy and Guidelines for Fish Habitat Conservation and Management (2013)*. DPI Fisheries is also responsible for ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing, aquaculture, marine parks and aquatic reserves in NSW.

Moore Gully and the two freshwater wetlands on site are considered highly sensitive key fish habitat, Thompsons Creek is on the border of the site and is also considered key fish habitat. Best practice development of this site should ensure the maintenance and improvement of key fish habitat by:

- protection and improvement of riparian habitat values;
- protection of aquatic habitat; and
- protection and/or improvement of water quality through water sensitive urban design, adequate stormwater treatment and best practice erosion and sediment control measures during construction.

ahp.central@dpi.nsw.gov.au
PO Box 5106, Wollongong NSW 2520
0455 794 560
dpi.nsw.gov.au

DPI Fisheries has reviewed the Bradfield City Centre Master Plan and the Biodiversity Strategy and Impact Assessment (Biosis, October 2023). DPI Fisheries is supportive of the recommendations outlined in Table 17 (specifically related to key fish habitat, watercourses and riparian corridors, and farm dams) of the Biodiversity Strategy and Impact Assessment and has the following additional recommendations to protect key fish habitat values at this site:

1. Riparian buffer zone widths should be implemented as outlined in DPI Fisheries P&Gs s.3.2.3.2. NSW DPI will require the design of riparian buffer zones to incorporate the maintenance of lateral connectivity between aquatic and riparian habitat. Installation of infrastructure, terraces, retaining walls, cycle ways, pathways and grass verges within the riparian buffer zone should be avoided or minimised.
2. A Rehabilitation Strategy should be developed to guide the establishment and rehabilitation of the riparian zone. The rehabilitation strategy should include native in-stream vegetation and snags where appropriate. Local native riparian vegetation species should be used across the riparian buffer zone to improve riparian habitat values.
3. The Biodiversity Strategy and Impact Assessment outlines impacts to the Moore Gully and Thompsons Creek key fish habitat buffers in the vicinity of the two transit corridors. DPI Fisheries should be consulted during the design of these transit corridors, and they should be consistent with DPI Fisheries Fish Passage Requirements for Waterway Crossings, available online at https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/633505/Why-do-fish-need-to-cross-the-road_booklet.pdf.
4. A Dewatering Management Plan should be prepared for dewatering of farm dams, including provisions to protect fish during the dewatering process. Any Dewatering Management Plan shall specifically consider any potential off-site impacts as a result of the dewatering operations and contain mitigation controls to effectively treat any discharge water to prevent off site pollution of any receiving waters. It should be noted that a s37 permit from DPI Fisheries may be required to relocate fish.
5. Water sensitive urban design stormwater treatment measures must be maintained according to manufacturers and best practice maintenance requirements over time.
6. Erosion and sedimentation impacts during the land forming and development of the area presents a significant risk to key fish habitat values. It is important that these works are staged to minimise the area of exposed earth in forming these areas and that best practice erosion and sedimentation controls are implemented during each stage of the development of this site.

DPI Fisheries requests to be included in any future consultation for the Bradfield City Centre. If you require any further information, please contact me on jess.hyland@dpi.nsw.gov.au.

Yours sincerely,

Jess Hyland

Fisheries Manager, Coastal Systems

DPI Fisheries

RFS

NSW GOVERNMENT

Department of Planning, Housing & Infrastructure
(Parramatta)
Locked Bag 5022,
PARRAMATTA NSW 2124
Australia

Your reference: EF23/13739
Our reference: DA20240207000514-Original-1

ATTENTION: Fadi Shakir

Date: Tuesday 27 February 2024

Dear Sir/Madam,

Development Application
Other – Other Assessment – Other
Notice of Exhibition - Bradfield City Centre Master Plan - 215 Badgerys Creek Road Bradfield NSW 2556, 3101//DP1282964

I refer to your correspondence regarding the above proposal which was received by the NSW Rural Fire Service on 05/02/2024.

Based on the review of the information provided, following comments are provided in relation to the proposed Bradfield City Centre Master Plan:

- The future development(s) within the proposed master plan must comply with the requirements of relevant sections of *Planning Bush Fire Protection (PBP) 2019*.
- Where open space(s) are considered as managed land for the purpose of hazard assessment, it must be supplemented by a suitable Vegetation Management Plan (VMP) or a Plan of Management (PoM) which guarantees commitment to future management demonstrating a regime is in place to ensure ongoing compliance with APZ requirements.
- It should also be noted that the proposal indicates development of certain Special Fire Protection Purpose (SFPP) development(s) which are also required to meet the requirements of the appendix B of the addendum to *PBP* in addition to the requirements of Chapter 6 of *PBP 2019*.

For any queries regarding this correspondence, please contact Surbhi Chhabra on 1300 NSW RFS.

Yours sincerely,

Kalpana Varghese
Supervisor Development Assessment & Plan
Built & Natural Environment

Postal address

NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address

NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

DOC24/92080

Andrew Watson
DA Coordinator
Department of Planning, Housing and Infrastructure

By email: andrew.watson@planning.nsw.gov.au

Dear Andrew

Thank you for your invitation to comment on the Bradfield City Centre Master Plan.

From the Master Plan, the EPA understands that:

- The proposal does not involve a Scheduled Activity under Schedule 1 of the *Protection of the Environment Operations Act* (1997) and so, will not require an Environment Protection Licence under the Act,
- The proposal is not being undertaken by or on behalf of a NSW Public Authority, nor are there activities for which the EPA is the appropriate regulatory authority,
- The site is not being regulated by the EPA under the *Contaminated Land Management Act* (1997).

Contamination

The EPA highlights that the site audit statement (SAS No. 0503-2304) concludes that the site (defined as Part Lot 101 DP 1282949 and subject to this planning proposal) can be made suitable for public open space/recreation and mixed uses including medium to high density residential, commercial/industrial, retail, hotel, childcare facilities, community and education, subject to management in accordance with the *Asbestos Management Plan, Bradfield City Centre* (ERM, 8 November 2022).

The EPA highlights that the AMP has been prepared in the event that asbestos is encountered during development work and remediation/validation of the site, if required. Therefore, site management and remediation (if required) must be undertaken in accordance with the AMP. Any changes to the AMP must be reviewed and endorsed by the appointed site auditor.

When assessing the merits of the development, it is recommended that DPHI considers the following:

1. If remediation is required, the Proponent must prepare a **Site Validation Report** for the development prior to commencement of use.

   The **Site Validation Report** must:

   a. be prepared or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.

   b. be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the *Contaminated Land Management Act 1997* (CLM Act) and

must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the RAP is implemented.

The **Site Validation Report** must be submitted to the Planning Secretary for review one month after the completion of the remediation works.

2. If remediation is required, the Proponent must engage a NSW EPA accredited Site Auditor throughout the duration of the works to ensure that any work required is appropriately managed. If work is to be completed in stages, the site auditor must confirm satisfactory completion of each stage by issuance of **Interim Audit Advice/s**.
3. If remediation is required, the Proponent must obtain from a NSW EPA accredited Site Auditor a **Section A1 Site Audit Statement** or a **Section A2 Site Audit Statement accompanied by an Environmental Management Plan** and submit it to the Planning Secretary and relevant Council for information no later than one (1) month before commencement of use of the site.

The EPA note that the draft master plan contains a number of inaccuracies, particularly with regard to the role of site auditors and the EPA in managing contamination in NSW. Please refer to **Attachment A**.

The EPA also reminds the Proponent of the following:

- The processes outlined in the *Resilience and Hazards SEPP 2021* (formerly the *State Environmental Planning Policy 55 - Remediation of Land (SEPP55)*) are to be followed in order to assess the suitability of the land and any remediation required in relation to the proposed use.
- The Proponent must ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site so as to result in significant contamination [note that this would render the Proponent the 'person responsible' for the contamination under section 6(2) of *Contaminated Land Management Act 1997* (CLM Act)].
- The EPA should be notified under section 60 of the CLM Act for any contamination identified which meets the triggers in the Guidelines for the Duty to Report Contamination.

The EPA recommends use of "certified consultants". Please note that the EPA's Contaminated Land Consultant Certification Policy supports the development and implementation of nationally consistent certification schemes in Australia and encourages the use of certified consultants by the community and industry. Note that the EPA requires all reports submitted to the EPA to comply with the requirements of the CLM Act to be prepared, or reviewed and approved, by a certified consultant.

Land Use Conflict

The EPA has previously provided comment and advice on various developments throughout the Aerotropolis that will represent a significant land use conflict in the future. The presence of residential development may result in any future adjacent commercial and industrial development being limited in terms of scope or operation.

This limitation is most likely to pertain to strict noise requirements associated with being co-located with residential receivers. Nearby residential receivers limit the mitigation options available to a future commercial or industrial development, and eliminate the benefit of spatial separation, which is a core component of effective land use planning. Further, as per the *Noise Policy for Industry* (EPA, 2017) a residential receiver is afforded a much lower noise level than commercial and industrial receivers, even if the receiver is in an urban environment. This must be considered in any future noise assessments for adjacent developments.

Similar considerations to those above are also relevant to dust, odour and air quality and should be considered when determining the location of future industrial sites.

Circular Economy

The Master Plan and associated documentation note that a specific waste precinct is needed. However, specific identification of land for waste infrastructure, and preserving and protecting existing infrastructure land against future development or rezoning, should be prioritised. Doing this would provide certainty to councils, industry and investors on the location they should consider building new waste infrastructure.

The Circular Economy Waste Strategy developed by WSP is high level and defers back to final implementation during design in the DA for many of the waste outcomes. Practical examples and implementation/responsibility in delivery are encouraged for how waste and circular economy priorities will be achieved. The strategy could also more fully address some of the sustainability aims of the Master Plan. The detailing of quantity and type of waste generated and how they will be managed, reused and recycled are still to be analysed.

If you have any questions or require clarification, please contact Justin Hillis, Senior Policy and Programs Officer at justin.hillis@epa.nsw.gov.au.

Yours faithfully

Jacqui Pulkkinen
Unit Head Strategic Planning Unit
NSW EPA

04/03/2024

Andrew Watson
DA Coordinator
Key sites and Regional Assessments
Department of Planning, Housing and Infrastructure
Locked Bag 502
Parramatta NSW 2124

Andrew.Watson@planning.nsw.gov.au

4 March 2024

Dear Mr Watson,

RE: Draft Bradfield City Master Plan Exhibition (Lot 10 DP 1235662)

Thank you for the opportunity to comment on the Draft Bradfield City Master Plan dated 5 February 2024 submitted by the Western Parkland City Authority.

Sydney Metro is generally supportive of the Draft Bradfield Master Plan proposed by the Western Parkland City Authority (WPCA) as it will respond to and complement the outcomes being delivered by the Western Sydney Aerotropolis Plan (WSAP), the State Environmental Planning Policy (Precincts—Regional) 2021 (SEPP 2021) and the Aerotropolis Precinct Plan (PP) to facilitate urban, social and economic opportunities.

Please find below matters listed by Sydney Metro for consideration by the Department of Planning, Housing and Infrastructure in the assessment of the Mater Plan.

Key matters

Corridor Protection

There are two rail corridors applicable to the site:

1. The mapped future transport corridor which Section 4.9 of the State Environmental Planning Policy (Transport and Infrastructure SEPP) 2021 (T&I SEPP) refers to; and
2. The Sydney Metro - Western Sydney Airport project which has received Critical State Significant Infrastructure approval is defined as a "rail corridor" pursuant to provisions of the T&I SEPP.

The Master Plan report on pages 50- 51 indicates tall buildings directly above or in close proximity to the Metro tunnels. As per comments provided to the proponent earlier, these tunnels have been designed for a maximum 2m excavation from existing ground level and a load capacity of 20kPa which will be consumed by bulk earthworks activities proposed by the Masterplan.

All developers of structures above or in close proximity to the Metro substratum including basements, will be required to comply with Sydney Metro Corridor Protection Technical Guidelines and demonstrate nil adverse impact to Sydney Metro infrastructure. This may require piled foundations and transfer structures to carry loads down to a level below the tunnels. If the piles are located within the Sydney Metro substratum, then Sydney Metro approval will be required for those structural elements.

Furthermore, page 60 of the Planning Report does not consider the requirement for development in or adjacent to Sydney Metro - Western Sydney Airport project corridor. Future development applications will need to consider the relevant triggers and demonstrate acceptable impacts on existing and future

rail infrastructure facilities (including but not limited to the Sydney Metro - Western Sydney Airport project). This should be included as a development standard for consideration.

It is also noted that Table 3 of the Earthworks report includes section 4.9 of the Transport & Infrastructure SEPP. Requirements for development in or adjacent to rail corridors in the Transport & Infrastructure SEPP Chapter 2, Part 2.3, Division 15, Subdivision 2 should also be considered.

Activation within Metro precinct

The Art and Cultural Strategy lists the Metro precinct as a location for public art and activation initiatives. The proponent will need to undertake further consultation with Sydney Metro to discuss the proposed timeline, delivery strategy, maintenance and integrate with Sydney Metro's Art and Cultural Strategy to avoid any clashes.

Noise and Vibration Impact

Sydney Metro notes that the Noise and Vibration Impact Assessment does not provide prescriptive controls for noise and vibration mitigation to sensitive receivers such as residential users. It is recommended that noise impact mitigation measures required as a result of the location of these uses, should be included in the Development Control Plan.

Connect with Country

The Acknowledgement to Country in the Master Plan report and Aboriginal and Cultural Heritage Assessment Report reference the Darkinjung clan which is incorrect as this clan is from the North side of Hawksbury River and does not belong to the Cumberland Plains. This should be amended.

Next Steps

Sydney Metro look forward to working with the Department in the development of this Master Plan.

Please contact me on 0451 115 471 or lara.dominish@transport.nsw.gov.au should you wish to discuss this matter.

Lara Dominish
Director Place Making and Property
Western Sydney Airport
Sydney Metro

LIVERPOOL CITY COUNCIL

Our Ref: MP-2/2022
Contact: Luke Oste
Ph: 0457 111 831
Date: 28 February 2024

Keiran Thomas
Director Regional Assessments
Department of Planning, Housing and Infrastructure
4 Parramatta Square, 12 Darcy Street Parramatta NSW 2150
By email: keiran.thomas@planning.nsw.gov.au

Re: Public Exhibition - Bradfield City Centre Master Plan - 215 Badgerys Creek Road, Badgerys Creek

Ben,

Thank you for the opportunity to provide feedback on the proposed Bradfield City Centre Master Plan. Council has prepared comments in relation to the public exhibition of the Bradfield City Centre Master Plan (**Attachment 1**).

Insufficient time has been provided for Council officers to make comprehensive comments on the Master Plan. The exhibition package contains approximately 40 documents that need to be analysed by staff members who have competing priorities. It is recommended that a project of this scale is exhibited for at least 60 days to allow for proper consideration of changes proposed.

It is noted that this is an interim officer level submission and a Council endorsed submission will be provided once the submission has been tabled at an upcoming Council meeting. These comments should also be read in combination with Council's previous comments provided through the Technical Assurance Panel (TAP) process.

Finally, Council stress the need for all of government coordination in the design, delivery and maintenance of infrastructure to enable development that is in accordance with the planning framework. The Bradfield City Centre represents one of the first and most important development fronts in the Aerotropolis, with orderly and efficient infrastructure delivery being key in achieving the vision for this precinct. Council stresses the need for DPHI to take the lead as the key planning agency in coordinating this enabling infrastructure effectively.

Council thanks the Department for including Council at this initial stage of the process and looks forward to working with the Department in relation to this matter.

Should you have any questions, relating to this matter, please contact me on 0457 111 831, or via email at ostel@liverpool.nsw.gov.au.

Kind regards,

Luke Oste
Coordinator Strategic Planning

Attachment 1 – Council Comments

Please be advised that the following comments are to be read in conjunction with previous comments raised during the technical assurance panel process.

1. Strategic Planning Overview

Connections to Neighbouring Sites

It is requested that the Master Plan provides further analysis of the adjoining sites to ensure a consistent provision of necessary infrastructure. Identification of new key access links to the east, linking Bradfield to the remainder of the Aerotropolis Core (and further east to Kemps Creek and Austral) should be identified with road corridor designs that provide continuity and amenity in line with the Western Sydney Street Design Guidelines.

The subject site will contain a Metro station with connectivity to surrounding arterial roads, collector and local roads. It is unclear if the proposed road network accounts for potential connectivity to surrounding sites and major corridors such as Fifteenth Avenue, Bringelly Road and The Northern Road. While the major road corridors cannot be accessed directly, efforts should be made to explore how the site can connect to the major corridors by other means. A broader awareness of connectivity is sought.

Infrastructure funding

The Master Plan must include sufficient detail in relation to development contribution considerations noting that at this time a contributions plan has not been finalised for the Western Sydney Aerotropolis.

It is noted that the Western Parkland City Authority (the Authority) prefers that infrastructure is funded via planning agreements. While Council welcomes the recommended approach by the Authority to negotiate funding local infrastructure in the Bradfield City Centre through a planning agreement, Council cannot provide further feedback on this matter until a draft letter of offer with further information is provided by the Authority for Council's review. In the absence of an adopted contributions plan for the Aerotropolis, negotiating a planning agreement is the only available option for securing funds for the delivery of local infrastructure.

2. Traffic and Transport

Development Control Plan (DCP)

Any DCP applying to the site is to include:

a) Road classification and administrative responsibilities for various types of roads including Badgerys Creek Road, Metro Link, sub-arterial road, transit boulevard, collector street, local street and pedestrian/active links including ownership, delivery mechanism and maintenance responsibility.

   Note: Council considers that Badgerys Creek Road and Metro Link should be classified as a state road for TfNSW to be responsible for road management. The maintenance responsibility for the remaining road is to be defined and agreed to. In this regard, an interface agreement is to be entered between TfNSW, Council and Western Sydney Parkland Authority regarding delivery mechanism of road

works, asset maintenance, public liability and administrative responsibility for various types of roads (arterial road, sub-arterial road, collector road, local streets, and civil place) within Bradfield City Centre.

b) The proposed public transport and active transport network, intersection treatment, street pavement treatments, street furniture design and pedestrian/cyclist links traffic calming devices and pedestrian crossings.

c) An overarching parking management strategy which clarifies the overall parking provision measures for all users within the Bradfield City Centre including car shared service, shared car park and loading facility, EV charging stations and other micro-mobility parking facilities.

Note: On-site parking provision and rates requirements in short, medium and long terms are to be agreed by Council.

d) An outline of traffic impact assessment requirements for staged developments.

e) Specific controls for any proposed waste and loading facilities.

f) Green travel plan requirements, including realistic mode share targets over the next 30 years and associated travel demand management measures.

g) A requirement and the relevant guide/framework for government, business, school, and other developments to develop and prepare a green travel plan as well as an overall evaluation process for the implementation of green travel plans to review public transport and active transport usages.

h) Possibly a link to an online green travel plan lodgement platform to monitor transport usage within the Bradfield City Centre. The platform could include the following:
   i. Transport mode share targets for different types of land uses
   ii. Registration of green travel plans and implementation plans
   iii. Transport mode and usage surveys every five years within the Bradfield City Centre
   iv. Public transport information
   v. Active transport and wayfinding information
   vi. Public car park locations
   vii. Shared car parking services
   viii. Micro-mobility parking facility and services
   ix. EV charging station locations

3. Social Planning

Affordable Housing

The Master Plan should identify the specific scope of addressing the estimated supply gap of Social & Affordable Housing in the Western Parkland City areas. The supply of Affordable Rental Housing is often impacted by varying levels of commitment from the Government and concurrent policies. We reiterate our recommendation to secure a threshold of affordable housing to attract diverse income levels and households to the City Centre.

The updated Housing strategy states that:

> *'The master plan has the capacity to accommodate-10,000 residential dwellings. In accordance with NSW Government policy a proportion of the residential dwellings will be affordable housing. The timing and delivery of residential dwellings will be subject to market demand and future Master plan reviews'…(p12).*
>
> *'a mix of tenures will also be delivered from owner-occupier, private rental, Build to Rent, student accommodation, short stay accommodation and* ***social and affordable housing****…(p16).'*

As mentioned in previous comments, neither the housing strategy nor the Master Plan has set any benchmark for delivery of affordable housing. It is recommended that clear targets are set with planned incentives for achieving this goal.

<u>Social Infrastructure</u>

The Social Infrastructure strategy recommends provision of a public primary and high school to accommodate the demographic needs of the Aerotropolis Core precinct. However, the Master Plan seeks to amend the Precinct Plan to delete sites reserved for 'education' and 'special infrastructure' (Figure 1).

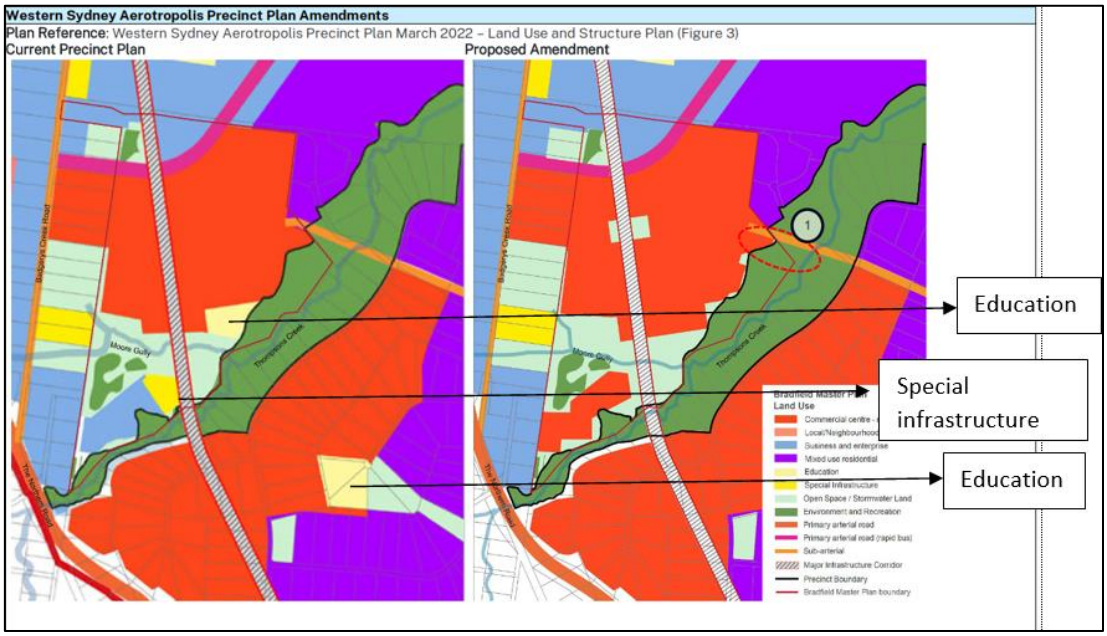


Figure 1: Removal of infrastructure

Regarding these, the updated Planning report states (pg.94), '*The Master Plan seeks to amend the Land Use and Structure Plan. The proposed change ensures that the entirety of the site has a commercial centre-mixed use land use which is consistent with the overall land use nominated for the site. It removes the specific location and size for the future school site within the 'Education' land use area. The area that is denoted as 'Special Infrastructure' in the Aerotropolis Precinct Plan has been incorporated within the Mixed Use (MU) under the WPC SEPP and has been amended to reflect the 'Commercial Centre-Mixed use'*.

The Master Plan identifies an opportunity to provide one Community health centre/IHUB in the Aerotropolis Core after the year 2031. As stated in previous comments, a modern

24/7 Airport city planned for 15,200 population needs to provide health care and emergency services on priority basis. The nearest hospitals are Nepean Hospital and Liverpool Hospital- both are over 25.9km away. The Indicative Layout Plan (ILP) should reserve land for health facilities.

Comments: We reiterate our recommendation to retain the school sites, recreation precinct and key social infrastructure at MP stages. We have noted the indicative location of social infrastructure in Master Plan report (pg.160). We understand the need for mixed-use flexibility. However, we think, if the ILP does not identify and reserve land for these at MP, later the future land market will be driven by mixed use demands and priorities.

The future residents should get all the essential eservices and amenities close to their home. We need to secure these scopes at MP stage.

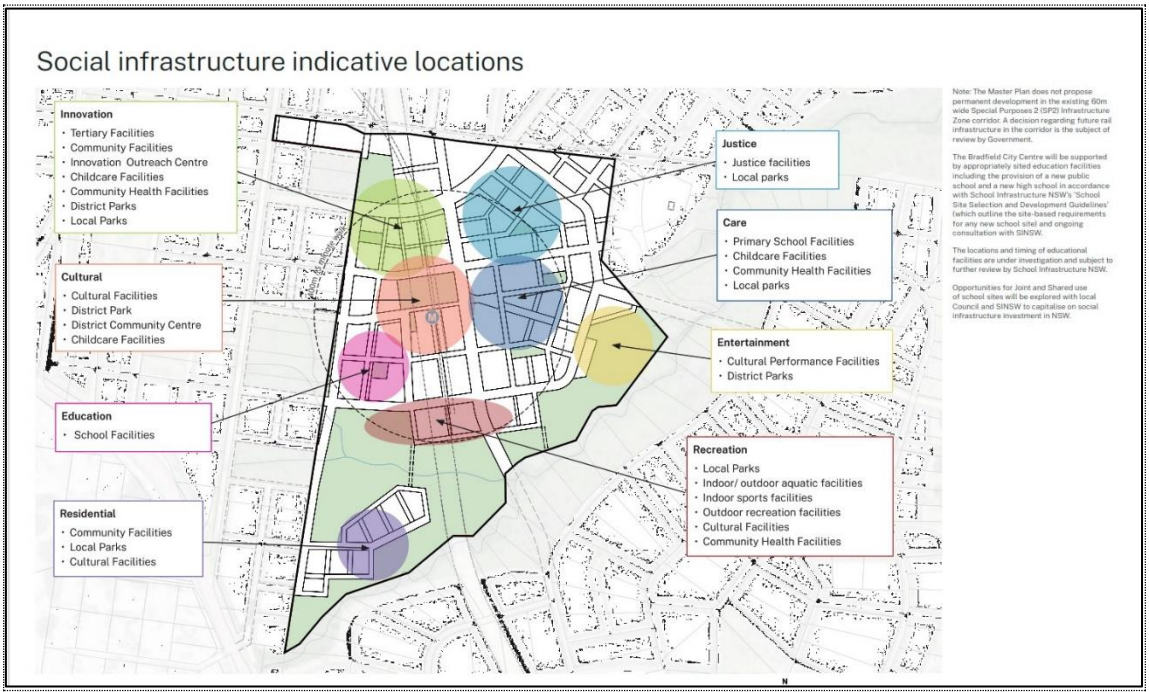


Figure 2: Social Infrastructure Indicative Locations, Master Plan p160

<u>Aquatic Centre</u>

The Master Plan Social Infrastructure Strategy recommends one indoor aquatic/swimming facility to accommodate the requirements of both master plan site and Aerotropolis Core precinct demographic needs (pg. 7). As relayed in previous comments, the artist's impression and ILP in the Master Plan report (pgs. 135 & 149) signify that the proposed Moore Gully Swimming Pool will not be an aquatic centre. It appears that it will be a recreational swimming hole/swimming zone or a tourism venue rather than traditional aquatic centre that provides learning to swim programs, hydrotherapy, and gymnastic facilities. Clarification is required as to whether the Moore Gully Swimming Pool will be an aquatic centre.

As part of the Liverpool Aquatic and Leisure Centre Provisions (May 2022) the Aerotropolis Aquatic Centre facilities should ideally include Outdoor toddler pool, 50m outdoor pool, 25m indoor pool, hydrotherapy indoor pool, 2 indoor courts, community meeting rooms, amenities block, adjoining open spaces/picnic area, youth recreation base hang out spaces, foyer, lounge and café. It is noted that this form of community infrastructure cannot be funded by local contributions.

The aquatic centre and the indoor facilities should be located outside flood-prone areas and should cover the needs of residents and transient people like workers, students, etc. Due to the 24-hour economy proposed, the supply of hotels and services, and the in-and-out flying opportunity, a swimming destination that provides more than a recreational pool must be investigated.

4. Environmental Health

Air Quality Impact Assessment

The submitted air quality assessment report predicts that the ambient air quality levels will increase slightly relative to the current levels as the site is predominantly low density residential and rural properties (noting the nearest monitor is the Bringelly monitor to the site). The ambient air quality levels at the Bradfield City Centre would be comparable to the surrounding monitoring locations.

The retail/commercial/residential areas incorporate a design that would provide good air flow around and between the buildings. The design avoids construction of dead-end courtyards or long narrow spaces perpendicular to the prevailing winds where air can lay dormant and stagnate. The layout permits the design of buildings so living and workspaces such as bedrooms and offices do not face air emission sources, such as roadways, with cleaner air from central areas of the building directed into the building rather than from the side of the air emission source side.

The Advanced Manufacturing Research Precinct has been positioned in the northern portion of the Bradfield City Centre Master Plan and is separated from the residential areas. They would be positioned predominately downwind of these residential areas and would reduce the potential for air quality impacts and minimise the likelihood of land-use conflict.

Greenspaces within the Bradfield City Centre Master Plan would act as buffers between air emission sources and sensitive land uses. Greenspaces also promote good air quality as trees can absorb air pollution and green areas also reduce heat generation that can affect air pollutant transformation.

The key source of air emissions associated with the Bradfield City Centre Master Plan is identified as road traffic emissions and from future development and activity. The Master Plan incorporates a layout which is designed to reduce effects of air emissions from road traffic through position of major transport corridors relative to sensitive uses, promotion of good air flow throughout the Bradfield City Centre and development from the sensitive uses to minimise the potential for land use conflict.

Traffic related air emissions would be a key air emission source for the immediate future in the Bradfield City Centre. The reporting methodology relies on the assumption that the future vehicle fleet projections indicate that overall exhaust emissions would continue to decrease through engine advancements, greater uptake of electric vehicles, stricter controls on exhaust emissions and improvements in tyre and brake emissions.

Aircraft emissions and pollutants are still not addressed by the air quality assessment. “Aircraft operations are likely to contribute significantly to concentrations of air pollutants including but not limited to particulate matter (PM), nitrogen oxides (NOX), sulphur dioxide (SO2), volatile organic compounds (VOCs) and odour in the region. An increase in ozone levels was also previously predicted to the south and south-west of the airport.

Despite these predictions, the Air Quality Impact Assessment did not evaluate the potential impact of aircraft emissions on future occupants of the Bradfield City Centre. The consent authority must also consider that existing odour generating land uses may continue to operate for an indefinite period of time in the surrounding area."

Despite not assessing for impacts caused by aircraft or the issues raised in the paragraph above, the report concludes that the design of the Bradfield City Centre Master Plan has considered the various air quality objectives in the development control plan for the Western Sydney Aerotropolis and would likely see these objectives being achieved.

5. Public Art

Council recommends that the Arts Strategy is updated to identify or address all the key items in section 4.6.3 of the Western Sydney Aerotropolis Plan (2020). The Strategy should also be brought into line with the Master Plan Requirements by:

- Demonstrating consistency with the Western Sydney Aerotropolis Development Control Plan (DCP) and Recognise Country.
- Ensuring that where it does not align with the Aerotropolis Precinct Plan that it provides for a superior planning outcome by meeting the criteria specified in the Guidelines
- Ensuring Technical Assurance Panel (TAP) recommendations are implemented
- Demonstrating consistency with other submitted Master Plans for Bradfield
- Acknowledging and reflecting the Aboriginal Cultural Heritage Assessment Report
- Providing insight into consultation undertaken with Liverpool City Council and communities within the Liverpool local government area (LGA) in relation to the development of this Plan.

Council requires clarification regarding:

- Council requests clarification on whom the 'Authority' is in relation to this Strategy and to be provided the 'arts and culture strategy' to ensure alignment, implementation, and management of public art within Bradfield.
- In relation to Early Engagement and Embedding Artists Council requires clarity on how identified deliverables will be made and who will be responsible for implementation and completion, with an emphasis on requirements under the Aerotropolis DCP.
- Council request clarification on how the Strategy will deliver Artists Residencies across the site. Will this be incorporated for private as well as Federal, State or Local developments? Who has been identified as responsible for this outcome? Clarity is sought on how this will be implemented and maintained.
- Strategy does not reference the Bradfield City Centre Master Plan Application Aboriginal Engagement Outcomes Report.
- Council request further information on how the Guiding Artistic Narratives were identified and if these were developed through community engagement or consultation.

The Art Strategy does not reference, propose consistency with or exceed relevant provisions within the Aerotropolis Development Control Plan. As such it appears that the Art Strategy does not achieve what is required as outlined in the DCP 2.1 Recognise Culture, 2.19 Public art, 6.1 Social and Cultural Infrastructure Controls.

<u>Art and Culture Strategy Amendments</u>
Council strongly recommends that the Art and Culture Strategy is amended as follows:

First Nations

- The Strategy must be consistent with the Bradfield City Centre Master Plan Recognise Country Strategy in acknowledging and identifying the four groups that have primary custodial care obligations for the area (Dharug/Darug, Dharawal/Tharawal, Gundungurra/Gundungara and Darkinjung). The Acknowledgment Of Country must be amended encompass others who have also passed through this Country for "trade and care purposes".
- Terms with potential negative connotations such as 'original resident' or 'enabler' should be replaced with terms such as 'First Nations' and 'Collaboration'.
- The Strategy must acknowledge and align with The Recognise Country: Guidelines for Development in the Aerotropolis (Guidelines).
- The Strategy must identify that consultation with First Nations artists, communities and other stakeholders is in line with Aboriginal Engagement Outcomes Report (AEOR).
- In relation to section 5.1 (Connecting to Country), Council recommends re-examining the language associated with Connection to Country artworks. Whilst artistic responses may be 'playful' and 'light-hearted' this narrative is also deeply significant and critical to cultural and lived experience. Council also recommends that terms identified as culturally inappropriate or not in line with the AEOR (i.e. Songlines, lack of Dharug prioritisation) are removed and replaced. The Bradfield City Centre Masterplan Application; AEOR identifies removing references to 'Songlines' for cultural reasons. In light of this, Council recommends the term is removed from the Cultural Strategy.

General wording

- The Strategy should identify the LGA's diverse history by amending 'Colonial history' to 'Colonial, Migrant and Transnational History'. This will ensure equal consideration, acknowledgement and relevance are acknowledged.
- The Strategy should remove 'class' as a means of identifying people.
- Ensure the Strategy also references 'visitors' or 'transient people' when describing people who will "live, learn, work and play here".
- On Councils request, the TAP noted that several identified Federal, State and Local references would be added. Two (2) were updated, Council requests the remaining four (4) are incorporated (Aboriginal Arts and Culture Protocols NSW, Creative Communities, Arts, Culture & Creative Industries Policy, NSW Architects Connecting to Country Framework, Liverpool Council's Public Art Policy).
- Include "migrant and transnational" to the list of "Potential Stories to Tell".

Commitments

- Council recommends a clear commitment to ensuring public art and culture are embedded into the fabric of the City.
- The Strategy identifies that "There is a clear need of purpose-built cultural infrastructure in Western Sydney with a staged approach to the infrastructure plan to adjust". This should rather be listed as a commitment within the Strategy.

Blue and Green Grid

- Council recommends that the Art Strategy address opportunities to promote and activate the Green and Blue Grid through the incorporation of public art. The strategy currently does not identify the Grid, in doing the strategy will support and encourage healthy active living for residents, workers and visitors.

- The Strategy should address opportunities to promote and activate the Green and Blue Grid through the incorporation of public art. This will support and encourage healthy active living for residents, workers and visitors.

Consultation

- Council recommends that consulting with Local Government is acknowledged and that the relationship to the site within the broader context of the geographical area, including the Liverpool LGA is identified. This will ensure that the Art Strategy is relevant beyond the City Centre footprint and acknowledges it's historical, social, cultural and economical contexts.
- in line with the Bradfield City Centre Masterplan Application; Aboriginal Engagement Outcomes Report (AEOR) identification of opportunities for Dharug artists are prioritised in line with priorities undertaken through consultation.
- Council recommends the Art Strategy commits to meaningful and ongoing consultation with existing communities and prioritises communities within the LGA.
- Council recommends that the Art Strategy commits to narratives that are meaningful and endemic of the area and that artworks foster these unique stories for all artwork delivery.

Site Specific Development Controls (SSDC)

- Council recommends that in line with the Bradfield City Centre Master Plan, that the SSDC of the Strategy identifies Ground Level Active Frontages as a public art opportunity.
- Council recommends that in line with the SSDC the Strategy identifies the Central Park public artwork relationship with WSA Metro Station.

Local Artists

- The Strategy should focus on the promotion and prioritisation of local artists with direct connections to the Liverpool LGA (i.e. lead artist, paid collaborations to provide legacy building). This is critical to support local economic, social and cultural opportunities for building and supporting creative industries.

Delivery

- The Strategy should identify who will deliver public art within Bradfield (ie Sydney Metro, WSPA, private developers). This will assist in aligning the document with clear deliverables.

6. Flood Plain Engineering

<u>Integrated Water Cycle Management</u>

Stormwater drainage network/underground pits and pipes were designed for individual sub-catchments. These pits and pipes accommodate flows only for minor events i.e., 20% AEP event. In case of storm events larger than 20% AEP, the catchment contributing flow at some of the streets will be more than 15Ha. This triggers a requirement for trunk drainage system along streets. Based on the pit and pipe network, the following are possible locations where the combined contributing catchment contribution overland flow to street would be more than 15Ha:

- Eastern side of P2 where flow will be contributed from catchment P1 and P2. The catchment contributing overland flow over the street would be the combination of P1 and P2.

- Street at Catchment P4 could potentially receive overland flow from P1, P2 and P3.
- Street at P6 could potentially receive overland flow from P1 to P5.
- Street at P8 potentially receive overland flow from P5.
- Stormwater management system shall demonstrate that the combined catchment contributing overland flow to each street drainage system is no more than 15Ha to avoid requirement of trunk drainage system.

7. Natural Environment

Moore Gully

The proposed realignment was briefly mentioned within the master plan as being realigned slightly to the south to provide adequate space for the storm water basin, and no further information was provided. The Biodiversity Strategy and Impact Assessment (BSIA) *partially* demonstrates that impacts to Moore Gully have been considered (pg. 52) in which appropriate consultation shall be undertaken with Department of Primary Industries.

Earthworks required for the Moore Gully realignment should be included in the development footprint shown in the figures of the BSIA. Figures such as figure 7 are misleading, indicating that there will be no impacts associated with the realignment. Section 6.7.6 (Water Management Act 2000) of the BSIA only mentions impacts of the transit corridor, not realignment.

Moore Gully and the extent of impacts should be further addressed due to the proposed realignment of this waterway. It seems the only proposed change for stage 2 is the consideration of water basin parameters. Impacts to biodiversity aren't restricted to water basin parameters and would therefore still be pertinent and not addressed.

Impacts to Environment and Recreation (ENZ) zoned land within Moore Gully and various infrastructure and recreational facilities that are being proposed have not yet been properly addressed as per the previous comments. Impacts within the Environmental Zones and the Biodiversity Values zones should be further addressed. There are insufficient details included in the updated BSIA on both the impacts and the extent of impacts within the ENZ zoned areas. Particularly, surrounding the impacts associated with realignment of Moore Gully.

Impacts within Moore Gully and within the vicinity of ridge Park are still going to occur, further information should be provided demonstrating how impacts on existing native vegetation will be avoided.

Native Vegetation

The Planning Report (pg. 59) indicates that future DAs seeking clearing of native vegetation under Clause 4.25A of the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* could be subject to merit assessment. However, Clause 4.25A does not permit the clearing of native vegetation, rather it states that *"Development consent must not be granted to development on the land unless the consent authority is satisfied that the development will not result in clearing of native vegetation".* Clearing of native vegetation can only be undertaken by a public authority (or person acting on behalf of a public authority) in limited circumstances.

Riparian Corridor

The Earthworks Plan (pg. 29) states that *"Thompsons Creek – considered to be a key fish habitat and is likely to have a key fish habitat buffer of 50m. Liaison with DPI Fisheries and NSW Department of Natural Resources Access Regulator (NRAR) is required if works are to be undertaken within the inner 50% of the 40m riparian buffer on both sides of the watercourse."* It is advised that relevant agencies should be consulted, regardless of whether the inner 50% is impacted.

8. Urban Design and Public Domain

Master Plan

The Master Plan does not propose permanent development in the existing 60m wide Special Purposes 2 (SP2) Infrastructure Zone corridor. However, the transport infrastructure corridor splits the Aerotropolis core into two and concerns are raised regarding the SP2 zone's impact on the precincts' connectivity. Particularly, it is unclear as to how the rail corridor impacts on the proposed active transport network, as the corridor cuts several pedestrian priority lanes (shared zone or car-free lanes) and safe cycling streets.

The SP2 Infrastructure Zone in Chapter 4 - Western Sydney Aerotropolis of the *State Environmental Planning Policy (Precincts—Western Parkland City) 2021* states that only "Roads; including any development that is ordinarily incidental or ancillary to development for that purpose" are permitted in the SP2 zone. The feasibility of delivering walkable neighbourhoods bisected by roads, raises concerns. It is recommended that further detail is submitted addressing how the proliferation of SP2 zone impacts on permeability throughout the precinct.

Design Excellence Strategy

The Design Excellence Strategy (pg. 12) does not include any objectives or controls for development within the vicinity of the public domain. These significant buildings must address their immediate streetscape as they face important streets (per the design competition locations map). Build forms, accesses, facades, etc. must be designed in accordance with the streetscape. It is recommended that the design excellence strategy includes objectives and controls for the public domain to ensure the project delivers an integrated approach to streetscape, landscape and building design so that there is a cohesive environment where people's safe movement is a priority. The new objectives and controls must be addressed in part 5-Design Excellence of the Bradfield City Centre Draft Master Plan Site Specific Development Controls Documents.

Urban Design Report

Chapter 8 (Movement) of the urban design report does not include intersection treatments. Intersections when designed to prioritise vehicles, can become dangerous. Including raised intersection crossings that prioritise pedestrian movement and pavement painting for bike lane turns is highly advised in areas like the intersection of Transit Boulevard and Commercial High Street Type B, the intersection of City Walk East, Transit Boulevard and City Lane, etc. New controls for intersection treatments must be addressed in part 10-Movement of the Bradfield City Centre Draft Master Plan Site Specific Development Controls Documents.

It is acknowledged that the Bradfield City Centre Master Plan complies with the overall 40% tree canopy target set on the Aerotropolis Precinct Plan. However, a significant reduction of the in-lot tree canopy target percentage is proposed (pg. 215) from 25-35% to 15%. The reduction is not supported, especially given that permeability has been reduced in all areas. The Master Plan should aim to achieve a higher percentage of

permeability to ensure resilience and natural growth of landscaping. Revised targets must be addressed in Part 8.1 Canopy Cover and Deep Soil of the Bradfield City Centre Draft Master Plan Site Specific Development Controls Documents.

It is noted that the Bradfield City Centre Master Plan does not achieve the Precinct Plan solar access requirements to Local Parks and proposes a minimum of 3hrs of solar access between 9 am and 3 pm on the 21st of June for 50% of the open space consistent with the Liverpool DCP requirements (pg. 315). Yet, in a greenfield site with no existing built environment, the minimal 70% solar access requirement should be maintained to ensure the open spaces thrive. Any changes to solar access provisions must be addressed in Part 7.7 Solar Access of the Bradfield City Centre Draft Master Plan Site Specific Development Controls Documents.

Bradfield City Centre Draft Master Plan
The alternative benchmark solution section (pg. 68) does not provide the minimum size or area of deep soil in metrics. It is recommended that minimum areas be specified in more than just a percentage (dimensions in meters or areas in square meters) to ensure the minimum dimensions adequately support the growth of mature trees and landscaping.

9. Waste Management

Council's Waste section is supportive of the various Parks and Open Spaces proposed (Central Park, Ridge Park etc.) highlighted Section 11, 'Public Domain and Public Open Space' in the Bradfield City Centre Master Plan but would like to ensure that the servicing requirements for the litter bins that those parks and open spaces will contain have been considered and included. The typical maximum distance for a waste operative to have to move a full 240L litter bin is 30 to 40m for Workplace Health and Safety reasons, which has implications for where waste trucks can pull up and where bins can be placed. For example, Central Park is a substantial park at approx. 2ha, and Ridge Park also at 3.9ha, and if waste trucks are confined to the periphery, there will be areas in the centre of the park where no litter bins will be able to be placed because they cannot be serviced.

10. Economic Impact

Impact on Liverpool City Centre
Bradfield Centre is likely to compete with the Liverpool City Centre, which is already planned for substantial urban renewal, residential and commercial growth. The Liverpool City Centre currently has close to 100,000sqm of commercial floor space yet to be realised. It is requested that the Master Plan appropriately considers the hierarchy of existing strategic centres in Penrith and Liverpool and seeks to complement rather than compete.

Smart Cities Approach
Additional comment is made on The Smart Cities infrastructure paper, which is an appendix to the Master Plan report, and which identifies aspirational goals to support a Smart City such as:

- Sensing equipment
- Smart poles
- Smart bins
- Telecommunications infrastructure
- Charging stations for electric vehicles and bicycles

However, there is very little detail surrounding funding, future locations and ongoing maintenance of such assets, all of which are necessary in creation of a “Smart City.” These aspects could be explored in more detail.

11. Heritage Impact

The applicant has not prepared a heritage interpretation strategy that draws on the Aboriginal and European history of the site. Therefore, it is recommended that the application should not be approved until the interpretation strategy has been drafted. It is recommended that all elements identified in any heritage interpretation strategy are implemented within a set timeframe.

Positively PENRITH

Our reference: InfoStore
Contact: Christine Gough
Telephone: 4732 7937

7 March 2024

NSW Department of Planning, Housing and Infrastructure
Locked Bag 5022
Parramatta NSW 2124

Submitted via email: aerotropolis.tap@dpie.nsw.gov.au

Exhibition of Bradfield City Centre Master Plan

Thank you for the opportunity to comment on the draft master plan for the Bradfield City Centre.

The draft master plan was developed as part of a collaborative and co-design process with the appointed Western Sydney Aerotropolis Technical Assurance Panel (TAP). As a member of the appointed TAP, Council officers had an opportunity to provide feedback during preparation of the draft master plan. Although Bradfield City Centre is located within the Liverpool Local Government Area (LGA), our advice sought to ensure the overarching vision and principles for the Aerotropolis Precinct are achieved.

Whilst no significant concerns are raised regarding the draft master plan or supporting technical studies, we seek to provide feedback on high-level matters regarding master-planning processes. Feedback is also provided broadly on supporting infrastructure matters. Please note that due to reporting timeframes, this is an officer submission and has not been endorsed by Council.

Master Planning Processes

Council officers request the following in relation to any Master Plan process that may occur in the Penrith LGA:

- DPHI consult with Council before any future master plan request is submitted in the Penrith LGA and that Council is included in all pre-lodgement discussions. This is to ensure that we have an opportunity to work with DPHI and the proponent to consider and address any preliminary issues before the proposal is accepted. Council officers would particularly like to understand why the Master Plan is being proposed and the outcomes being sought to assist in

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city

determining the most appropriate and streamlined planning pathway prior to significant investment in the process.

- Furthermore, Council officers are seeking clarity regarding the statutory status of any approved master plan, including who is responsible for administering and ensuring compliance with the master plan, the process for varying a master plan, including if this can be done via a future development application, and who has the authority to vary a master plan.
- While the master-planning process provides an opportunity for meaningful collaboration with key stakeholders, it may not be suitable for all development proposals. DPHI should consider the benefits of the master-planning pathway against cost, time and resource commitments from key stakeholders. An alternative pathway may be more appropriate in some circumstances, particularly where no significant changes to the Precinct Plan or SEPP controls are proposed.
- As the Aerotropolis falls across Penrith and Liverpool LGAs, potential implications on both LGAs from a proposed master plan should be considered.
- Council needs to be involved if any master plan has the potential to effect the ability to deliver essential infrastructure or fundamentally change the planning assumptions and key development outcomes that have been established as this has the potential to impact more broadly on the Penrith LGA.

Infrastructure and Contributions

- As DPHI are aware, Penrith and Liverpool Councils have collaborated to prepare draft development contribution plans to ensure both Councils can collect development contributions to provide for much needed local infrastructure within the Aerotropolis. The draft plans have been submitted to the Minister for Planning and Public Spaces for finalisation but are not yet made. Accordingly, the finalisation of the contributions framework is a priority for Council and we would ask that no master plans be finalised until the contributions framework is in place.
- Under the draft Bradfield Master Plan, any public works outside of a State or local contribution plan are proposed to be secured in a Voluntary Planning Agreement (VPA). It is not clear who the VPA would be with, it is assumed that it would be an agreement between Liverpool Council and the State government as landowner. This raises broad concerns regarding the mechanism for the delivery of infrastructure in the Aerotropolis and has the potential to undermine the delivery of key community infrastructure such as sporting and

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city

cultural facilities that the new residential population requires. Concern is raised that the master plan will raise community expectations for these facilities to be delivered, however, there is still no certainty of funding and delivery timeframes.

- Specific concern is raised regarding the proposed shifting of costs for certain stormwater infrastructure from Sydney Water to Council. Such matters require resolution at the master planning stage and should not be deferred to a VPA. If the master plan was in Penrith LGA it would be appropriate for all identified infrastructure to be linked to a specific funding source and ownership/maintenance agreed upon before the draft master plan is finalised.
- It is understood the Special Infrastructure Contribution (SIC) for the Western Sydney Aerotropolis will be transitioned to the Housing and Productivity Contribution (HPC) in 2026. We reiterate Council's submission to the draft HPC that further clarity is needed to understand what funding will be available for state and regional infrastructure in the Aerotropolis Precinct once this area is transitioned to the HPC.
- While Council appreciates that the master plan process only applies to certain land, the timely and orderly provision of facilitating infrastructure is critical for the success of the Aerotropolis. The cost of the majority of infrastructure within the SIC will not be covered entirely by the SIC. This does not provide certainty in respect to the deliverability of this infrastructure, nor explain how master planned sites will be connected to the broader network.
- We seek to further work with State and Federal government to ensure that all infrastructure required to deliver the Aerotropolis can be funded, and the delivery mechanism and responsible authority identified to ensure delivery in a timely manner. This will also assist in the preparation of future master plans as funding certainty will enable the progression of development in a timely manner.

Strategic Context

- Council's position is to ensure we maximise the benefits and minimise impacts and that Bradfield and the associated Aerotropolis generates socioeconomic benefits for all in our community.
- Where appropriate, Penrith undertakes strategic planning in the context of the Metropolitan Cluster of centres in the Western Parkland City, comprising Penrith, Liverpool, Bradfield and Campbelltown. This is because we see the value of each of these centres and what we can bring collectively to deliver the Western Parkland City vision.

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city

- We collaborate closely with these LGAs as we strongly believe that each centre has an equally important role to play, and we recognise the complementary nature of each of these centres.
- In the Master Plan, it is not clear how Bradfield will interrelate and build on the cohesion of the existing centres within the Metropolitan Cluster. We seek further clarification in the Master Plan the role Bradfield will play as part of the Metropolitan Cluster.
- We are also seeking a greater understanding of how the broader Aerotropolis delivery will be co-ordinated, with a clear line of site to roles and responsibilities and a Governance structure, to ensure the broader Aerotropolis vision is realised.

Thank you again for the opportunity to provide feedback on the draft master plan for Bradfield City Centre. If you have any questions about this matter, please contact Christine Gough on 4732 7937 or at christine.gough@penrith.city.

Yours sincerely

Kylie Powell
Director – City Futures

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city

From:	Alex Baidjurak
To:	Fadi Shakir
Cc:	Stuart Withington; Prema Govender
Subject:	RE: DCCEEW Feedback: Bradfield City Centre Masterplan
Date:	Thursday, 7 March 2024 9:19:13 AM
Attachments:	image001.png image005.png image010.png image012.png image013.png image014.png image015.png image016.png image002.png

---

Hi Fadi,

I'm contacting you on behalf of the Sustainable Government team at DCCEEW – we enable and support government agencies towards net zero, and are currently supporting the WPCA with their strategic planning. Lucy Sharman at WPCA asked my team to review the BCC masterplan which we completed late Feb but seem to have missed the closing date for public comment. Stuart Withington at DPHI suggested sending it to you.

In providing the feedback below we familiarised with the Social Infrastructure Report (Appendix N) for context on government assets and reviewed the Sustainability Report (Appendix L): https://www.planningportal.nsw.gov.au/draftplans/exhibition/bradfield-city-centre-master-plan

Overall the Sustainability Report is comprehensive and sets a level of ambition which positions government to lead by example.

Possible opportunities to consider are:

- Alignment with UN Sustainable Development Goals (to showcase the world leading sustainability and benchmark the city globally)
- It is likely the IPCC 1.5*C target will not be met (based on current trajectory and CoPs) so scenarios should be identified and considered in climate risk assessment
- Alignment with the Greenhouse Gas Protocol is needed to ensure requirements are embedded in asset lifecycle and operations of the city (to identify and address Scopes 1, 2 and 3 emissions in preparation for future reporting and disclosure)
- Alignment with the Sustainable Cities and Regions 10 year strategy for urban systems transformation could be considered (refer to futureearth.org.au / Aus Academy of Sciences)
- NatHERs and NABERS ratings should be considered if not already targeted (common for other cities in Australia)
- Role of NSW and Australian Regional Climate Modelling (NARCliM) to inform planning and design
- Using the Smart City Infrastructure for climate change risk management (early warnings of extreme heat, floods, bushfires and air quality issues)
- Adding objectives for Smart City's contribution to an integrated urban and regional knowledge platform (for data analysis and exchange, new capability and knowledge sharing)
- Including Walk Score rating (to quantify and compare the city to others like Canberra who feature it in their city strategy)
- Alignment with Global Liveability Ranking (to promote the city as an international exemplar and gateway to Australia)
- A landmark building or site that showcases sustainability and draws visitors (as appropriate for an international gateway city)

- An Asset Management Framework and Policy identified in the master planning suite to direct coordinated activity of the city in realising lifecycle value from its assets (aligned with the sustainability framework)

Trust this feedback can be considered in further work on this important development.

Please let me know if you need any help coordinating responses from the broader DCCEEW as we are not aware which other teams from our department were asked to provide feedback.
Regards,

Alex Baidjurak
Sustainable Government
Climate Change and Sustainability Division
Department of Climate Change,
Energy, the Environment and Water

T (02) 9895 7502 **M** 0400 103 287 **E** alex.baidjurak@environment.nsw.gov.au

dcceew.nsw.gov.au

Our Reference: CM 10960#10

Department of Planning, Housing and Infrastructure
Submitted via the NSW Planning Portal
Cc: Western Parkland City Authority

4 March 2024

Dear Sir/Madam,

SUBMISSION ON DRAFT BRADFIELD CITY CENTRE MASTERPLAN

Thank you for the opportunity to provide feedback on the draft Bradfield City Centre Master Plan. Wollondilly Shire Council congratulates the Western Parkland City Authority (WPCA) and the Department of Planning, Housing and Industry (DPHI) in developing the draft Master Plan for the Bradfield City Centre, which will play a crucial role in the success of the Aerotropolis and enhance the overall economic growth opportunities of the Western Parkland City.

Western Sydney International Airport and the new Bradfield City Centre will be located just 11km north of Wollondilly and Council is working to leverage the opportunities that the airport and related economic uses such as agriculture, tourism and agri-business can bring to Wollondilly. Alongside our economic opportunities, Council has two growth areas in Wilton and Appin that will house Sydney's growing population and workforce with an estimated population of an additional 100,000 people expected by 2041. Currently, over 70% of Wollondilly's local resident workers leave the Shire for work.

We note that the planning for the Aerotropolis and the Bradfield City Centre is heavily focused on connections north of the airport site. It is acknowledged that this is largely in response to the Sydney Metro – Western Sydney Airport. Given the economic opportunities and population growth planned for the South Western Sydney region, Council continues to advocate strongly for improved infrastructure and connections. Wollondilly is also strategically located at the centre of connections to and from the Aerotropolis and Bradfield City Centre

and the Illawarra region, including Port Kembla. Therefore, we highlight that the following infrastructure and connections should be prioritised to not only unlock the economic opportunities within these regions, but to support and enhance the success of the Aerotropolis and Bradfield City Centre by providing better access and connections for industries, workers and visitors:

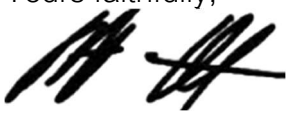
- As the highest priority, construction of the Sydney Metro –from Campbelltown/Macarthur Airport to Western Sydney, with a rapid bus link to Wilton;
- Construction of the Outer Sydney Orbital Stage 1 and 2;
- Complete the Maldon to Dombarton line to connect Maldon to Port Kembla;
- Duplicate the Blaxland Crossing;
- Reclassify major connecting roads including Silverdale Road, Remembrance Driveway, Menangle Road and Montpelier Road; and
- Improve and upgrade truck and freights routes within the Shire that are capable of carrying heavy vehicles.

Our Council has bee consistent in these requests, including to the earlier planning for the Aerotropolis.

We call on DPHI and WPCA's support for the abovementioned infrastructure upgrades to realise the full potential of the Western Parkland City region, and Wollondilly Shire Council's role in achieving that potential.

Should you require any further information in regard to this submission, please contact me on 4677 9624 or via email on Stephen.gardiner@wollondilly.nsw.gov.au.

Yours faithfully,



Stephen Gardiner
Manager Sustainable Growth
Shire Futures

Endeavour Energy
ABN 11 247 365 823
T 133 718
Level 40-42, 8 Parramatta Square
10 Darcy Street
Parramatta NSW 2150
PO Box 811, Seven Hills NSW 1730

5 February 2024

The Secretary
NSW Department of Planning and Environment

ATTENTION: Fadi Shakir

Dear Sir or Madam

Exhibition of Bradfield City Centre Master Plan (Western Sydney Aerotropolis)

I refer to the Department's email of 5 February 2024 regarding the Exhibition of Bradfield City Centre Master Plan (Western Sydney Aerotropolis) (Department's Ref. EF23/13739) at 215 Badgerys Creek Road, Bradfield (Lot 3101 DP 1282964) in the Liverpool City Council Local Government Area (LGA). Submissions need to be made to the Department by 4 March 2024.

Please refer to Endeavour Energy's previous submissions made to the Department regarding State Significant Developments:

- SSD-25452459 First Building Bradfield City Centre
- SSD-58591961 Building 2 Advanced Manufacturing Research Facility (AMRF), Bradfield.

The recommendations and comments provided therein are essentially also applicable to the entire Bradfield City Centre.

The Planning Report includes the following addressing whether the available electricity services are adequate for the proposed development facilitated by the Master Plan.

Table 27 – Western Sydney Aerotropolis Phase 2 DCP

Performance Outcome		*Benchmark Solution (summarised)*	*Addressed by Master Plan Response*
2.1 Services and Utilities			
PO1	*Site is serviced with electricity.*	1. *Meet the design requirements as per the Western Sydney Street Design Guidelines Section C5.4 Electricity.*	• The Master Plan can be serviced by key services and utilities. Services and utilities will be provided as development is completed. For further information, refer to the Utility Infrastructure and Servicing Report at **Appendix H**. • Future Development Applications will provide the relevant and specific detail on services and utilities. • Further assessment against this requirement is subject to the relevant Development Application stage for detailed development/design consideration and subsequent assessment and development consent.

The Utility Infrastructure and Servicing Report prepared by AECOM dated October 2023 includes the following advice in Section 6.2 'Electrical'.

6.2.6 Next Steps

To progress planning of the Bradfield City Centre electrical service infrastructure footprints and routes it is important to understand Endeavour Energy's program and concepts. Engagement with Endeavour Energy will include:

1. Coordinating on North Bradfield ZS construction and delivery timeframes
2. Confirm interim supply opportunities, surrounding ZS capacities;
3. Develop duct masterplan based on Endeavour Energy's input;
4. Confirm supply staging for the new Bradfield City Centre infrastructure;
5. Liaise with Endeavour Energy to understand the impacts and opportunities of surrounding projects supply arrangements, e.g., Sydney Metro 11kV temporary site supplies; and
6. Consider information requirements for planning advice and applications with Endeavour Energy.

As indicated it is important that the proponent / applicants continue to engage / liaise with Endeavour Energy's Customer Networks Solutions Branch to ensure a suitable electricity supply is available as the projects progress.

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

- Land Interest Guidelines for Network Connection Works, Version 5, December 2022.
- Standard Conditions for Development Applications and Planning Proposals, Version 9, August 2023 which provides additional and updated information.

For further advice the proponent can call Endeavour Energy via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 and the following contacts:

- Customer Network Solutions Branch for matters related to the electricity supply or asset removal / relocation who are responsible for managing the conditions of supply with the applicant and their Accredited Service Provider (ASP). Alternatively contact can be made by email cicadmin@endeavourenergy.com.au .

- Easements Officers for matters related to easement management, protected works or other forms of property tenure / interests. Alternatively contact can be made by email Easements@endeavourenergy.com.au .

- Property Branch for matters related to property tenure. Alternatively contact can be made by email network_property@endeavourenergy.com.au (underscore between 'network' and 'property').

- Field Operations Branch for safety advice for building or working near electrical assets in public areas. The site is in the area covered by Narellan Field Service Centre. Alternatively contact can be made by email Construction.Works@endeavourenergy.com.au .

Should you wish to discuss this matter, or have any questions, please do not hesitate to contact me or the contacts identified above or in Endeavour Energy's submissions to the State Significant Developments relation to the various matters. Due to the high number of development application / planning proposal notifications submitted to Endeavour Energy, to ensure a response contact by email to Property.Development@endeavourenergy.com.au is preferred.

Yours faithfully

Cornelis Duba | Development Application Specialist

M 0455250981
E cornelis.duba@endeavourenergy.com.au

Level 40-42, 8 Parramatta Square, 10 Darcy Street
Parramatta NSW 2150.

Dharug/Wiradjuri/Dharawal/Gundungurra/Yuin Country

endeavourenergy.com.au

Endeavour Energy respectfully acknowledges the Traditional Custodians on whose lands we live, work, and operate and their Elders past and present.

LAND INTEREST GUIDELINES FOR NETWORK CONNECTION WORKS

Provision of Network Connection Services

Prepared by Property Services

December 2022

Customer Network Solutions
Asset & Operations

Endeavour Energy

Version	Date	Prepared by	Comments
1	January 2014	Network Connections	
2	July 2014	Network Connections	Minor amendments
3	July 2021	Network Connections Property Services	Major amendments including name change from Property Tenure Guidelines
4	July 2021	Property Services	Final approved easement terms
5	December 2022	Customer Network Solutions	Section 6.0 only Amendment to timing of land interest registration

CONTENTS

CONTENTS

1.0 DEFINITIONS AND ABBREVIATIONS

CAMS	Endeavour Energy's Customer Application Management System for Network Connection Works
Community Land	Land subject to a subdivision under the C*ommunity Land Development Act* 1989 and includes community property, precinct property and neighborhood property
Connection Project	Any Network Connection Works project other than a Subdivision Project
Constructor	Level 1 Accredited Service Provider
Contractual Licence	Any agreement the primary purpose of which is to enable the location of a Network Asset on above or under any land or to enable access to a Network Asset
Customer	Applicant for contestable connection services under a Model Standing Offer including the owner and development consultants engaged by the owner
CWE	Contestable Works Engineer authorised to certify a Design Drawing that satisfies Endeavour Energy's requirements
Definition Plan	A plan of survey, compiled plan or sketch plan prepared by a registered surveyor that defines a Land Interest site
Design Drawing	Electricity network construction drawing
Designer	Level 3 Accredited Service Provider
Distribution Network Lease	The lease of the EDMHC Distribution System to the Network Lessee on 14 June 2017
Distribution System	EDMHC's electricity distribution system
Easement Document	Any formal document to be entered into by EDMHC and the land owner that sets out the terms of a Land Interest including RPA Dealing and Section 88B
EDMHC	The Distribution System lessor Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878
EDMHC Property Protocol	A document setting out approved clauses and terms for use in Land Interests acquired on behalf of EDMHC by EENAP
EENAP	The Distribution System lessee Endeavour Energy Network Asset Partnership ABN 30 586 412 717
Endeavour Energy	The Distribution System sub-lessee Endeavour Energy Network Operator Partnership ABN 11 247 365 823 trading as Endeavour Energy

ESA	*Electricity Supply Act 1995*
FPJ5013 Form	Agreement for Entry, Grant and Creation of Easement
Land Interest	An easement, restriction, right of access, positive covenant. Contractual Licence or Site-Specific Conditions providing appropriate rights for the installation of a Network Asset in, on, or over land
LRS	NSW Land Registry Services – a business owned by the Australian Registry Investments Trust which is responsible for land titling and plan registration in NSW
Model Standing Offer	Either *Model Standing Offer for a Standard Connection Service* or *Model Standing Offer for a Standard Connection Service (Subdivision & Asset Relocation)*
Network Asset	Includes all transmission, high voltage and low voltage electrical equipment that is operated by Endeavour Energy (including any earthing cables)
Network Connection Works	Works required to augment or extend the Distribution System under the relevant Model Standing Offer
NOA	Notification of Arrangement document issued by Endeavour Energy to indicate that all requirements for the supply of electricity to new lots in a subdivision have been satisfied
Premises Connection Assets	A component of the Distribution System dedicated to the supply of electricity to the site including service lines from the street to the Customer's electrical installation
Property Services	Endeavour Energy's property team responsible for assessing and approving Land Interest issues
Protection Zone	An area around Premises Connection Assets shown in the Design Drawing to be protected by Site-Specific Conditions
PTB	Refundable property tenure bond paid to Endeavour Energy to allow construction, inspection and commissioning of a Connection Project prior to the Customer granting required Land Interest/s.
Restriction	Restriction on the Use of Land created under *Conveyancing Act 1919*
Public Road	Land dedicated to the public under *Roads Act 1993* including pathways and laneways
Registered Land Interest	An easement, restriction, right of access or positive covenant
RPA Dealing	A prescribed form under the *Real Property Act 1900* that includes Transfer Granting Easement [LRS form 01TG] , Restriction on the Use of Land by a Prescribed Authority [LRS form 13RPA], Positive Covenant [LRS form 13PC]

Section 88B	Instrument accompanying a deposited plan that creates a Land Interest under the provisions of Section 88B of the C*onveyancing Act 1919*
Site-Specific Condition	A condition of connection to premises that is peculiar to those premises
Subdivision Project	Any Network Connection Works project other than a Connection Project that requires a NOA
Transmission Network Asset	Network Asset designed to operate at a voltage above 22kV

2.0 INTRODUCTION

A Customer may carry out Network Connection Works under one of the Endeavour Energy Model Standing Offers for a Standard Connection Service.

Under the Model Standing Offer the Customer must, as and when required, grant Land Interests which in the opinion of Endeavour Energy are required in respect of the land or premises of any person, where any part of the Distribution System is or will be located.

The purpose of this document is to explain the procedures for the creation of Land Interests under the Model Standing Offer.

2.1 Electricity Supply Act 1995

Electricity works are owned separately from the land in, on or over which they are situated and ownership of land in, on or over which electricity works are situated does not constitute ownership of those works. [ESA Section 51]

The ESA provides that a person who owns, controls or operates a distribution system (“the Distributor”) may require the installation of services lines and service equipment to supply electricity to or from a Customer.

If the supply of electricity required by a Customer exceeds that which can be provided by a service line from its street mains, the Distributor may require the Customer to provide a place to accommodate the Distributor’s transformers, switchgear or other equipment. The Customer is required to provide such accommodation free of cost. [See ESA Sections 26-28]

A distributor may carry out any work comprising or connected with the alteration, maintenance or removal of existing electricity works on any land. [See ESA section 45]

The ESA applies to all Network Connection Works upon issue of a Letter of Acceptance under a Model Standing Offer.

2.2 Distribution Network Lease

On 14 June 2017 the NSW Government commenced the long-term lease of the Distribution System and all existing Network Assets including Land Interests were vested in EDMHC.

The Distribution System was simultaneously leased to EENAP and sub-leased to Endeavour Energy.

The *Electricity Network Assets (Authorised Transactions) Act 2015* defines the creation, assurance or extinguishment of an interest in land as 'land acquisition functions' which EDMHC cannot exercise in its own right, however, EENAP has full power and authority to exercise those functions on behalf of EDMHC.

Under the Distribution Network Lease all new Network Assets must be supported by an appropriate right to locate them on, above or under the land. [DNL Clause 2.9(c)]

All new Land Interests must be granted to or vested in EDMHC, however, all land interests must be exercised by EENAP and its nominee Endeavour Energy, who are responsible for performing any obligations of EDMHC.

2.3 Contact Details for Advice

Enquiries in relation to the creation of Land Interests in Network Connection Works should be directed to: network_property@endeavourenergy.com.au

Administrative enquiries regarding Network Connections Works and the issue of NOA for Subdivision Projects should be directed to: CWAdmin@endeavourenergy.com.au

General enquiries regarding existing easements should be directed to: Easements@endeavourenergy.com.au

3.0 A NEW GUIDELINE FOR LAND INTERESTS

The current property tenure process for the Network Connection Works process was designed more than 20 years ago when responsibility for creating property tenure for new Network Assets moved to the Customer in line with the transfer of design and construction responsibilities to the Customer. Despite the provision of support services this responsibility often brought difficulties for the Customer particularly if the Customer was lacking in experience in the conveyancing process.

The PTB method for Connection Projects has become difficult to manage and leaves new Network Assets unprotected by a Registered Land Interest for too long or not at all. From the Customer's perspective, the payment of a PTB causes difficulties and deprives the Customer of a portion of its working capital.

In an effort to improve the process for both the Customer and Endeavour Energy, Endeavour Energy is introducing two new forms of unregistered Land Interests for Connection Projects known as Site-Specific Conditions [see Section 4] and a Contractual Licence [see Section 9].

A Contractual Licence will only apply to short term assets where the Customer will remove the Network Assets when no longer required.

For Connection Project Design Briefs issued by Endeavour Energy from 2 August 2021, achieving a Land Interest through the application of Site-Specific Conditions may be allowed.

If Site-Specific Conditions are inappropriate and Registered Land Interests are required, the Customer will be required to register any Land Interests before the Constructor commences the Network Connection Works. [see Section 6]

For Subdivision Projects, the current process will remain and Registered Land Interests will continue to be created by the plan of subdivision after the issue of the NOA. [see Section 5]

4.0 SITE SPECIFIC CONDITIONS

The Model Standing Offer and Chapter 5A of the *National Market Rules* allow for the application of Site-Specific Conditions for Premises Connection Assets.

Site-Specific Conditions is a type of statutory right allowing Endeavour Energy to accommodate its equipment on the premises that is being supplied.

4.1 Site-Specific Conditions Criteria

a) Not appropriate for Subdivision Projects.

b) Not appropriate for Transmission Network Assets.

c) The Customer carrying out Network Connection Works under the Model Standing Offer must be supplied by the Premises Connection Assets installed under the Model Standing Offer.

d) May be appropriate for distribution Network Assets such as an indoor substation, padmount substation, pole mounted substation, HV switching cubicle, LV switching cubicle or LV pillar.

e) Premises Connection Assets must be located on the Public Road frontage and be directly accessible from the Public Road.

f) Premises Connection Assets must be located a minimum distance from the side boundary, as relevant to the type of asset, and the dimensions of its Protection Zone.

g) Premises Connection Assets must be within one land parcel being supplied by the Premises Connection Assets.

4.2 Property Information Required for Design Drawing Certification

The Design Package must include:

a) Current title search (not more than 1 month old) obtained from LRS information wholesaler,
b) Customer provides signed FPJ4689 Notice of Acceptance of Site-Specific Conditions
c) Proposed final levels within 5 metres of proposed Network Assets,
d) Proposed retaining walls within 5 metres of proposed Network Assets, and
e) Proposed and existing utilities within 5 metres of proposed Network Assets.

4.3 Process for Site-Specific Conditions

a) Designer submits a Method of Supply locating the new Premises Connection Assets to qualify for the application of Site-Specific Conditions.

b) CWE issues Design Brief to the Designer confirming required Site-Specific Conditions.

c) Designer submits a Design Package to CWE including Property Information

d) The Design Drawing should include a Protection Zone diagram showing the assets covered and the extent of the Protection Zone.

e) CWE certifies the Design Drawing including a notation of the use of Site-Specific Conditions – “Site-Specific Conditions apply to the Protection Zone shown in this design”.

f) Constructor submits Letter of Intent and proceeds with construction of Network Connection Works.

g) The application of Site-Specific Conditions will be noted on the Permission to Connect.

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.

5.3 Exception for Existing Network Assets in a Compiled Lot

The creation of a Land Interest is **not** required for existing Network Assets within any lot in a subdivision that has two or more boundaries that do not need to be surveyed and where an exemption for compiled boundaries has been issued by LRS.

The purpose of this exception is to minimise the Customer's survey expense associated with creating Land Interests within a compiled lot.

5.4 Community Title Subdivisions

Community title is a type of shared property established by the *Community Land Development Act 1989* and characterised by community property comprising land and facilities under shared ownership and a management statement explaining how the shared property will be used and maintained.

The *Community Land Development Act 1989* defines three types of shared property in three types of schemes:

a) Community property in community schemes
b) Precinct property in precinct schemes
c) Neighbourhood property in neighbourhood schemes

Community land developments are created by a plan of subdivision and Land Interests must be created in favour of EDMHC under Section 88B of the *Conveyancing Act 1919*.

Endeavour Energy will own and maintain all high voltage Network Assets within the development. Either EDMHC or the community title association may own and maintain the low voltage assets and/or public lighting network as determined in the Design Drawing.

Endeavour Energy may request the inclusion of by-laws in Part 5 of the management statement covering the use of access ways and the ownership of low voltage Network Assets.

5.5 Property Information Required for Design Drawing Certification

When subdividing land the Design Package must include:

a) Draft plan of Subdivision,
b) Proposed final levels within 5 metres of proposed Network Assets,
c) Proposed retaining walls within 5 metres proposed Network Assets, and
d) Proposed and existing utilities within 5 metres of proposed Network Assets.

5.6 Process When Subdividing Land and Registered Land Interests are required

a) The Designer submits a Method of Supply

b) If a Land Interest is required within land that is not owned by the Customer, the Customer must negotiate and register the Land Interest on this land prior to applying for Design Drawing certification.

c) CWE issues Design Brief to the Designer confirming Land Interests are required for proposed Network Assets.

d) Designer submits Design Package to CWE for certification

e) CWE certifies Design Drawing after relevant procedures

f) Constructor submits Letter of Intent and proceeds with construction of Network Connection Works

g) Customer/surveyor applies to CWAdmin for NOA and provides final Easement Document

h) CWAdmin issues NOA after relevant procedures

i) Customer lodges Easement Document for registration by LRS

6.0 REGISTERED LAND INTERESTS REQUIRED WHEN NOT SUBDIVIDING LAND

6.1 Urban Requirements

Endeavour Energy will require the registration of Land Interests for:

a) All new transmission Network Assets

b) all new high voltage Network Assets;

c) any new low voltage Network Assets located on an adjoining lot that will be used to supply the development;

d) all new consumers mains that are outside the lot occupied by the premises to be supplied (this may require an inter-allotment easement); and

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

6.2 Non-urban Requirements

Endeavour Energy will require the registration of Land Interests for:

a) All new transmission Network Assets
b) all new high voltage Network Assets; and
c) all new low voltage Network Assets.

Endeavour Energy will **not** require the creation of a Land Interest for an existing overhead power line without an easement if the power line is upgraded within the line of existing poles.

6.3 Property Information Required for Design Drawing Certification

The Design Package when **not** subdividing land must include:

a) Current title search (not more than 1 month old) obtained from an LRS information wholesaler,
b) Draft Plan of Easement, Administration Sheets and Section 88B or draft RPA dealing
c) Proposed final levels within 5 metres of proposed Network Assets,
d) Proposed retaining walls within 5 metres of proposed Network Assets, and
e) Proposed and existing utilities within 5 metres of proposed Network Assets.

6.4 Process When Not Subdividing Land and Registered Land Interests are required

a) Designer submits a Method of Supply

b) CWE issues Design Brief to the Designer confirming Land Interests are required for proposed Network Assets.

c) Designer submits a Design Package to CWE including Property Information

d) CWE certifies the Design Drawing

e) Constructor submits Letter of Intent, receives a Permission to Construct letter and proceeds with construction

f) Registered surveyor pegs the site in readiness for construction

g) Constructor completes construction

h) Registered surveyor completes the survey

i) Customer submits the Easement Document to Property Services for approval and signing

j) EENAP signs and returns Easement Document to Customer

k) Customer arranges for signing by others and lodgement for registration at LRS

l) Customer provides PDF images of registered Easement Document to Property Services minimum 3 weeks prior to outage date

m) Property Services confirms to CWAdmin and Customer that outage may proceed

7.0 TYPES OF REGISTERED LAND INTERESTS

7.1 Easement

If Site-Specific Conditions are inappropriate Registered Land Interests will be required.

The EDMHC Property Protocol has standard Land Interest terms for:

a) Easement for Padmount Substation or Switching Station or Auto Transformer
b) Easement for Underground Cables and/or Street Lighting Equipment
c) Easement for Overhead Power Lines
d) Easement for Overhead Power Lines and Underground Cables
e) Easement for Indoor Substation
f) Easement for Support Stay
g) Right of Access

7.2 Easements for Indoor Substations

If an indoor substation does not qualify for Site-Specific Conditions, Endeavour Energy will require an easement for the indoor substation and any associated cableways and access routes.

The boundaries of an easement for indoor substation should be defined by the internal face of the walls, ceiling and floor of the substation room and associated cableways. An easement for the cableway from the Public Road to the substation room may also be required.

These easements may need to be limited in height and depth. The survey plan will need to show any height and depth limitations as reduced levels (RLs) on Australian Height Datum.

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

If the indoor substation is located within a separate building with its own walls and roof, a positive covenant is required to be created regarding repair and maintenance of this building.

An indoor substation is a high voltage danger area. The substation room is a security area protected by security locking, hence, restricted access provisions apply. An authorised person from Endeavour Energy must accompany surveyors inside a commissioned indoor substation room at all times.

A surveyor requiring access to an indoor substation room should contact Property Services, allowing a minimum of three days' notice to enable suitable arrangements to be made.

7.3 Restriction on the Use of Land

A restriction prevents the owner from using a defined part of the land in a particular way but does not provide any right of access or allow Network Assets to be installed for or by Endeavour Energy.

The EDMHC Property Protocol has standard Restriction terms for:

a) Fire Rating of Buildings
b) Swimming Pools and Spas
c) Metallic Structures

In some situations, Endeavour Energy requires one or more Restrictions to be created by registration on the title of the land to ensure appropriate segregation from a Network Asset is maintained by both current and future owners.

7.3.1 Padmount Substation Restrictions

Subdivisions	Common earthing	Separate earthing
Urban residential URS	**3m fire restriction [1]** **5m swimming pool restriction [2]**	3m fire restriction [1] metallic structure/fence restriction [3] swimming pool restriction [3]
Other urban UIS, UCS	**3m fire restriction [1]**	3m fire restriction [1] metallic structure/fence restriction [3]
Non urban residential NRS	**3m fire restriction [1]** **5m swimming pool restriction [2]**	3m fire restriction [1] metallic structure/fence restriction [3] swimming pool restriction [3]
Other non urban NIS, NCS	**3m fire restriction [1]**	3m fire restriction [1] metallic structure/fence restriction [3]

[1] distance measured from plinth
[2] distance measured from substation easement
[3] distance measured from substation easement as determined by earthing design

Connections of load, asset relocations and public lighting	Common earthing	Separate earthing
Urban (including high and medium density residential) UML, UCL, UIL, UUL, ULL, ARP, PLT	**3m fire restriction [1]**	3m fire restriction [1] metallic structure/fence restriction [2]
Non Urban NCL, NIL, NLL, NRL, ARP, PLT	**3m fire restriction [1]**	3m fire restriction [1] metallic structure/fence restriction [2]

[1] distance measured from plinth
[2] distance measured from substation easement as determined by earthing design

7.3.2 Switching Station Restrictions

If a switching station is built in a padmount substation cubicle that has provision for a future transformer, the restriction requirements are in accordance with the table in section 7.3.1.

If a switching station is built in a standard switching station cubicle that does not have provision for a future transformer, the restriction requirements are as detailed in the table below.

Project types	Common earthing	Separate earthing
Urban residential land uses	**5m swimming pool restriction [1]**	metallic structure/fence restriction [2] swimming pool restriction [2]
Non-urban and non-residential land uses	No restriction required	

[1] distance measured from substation easement
[2] distance measured from substation easement as determined by earthing design

7.3.3 Pole-mounted Substation Restrictions

Project types	Common earthing	Separate earthing
All land uses	**No restriction required**	metallic structure/fence restriction [1] swimming pool restriction [1]

[1] distance measured in all directions from the high voltage earthing cables and rods as determined by earthing design

7.4 Right of Access

Wherever possible, Network Assets should be located adjacent to a Public Road, with the easement boundary abutting the Public Road boundary.

Endeavour Energy has general access rights under its standard easement terms, however, there are special situations where a defined right of access will be required to ensure practical access to the new Network Asset is permanently available.

7.4.1 Padmount Substations and Switching Stations

If the substation site is not abutting a Public Road boundary, a defined right of access may be required that is trafficable to trucks from the Public Road to the substation site.

The requirement for a defined right of access may be waived if the substation site is located:

a) Within a large public institution where unrestricted access is generally available, for example, a public hospital or university campus

b) Within a commercial site that is accessible to the public during daylight hours, for example, a shopping centre car park or medical centre car park

c) Abutting a trafficable easement at least 5.0 metres wide in favour of EDMHC

d) Within Community Property land in a community title development and the substation easement abuts an open access way shown in the Community Property plan

e) Within Common Property in a strata title development and the substation abuts the common driveway used by the lot owners.

f) Within utility facilities, for example a sewage treatment plant or pumping station

g) Within public parks and reserves

h) Within public schools

i) Within any property if Endeavour Energy determines a defined right of access is not required

If a switching station is located on the front property boundary, a defined right of access to a padmount substation located deeper within the property will not be required.

7.4.2 Above Surface Assets

Endeavour Energy will require a defined right of access if there is an above surface asset, for example, distribution pillar, that is not accessible from:

a) a Public Road abutting the lot on which the new Network Asset is located; or
b) a right of carriageway benefiting the lot on which the new Network Asset is located; or
c) a trafficable easement at least 5.0 metres wide in favour of EDMHC that abuts the lot on which the new Network Asset is located.

7.5 Positive Covenant

A positive covenant requires the owner to carry out work, such as the maintenance of a fire screen wall associated with Endeavour Energy's Network Assets.

If the customer is unable to provide a 3 metre fire clearance around a padmount substation, Endeavour Energy may allow the construction of suitable fireproof screen wall to protect adjacent buildings and properties. The wall must be approved by local council and the Customer must:

a) Show the location of the structures on the Definition Plan.
b) Create a registered positive covenant for the maintenance of these structures.
c) Provide written evidence from an architect or engineer confirming that the structures, as constructed, conform to the approved Design Drawing proposal in relation to the FRL (fire resistance level).

8.0 CREATION OF REGISTERED LAND INTERESTS

Land Interests must be created in favour of **EDMHC**.

Land Interests may be created by either method set out below.

8.1 Creation by Section 88B

The most commonly used method of creation is by defining the relevant site on a Definition Plan suitable for registration as a deposited plan at LRS and preparing a Section 88B that incorporates the relevant Land Interest terms.

All Section 88Bs creating Land Interests in favour of EDMHC must be signed by an attorney appointed by EENAP.

The Section 88B and the plan administration sheet must be signed by all owners and any mortgagee/s before lodgement at LRS. Any registered lessee and Caveator must also provide its consent.

The Land Interest is created upon registration by LRS.

8.2 Creation by RPA dealing

Land Interests may be created using various RPA Dealings available from the LRS website.

RPA Dealings must refer to a Definition Plan that is either attached to the dealing or has been registered separately (unless the whole parcel is to be affected).

RPA Dealings must be signed by the owner, EENAP and any mortgagee. Consent from any registered lessee and Caveator will be required.

RPA Dealings must be registered at LRS. The Land Interest is created upon registration.

9.0 CONTRACTUAL LICENCE

A Contractual Licence allows Endeavour Energy to install and maintain Network Assets on a parcel of land. A Contractual Licence is:

- Defined by a written document that does not require a Definition Plan;
- Requires the consent of EDMHC
- Benefits EDMHC
- Is **not** registered by LRS nor recorded on the Certificate of Title; and
- Does not bind subsequent owners.

A Contractual Licence will be a satisfactory form of Land Interest if the Network Asset is temporary, the land is controlled by a Government entity and ownership is unlikely to change during the proposed period of occupation.

The terms of a proposed Contractual Licence must be negotiated and agreed upon prior to certification of the Design Drawing, which must show a licensed area for the protection of the Network Assets.

A Contractual Licence should be prepared in the form of a Deed which is a written instrument signed in the presence of a witness and delivered by the parties to each other.

10.0 SPECIAL ARRANGEMENTS INVOLVING GOVERNMENT AUTHORITIES

10.1 Public Roads

A Public Road is controlled by a road authority which may be the local council, Transport for NSW or Crown Lands NSW.

A Public Road may be either formed or unformed and includes all land between the opposing front property boundaries.

If the Public Road is unformed, it is often called a paper road; however, it is still under the control of one of the three road authorities.

Although Endeavour Energy does **not** require Land Interests in Public Roads, the Customer is required to submit details of proposed construction work to the relevant road authority for approval prior to the construction of any Network Assets.

10.2 Crown Land

Most Crown land is managed by local Councils on behalf of Crown Lands NSW.

The creation of a Registered Land Interest requires approval from a delegate of the Minister for Lands.

Crown land may be subject to Native Title and Aboriginal Land Claims which may prevent the grant of Registered Land Interests.

10.3 Water NSW Land

Water NSW owns and manages water catchment areas.

Water NSW will grant Land Interests over its land but may require Endeavour Energy's standard terms to be modified and compensation may be payable.

10.4 National Parks & Wildlife Service Land

Land dedicated as wilderness area, national park, state recreation area, regional park, and nature reserve is managed by the NSW National Parks & Wildlife Service which is part of the Department of Planning Industry and Environment.

Endeavour Energy is usually required to enter into a formal deed of easement under Section 153 of the *National Parks & Wildlife Act 1974* and compensation may be payable.

10.5 Forestry Land

Land dedicated as state forest is managed by Forests NSW/Department of Primary Industries.

Forestry land may be subject to native title.

Forests NSW may grant an *Occupation Permit* and an annual rent may be payable.

10.6 Rail Corridors

The Transport Assets Holding Entity of NSW owns the NSW rail corridors.

Network Assets located within a rail corridor require a Registered Land Interest.

11.0 PROPERTY TENURE BONDS (DESIGN BRIEFS ISSUED BEFORE 2 AUGUST 2021)

This section applies to legacy projects where a PTB has been taken to allow Network Connection Works to be connected to the Distribution System.

11.1 Ownership and Refund of PTBs

If a PTB is paid by bank cheque, Endeavour Energy deems the right of refund belongs to the bond payer nominated on the FPJ5013 Form.

PTB paid by cheque or EFT will be refunded by EFT.

If the PTB was provided as a bank guarantee, the original bank guarantee will be returned to the bank's customer not directly to the bank.

Upon becoming aware of the completion of property tenure, Endeavour Energy will initiate refund of the PTB.

If current address or bank account details for the refund cannot be verified, the PTB will be retained until the bond payer contacts Endeavour Energy.

If the Connection Project is cancelled, Endeavour Energy will need to be informed in writing in order to initiate the PTB refund process.

11.2 Forfeiture of PTB

If a change in circumstances makes it impossible or impractical to complete the property tenure within the required six months period, the bond payer must contact the Property Services as soon as such a delay becomes apparent.

Endeavour Energy may deem the developer to have lost the right of refund if:

- the property tenure is not completed within six months of the network asset being commissioned, or
- the land changes ownership before the six months period has elapsed and the property tenure has not been completed.

If Endeavour Energy deems the right of refund to have been lost, it will notify the bond payer in writing.

If the right of refund is lost, the PTB is deemed to be forfeited and the ownership of the PTB is transferred to Endeavour Energy as compensation for the breach of the bond payer's agreement to complete the property tenure.

If a forfeited PTB was provided as a bank guarantee, Endeavour Energy will draw on the bank for the full amount.

12.0 EXTINGUISHMENT OR RELEASE OF LAND INTERESTS

EENAP is authorised under section 36 of the *Electricity Network Assets (Authorised Transactions) Act 2015* to extinguish Land Interests on behalf of EDMHC.

The right to extinguish is restricted to Land Interests vested in EDMHC and includes Land Interests created in the name of:

a) Endeavour Energy

b) Integral Energy Australia

c) MetSouth Energy

d) Prospect Electricity and its local government electricity predecessors such as Prospect County Council

e) Illawarra Electricity and its local government electricity predecessors such as Illawarra County Council

f) Easements assigned by the Electricity Commission of NSW to Prospect Electricity on 3 June 1994 [Listed in GG No 76 pages 2706-2731]

g) Easements assigned by the Electricity Commission of NSW to Illawarra Electricity on 3 June 1994 [Listed in GG No 76 pages 2687-2705]

h) Public Works' electricity easements transferred under *Energy Services Corporations Act 1995* to Integral Energy Australia on 25 September 1998. [Listed in GG No 139 page 7814-7815]

12.1 Release by Section 88B

A Section 88B releasing an easement in favour of EDMHC under Part 1A must be signed by an attorney of EENAP.

EENAP's execution clause must be added to the Section 88B.

It is **not** possible to release a restriction or a positive covenant under Part 1A of a Section 88B. This must be done by RPA Dealing.

12.2 Release by RPA dealing

A RPA Dealing releasing Land Interests in favour of EDMHC must be signed by an attorney of EENAP.

The most practical RPA Dealing for the cancellation of an easement is LRS form 20ECE, as the alternative Transfer Releasing Easement form requires payment of stamp duty.

The RPA Dealing for the release of a restriction is LRS Form 13RRE.

13.0 TERMS & DIAGRAMS FOR SITE-SPECIFIC CONDITIONS

13.1 Premises Connection Assets Site-Specific Conditions

1.0 Background

1.1 Where the supply of electricity exceeds that which can be supplied by a service line from the street mains the Network Operator may require the customer to provide a place to accommodate its electrical equipment ("Premises Connection Assets"). (See section 28 *Electricity Supply Act 1995*)

1.2 Under Chapter 5A of the National Market Rules and the Model Standing Offer a Customer may be connected to the distribution system subject to Site-Specific Conditions.

1.3 These Conditions are imposed in lieu of the Customer creating a registered Land Interest for the Premises Connection Assets.

2.0 Definitions

2.1 **120/120/120 Fire Rating** and **60/60/60 Fire Rating** means the fire resistance level of a building expressed as a grading period in minutes for structural adequacy / integrity failure / insulation failure calculated in accordance with Australian Standard 1530.

2.2 **Customer** means the person that submits an application for a Connection Service and includes any subsequent Owner.

2.3 **Premises Connection Assets** means all components of the Network Owner's Distribution System dedicated to the supply of electricity to the Site from the Network Owner's Distribution System.

2.4 **Protection Zone** means any part of the Site that accommodates Premises Connection Assets and is shown as a Protection Zone in the Design Drawing.

2.5 **Network Operator** has the same meaning as the Electricity Supply Act 1995.

2.6 **Network Owner** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 who may exercise its rights by any persons authorised by it.

2.7 **Model Standing Offer** means the Endeavour Energy Model Standing Offer for a Standard Connection Service for Customers.

2.8 **Owner** means the person who controls the Site.

2.9 **Site** means the Customer's premises supplied by the Premises Connection Assets.

3.0 The Owner must:

3.1 provide a Protection Zone for use by the Network Owner and the Network Operator to accommodate the Premises Connection Assets,

3.2 provide the Protection Zone free of cost,

3.3 maintain the Protection Zone in a satisfactory state of repair, but is not responsible for maintaining the Premises Connection Assets,

3.4 not change surface levels within the Protection Zone

3.5 not install anything or plant trees and shrubs within the Protection Zone without the Network Operator's prior written approval,

3.6 if the Protection Zone is located within its building, not interfere with the ventilation of the Protection Zone,

3.7 not direct drainage into the Protection Zone,

3.8 not do or permit to be done anything that restricts the Network Operator's access to the Premises Connection Assets, and

3.9 if the Protection Zone is located outside its building, not construct or maintain a substantial structure with roof and walls unless the external surface of the structure has:

3.9.1 *120/120/120 Fire Rating* within 1.5 metres of the Premises Connection Assets, and

3.9.2 *60/60/60 Fire Rating* between 1.5 and 3 metres from the Premises Connection Assets.

4.0 The Network Operator may:

4.1 install, repair, replace, maintain, modify, use, operate and remove Premises Connection Assets within the Protection Zone,

4.2 enter the Site using the most practical route at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

4.3 if the Protection Zone is located within a building, install its own security doors to gain access and to prevent access by others,

4.4 install conduits, cables, and pipes on, under or through the Site for the purpose of connecting the Protection Zone with any services and to operate those services, and

4.5 supply other customers from the Premises Connection Assets.

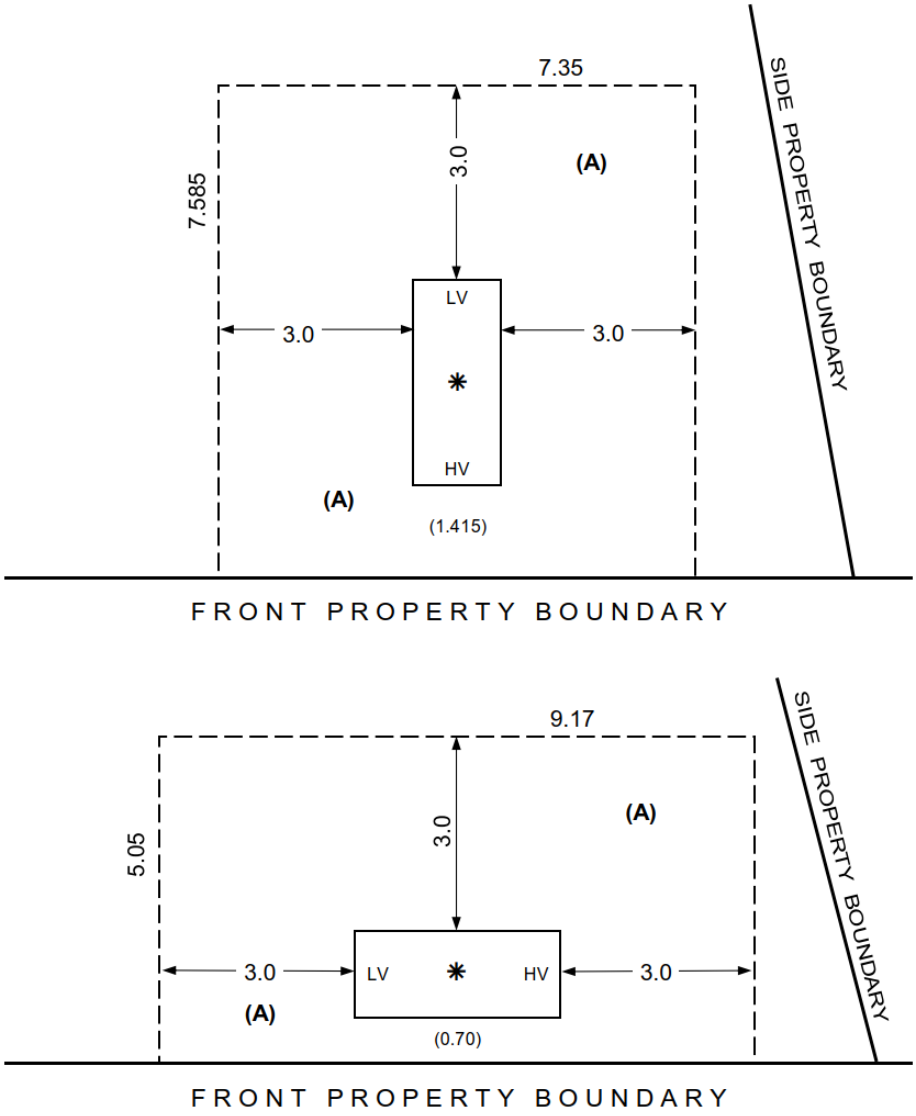
5.0 The Network Operator must:

5.1 maintain the Premises Connection Assets in a safe and reliable condition,

5.2 not cut, drill or demolish any part of the Site without the written permission of the Owner and in accordance with such conditions as the Owner may reasonably impose, and

5.3 take reasonable precautions to minimise disturbance to the Site and restore the Site as nearly as practicable to its original condition.

13.2 Padmount Substation Protection Zone Diagram



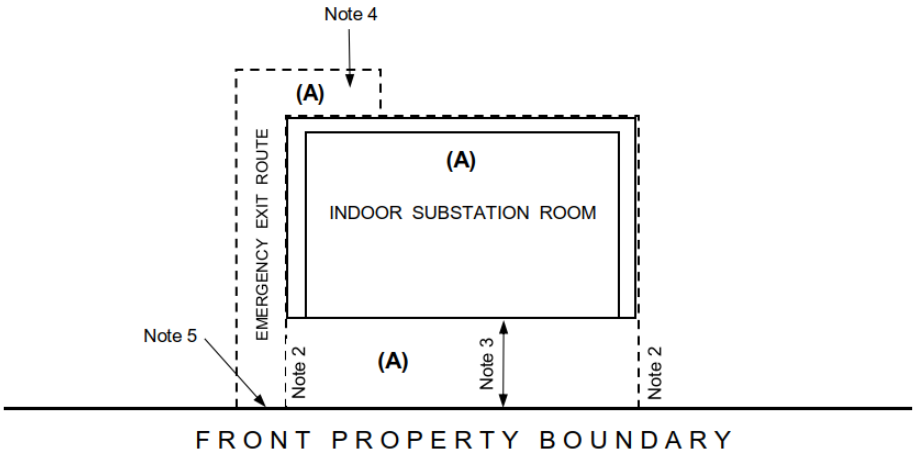
For use with Common Earthed substations in Non - Residential applications only.

(A) Protection Zone
Measured 3.0m from the concrete plinth as shown.

✱ Substation plinth 1.35m x 3.17m at top of concrete
(All offsets to plinth shown from top of concrete)

Note: The Protection Zone must not encroach onto an adjoining lot

13.3 Indoor Substation Protection Zone Diagram

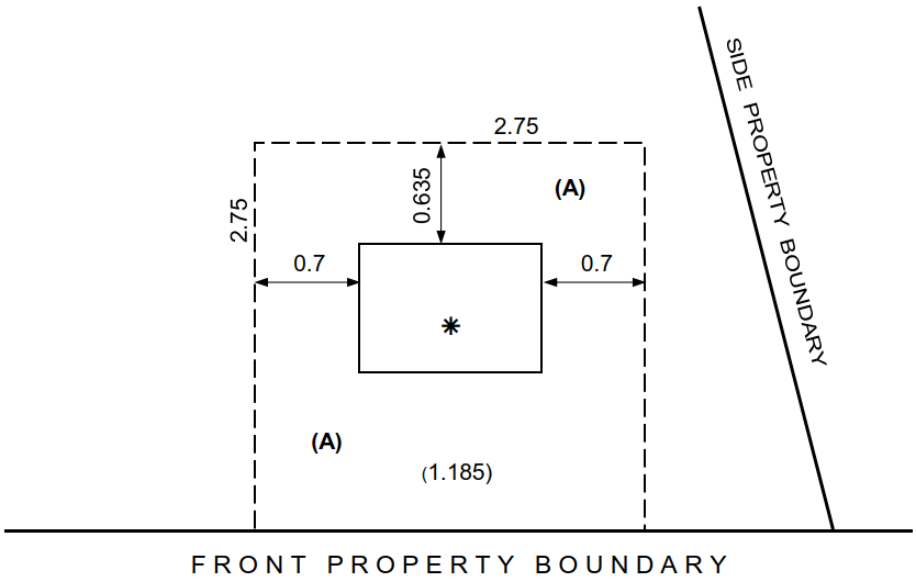


(A) Protection Zone

Notes:

1. Protection zone boundary is located along the outside face of the substation walls.
2. If the front wall of the substation is located inside the front property boundary, the side boundaries of the protection zone are to be extended to meet the front property boundary.
3. The maximum distance allowed between the front property boundary and the indoor substation is 3.0m.
4. If a substation room requires a separate emergency exit route, the route is to be included as part of the protection zone.
5. The minimum width of an emergency exit route is 1.0m.

13.4 Switching Station (High Voltage or Low Voltage) Protection Zone Diagram



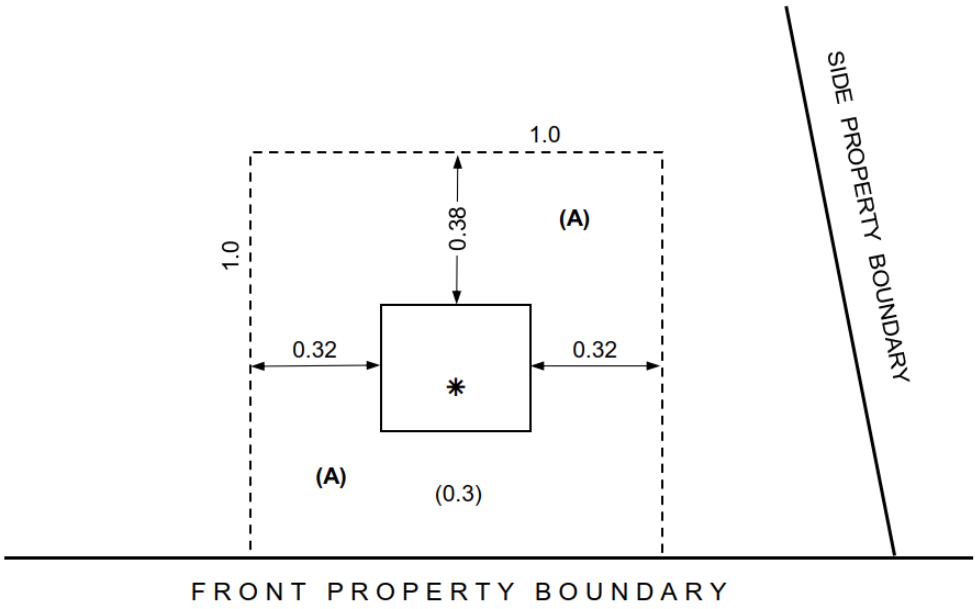
For use with Common Earthed substations in Non - Residential applications only.

(A) Protection Zone
Measured 0.635m and 0.7m from the concrete plinth as shown.

✳ Switching Station plinth 1.35m x 0.93m at top of concrete
(All offsets to plinth shown from top of concrete)

Note: The Protection Zone must not encroach onto an adjoining lot

13.5 LV Pillar Protection Zone Diagram

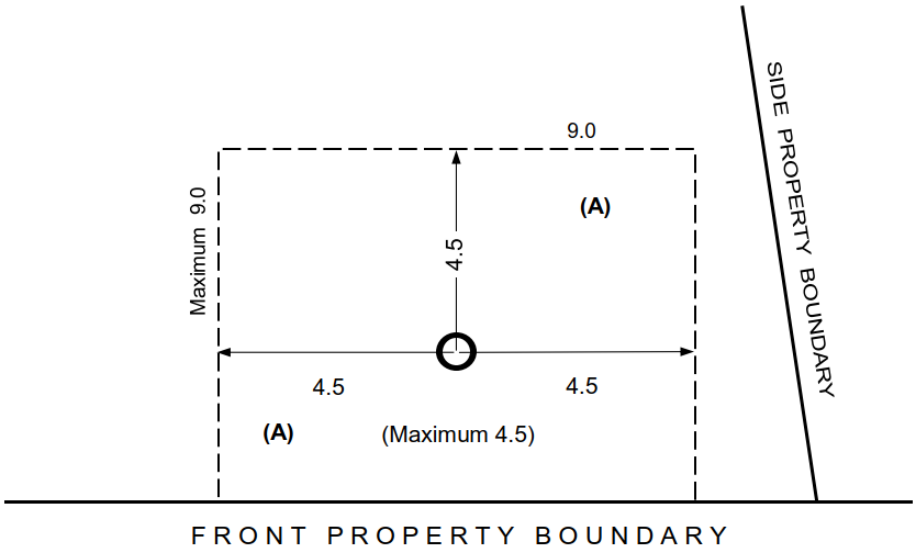


(A) Protection Zone
Distances measured from top of pillar base

✱ Pillar base 0.36m x 0.32m at top of base
(All offsets to pillar shown from top of the base section)

Note: The Protection Zone must not encroach onto an adjoining lot

13.6 Pole-mounted Substation Protection Zone Diagram



(A) Protection Zone
Measured 4.5m from the centre of the pole

Pole supporting a substation

Note: The Protection Zone must not encroach onto an adjoining lot

14.0 REGISTERED LAND INTEREST TERMS

14.1 Easement for Padmount Substation or Switching Station or Auto Transformer

1.0 Definitions

1.1 **easement site** means that part of the land that is affected by this easement.

1.2 **electrical equipment** includes electrical transformer, electrical switchgear, protective housing, concrete plinth, underground electrical cable, duct, underground earthing system, and ancillary equipment.

1.3 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.4 **land** means the lot or Torrens title land that is burdened by this easement.

1.5 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.6 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.7 **services** includes overhead and underground gas, telephone, communications, water, sewage, and drainage services.

1.8 **structure** includes building, wall, retaining wall, carport, driveway, fence, swimming pool, and fixed plant or equipment; but excludes garden furniture and garden ornament.

2.0 The prescribed authority may:

2.1 install electrical equipment within the easement site,

2.2 excavate the easement site to install the electrical equipment.

2.3 use the electrical equipment for the transmission of electricity,

2.4 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.5 trim or remove any vegetation from the land that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.6 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its original condition.

4.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

4.1 installing or permitting to be installed any services or structure within the easement site, or

4.2 altering the surface level of the easement site, or

4.3 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.2 Easement for Underground Cables and/or Street Lighting Equipment

1.0 Definitions

1.1 **easement site** means that part of the land that is affected by this easement.

1.2 **electrical equipment** includes underground electrical cable, duct, service pillar, underground earthing system, street lighting equipment, communications cable, and ancillary equipment.

1.3 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.4 **land** means the lot or Torrens title land that is burdened by this easement.

1.5 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.6 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.7 **services** includes overhead and underground gas, telephone, communications, water, sewage, and drainage services.

1.8 **structure** includes building, wall, retaining wall, carport, driveway, fence, swimming pool, and fixed plant or equipment; but excludes garden furniture and garden ornament.

2.0 The prescribed authority may:

2.1 install electrical equipment within the easement site,

2.2 excavate the easement site to install the electrical equipment.

2.3 use the electrical equipment for the transmission of electricity,

2.4 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.5 trim or remove any vegetation from the land that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.6 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its original condition.

4.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

4.1 installing or permitting to be installed any services or structure within the easement site, or

4.2 altering the surface level of the easement site, or

4.3 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.3 Easement for Overhead Power Line

1.0 Definitions

1.1 **easement site** means that part of the land that is affected by this easement.

1.2 **electrical equipment** includes pole, overhead electrical cable, underground electrical cable, duct, underground earthing system, and ancillary equipment.

1.3 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.4 **land** means the lot or Torrens title land that is burdened by this easement.

1.5 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.6 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.7 **services** includes overhead and underground gas, telephone, communications, water, sewage, and drainage services.

1.8 **structure** includes building, wall, retaining wall, carport, driveway, swimming pool, and fixed plant or equipment; but excludes garden furniture and garden ornament.

2.0 The prescribed authority may:

2.1 install electrical equipment within the easement site,

2.2 excavate the easement site to install the electrical equipment.

2.3 use the electrical equipment for the transmission of electricity,

2.4 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.5 install its own access gates and locks,

2.6 trim or remove any vegetation from the land that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.7 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its original condition.

4.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

4.1 installing or permitting to be installed any services or structure within the easement site, or

4.2 altering the surface level of the easement site, or

4.3 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.4 Easement for Overhead Power Lines and Underground Cables

1.0 Definitions

1.1 **easement site** means that part of the land that is affected by this easement.

1.2 **electrical equipment** includes pole, overhead electrical cable, underground electrical cable, duct, service pillar, underground earthing system, and ancillary equipment.

1.3 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.4 **land** means the lot or Torrens title land that is burdened by this easement.

1.5 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.6 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.7 **services** includes overhead and underground gas, telephone, communications, water, sewage, and drainage services.

1.8 **structure** includes building, wall, retaining wall, carport, driveway, swimming pool, and fixed plant or equipment; but excludes garden furniture and garden ornament.

2.0 The prescribed authority may:

2.1 install electrical equipment within the easement site,

2.2 excavate the easement site to install the electrical equipment.

2.3 use the electrical equipment for the transmission of electricity,

2.4 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.5 install its own access gates and locks,

2.6 trim or remove any vegetation from the land that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.7 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its original condition.

4.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

4.1 installing or permitting to be installed any services or structure within the easement site, or

4.2 altering the surface level of the easement site, or

4.3 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.5 Easement for Support Stay

1.0 Definitions

1.1 **easement site** means that part of the land that is affected by this easement.

1.2 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.3 **land** means the lot or Torrens title land that is burdened by this easement.

1.4 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.5 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.6 **services** includes overhead and underground gas, telephone, communications, water, sewage, and drainage services.

1.7 **structure** includes building, wall, retaining wall, carport, driveway, fence, swimming pool, and fixed plant or equipment; but excludes garden furniture and garden ornament.

1.8 **support stay** includes pole, concrete strainer block, cable, wire, and ancillary equipment.

2.0 The prescribed authority may:

2.1 install a support stay within the easement site,

2.2 excavate the easement site to install the support stay,

2.3 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.4 trim or remove any vegetation from the land that interferes with or prevents reasonable access to the easement site or the electrical equipment, and

2.5 remove any encroachments from the easement site and recover the costs of carrying out the removal work and repairing any damage done to the electrical equipment by the encroachment.

3.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its original condition.

4.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

4.1 installing or permitting to be installed any services or structure within the easement site, or

4.2 altering the surface level of the easement site, or

4.3 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.6 Easement for Indoor Substation

1.0 Definitions

1.1 **building** means the building within which the electrical equipment is located.

1.2 **easement site** means that part of the land that is affected by this easement.

1.3 **electrical equipment** includes electrical transformer, electrical switchgear, electrical cable, duct, services, ventilation, and ancillary equipment.

1.4 **install** includes construct, repair, replace, maintain, modify, use, and remove.

1.5 **land** means the lot or Torrens title land that is burdened by this easement.

1.6 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.7 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.8 **services** includes electricity, telephone, communications, ventilation, water, sewage, and drainage services.

2.0 The prescribed authority may:

2.1 install electrical equipment within the easement site,

2.2 use the electrical equipment for the transmission of electricity,

2.3 enter the land using the most practical route (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time,

2.4 install its own security doors to gain access to the electrical equipment and to prevent access by others, and

2.5 install conduits, cables, and pipes on, under or through the building for the purpose of connecting the electrical equipment with any services and to operate those services.

3.0 The prescribed authority agrees to obtain the written consent of the owner, and comply with any conditions of consent reasonably imposed by the owner, prior to cutting, drilling, altering or demolishing any part of the building as necessary to install or operate the electrical equipment.

4.0 In exercising its rights under this easement the prescribed authority will take reasonable precautions to minimise disturbance to the land and will restore the land as nearly as practicable to its former condition.

5.0 The owner agrees to obtain the written consent of the prescribed authority, and comply with any conditions of consent reasonably imposed by the prescribed authority, prior to:

5.1 installing or permitting to be installed any thing within the easement site, or

5.2 interfering with, allowing to be interfered with, or preventing the ventilation of the easement site, or

5.3 directing or allowing to be directed drainage into the easement site, or

5.4 doing or permitting to be done anything that restricts access to the easement site by the prescribed authority.

6.0 Electricity Network Assets (Authorised Transactions) Act 2015

6.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

6.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.7 Right of Access

1.0 Definitions

1.1 **access site** means that part of the land that is affected by this right of access.

1.2 **land** means the lot or Torrens title land that is burdened by this easement.

1.3 **owner** means the registered proprietor of the land and its successors (including those claiming under or through the registered proprietor).

1.4 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

2.0 The prescribed authority may:

2.1 by any reasonable means pass across the access site for the purpose of exercising or performing any of its powers, authorities, duties or functions, and

2.2 do anything reasonably necessary for passing across the access site, including:

2.2.1 entering the land, and
2.2.2 taking anything on to the land, and
2.2.3 carrying out work within the access site such as constructing, placing, repairing or maintaining trafficable surfaces, driveways or structures.

3.0 In exercising its rights under this easement, the prescribed authority must:

3.1 ensure all work is done properly, and

3.2 cause as little inconvenience as is practicable to the owner and any occupier of the land, and

3.3 cause as little damage as is practicable to the land and any improvement on it, and

3.4 restore the land as nearly as is practicable to its former condition, and

3.5 make good any collateral damage.

4.0 Electricity Network Assets (Authorised Transactions) Act 2015

4.1 Notwithstanding any other provision in this easement, the owner grants the easement to the prescribed authority and acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

4.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.8 Restriction on the Use of Land – Fire Rating of Buildings

1.0 Definitions

1.1 **120/120/120 fire rating** and **60/60/60 fire rating** means the fire resistance level of a building expressed as a grading period in minutes for structural adequacy / integrity failure / insulation failure calculated in accordance with Australian Standard 1530.

1.2 **building** means a substantial structure with a roof and walls and includes any projections from the external walls.

1.3 **erect** includes construct, install, build and maintain.

1.4 **owner** means the registered proprietor of the lot or Torrens title land that is affected by this restriction and its successors (including those claiming under or through the registered proprietor).

1.5 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.6 **restriction site** means that part of the lot or Torrens title land that is affected by this restriction on the use of land.

2.0 No building shall be erected or permitted to remain within the restriction site unless:

2.1 the external surface of the building erected within 1.5 metres from the substation footing has a 120/120/120 fire rating, and

2.2 the external surface of the building erected more than 1.5 metres from the substation footing has a 60/60/60 fire rating, and

2.3 the owner provides the prescribed authority with an engineer’s certificate to this effect.

3.0 The 120/120/120 fire rating and 60/60/60 fire rating must be achieved without the use of fire fighting systems such as automatic sprinklers.

4.0 No doors or opening windows are permitted to be erected within the restriction site on the external surface of a building within 3 metres from the substation footing.

5.0 Electricity Network Assets (Authorised Transactions) Act 2015

5.1 Notwithstanding any other provision in this restriction, the owner acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

5.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.9 Restriction on the Use of Land – Swimming Pools and Spas

1.0 Definitions

1.1 **erect** includes construct, install, build and maintain.

1.2 **owner** means the registered proprietor of the lot or Torrens title land that is affected by this restriction and its successors (including those claiming under or through the registered proprietor).

1.3 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.4 **restriction site** means that part of the lot or Torrens title land that is affected by the restriction on the use of land.

2.0 No swimming pool or spa shall be erected or permitted to remain within the restriction site.

3.0 Electricity Network Assets (Authorised Transactions) Act 2015

3.1 Notwithstanding any other provision in this restriction, the owner acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.10 Restriction on the Use of Land – Metallic Structures

1.0 Definitions

1.1 **erect** includes construct, install, build and maintain.

1.2 **owner** means the registered proprietor of the lot or Torrens title land that is affected by this restriction and its successors (including those claiming under or through the registered proprietor).

1.3 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

1.4 **restriction site** means that part of the lot or Torrens title land that is affected by the restriction on the use of land.

2.0 No metallic structure shall be erected or permitted to remain within the restriction site except for metallic fencing if the fence panels are insulated from the fence posts and from the ground.

3.0 Electricity Network Assets (Authorised Transactions) Act 2015

3.1 Notwithstanding any other provision in this restriction, the owner acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

14.11 Positive Covenant – Fire Screen Wall

1.0 Definitions:

1.1 **120/120/120 fire rating** means the fire resistance level of a building structure expressed as a grading period in minutes for structural adequacy/integrity failure/insulation failure calculated in accordance with Australian Standard 1530.

1.2 **fire screen wall** means a wall constructed of non-combustible material that achieves a 120/120/120 fire rating up to a minimum height of 6 metres from the level of the substation footing, including any structures attached to the wall such as a fire screen overhang, a fire screen roof, eaves and gutters.

1.3 **owner** means the registered proprietor of the lot or Torrens title land and its successors (including those claiming under or through the registered proprietor).

1.4 **positive covenant site** means that part of the lot or Torrens title land that is affected by this positive covenant.

1.5 **prescribed authority** means Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878 and its successors (who may exercise its rights by any persons authorised by it).

2.0 The owner covenants with the prescribed authority that:

2.1 the owner will construct a fire screen wall within the positive covenant site; and

2.2 the owner will maintain the fire screen wall in a satisfactory state of repair and in accordance with any reasonable conditions that the prescribed authority may impose.

3.0 Electricity Network Assets (Authorised Transactions) Act 2015

3.1 Notwithstanding any other provision in this positive covenant, the owner acknowledges and agrees that any lessee of the prescribed authority's distribution system, and any nominee of such lessee (which may include a sublessee of the prescribed authority's distribution system from that lessee), may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the prescribed authority as if that lessee or nominee were the prescribed authority, but only for so long as the lessee leases the prescribed authority's distribution system from the prescribed authority.

3.2 The owner must do all things reasonably necessary to ensure any such lessee, and any such nominee, is able to exercise the rights and perform the obligations of the prescribed authority.

15.0 BY-LAWS FOR COMMUNITY TITLE SUBDIVISIONS

15.1 Access Ways

To maintain access to new Network Assets by Endeavour Energy, the following by-law must be incorporated into all community title management statements.

BY-LAW [X] ENDEAVOUR ENERGY – Access Ways

The Association agrees that if the surface of the access ways does not support the heavy vehicles, machinery and materials necessary to maintain Endeavour Energy's electrical equipment, the Association will be responsible for repairing any damage caused to the surface of the access ways during such maintenance. This provision applies despite any other easement term to the contrary.

15.2 Ownership of Assets by the Association

Where the community association is responsible for the low voltage electricity system (including street lighting) within the community title development, the following by-law must be incorporated into all community title management statements.

BY-LAW [X] ENDEAVOUR ENERGY – Ownership of Assets by the Association

The low voltage electricity system is defined on the prescribed diagram as [eg "electricity"]. This electricity system is Association property. The Association is responsible for the maintenance, repair, refurbishment, and augmentation of this electricity system. The design of this electricity system has been based on a maximum demand of [as advised by the designer] Amps per dwelling.

16.0 CONTRACTUAL LICENCE TEMPLATE

Cover Page:
Licence for Electrical Equipment
[insert site description]
The Licensor and the Licensee enter into this licence in accordance with Schedule 1 and Schedule 2.

Schedule 1 – Commercial Terms

Land	
Building:	
Licensed Area:	Part of the [Building on the Land OR Land] being [insert] as shown on the plan in
Licence Fee	$1 plus GST
Commencing Date:	
Expiry Date	
Term	The period from the Commencing Date to the Expiry Date subject to the terms of this Licence
Licensee:	Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878.
Licensee address:	C/- Endeavour Energy – 51 Huntingwood Drive, Huntingwood NSW 2148
Licensor:	
Licensor address:	
Access Hours:	
Electrical Equipment:	[describe equipment] in accordance with the Design Drawings
Design Drawings	Endeavour Energy drawing no. [insert]
Variations to Conditions	[Insert if applicable: 1. Improvement means any building, structure or improvement. 2. Restriction Site means [describe area]. 3. The Licensor must not construct, install, build or maintain (**erect)** or permit to be erected within the Restriction Site any Improvement unless: (a) the external surface of the Improvement erected within 1.5 metres from the Electrical Equipment has a 120/120/120 fire rating, and (b) the external surface of the Improvement erected more than 1.5 metres from the Electrical Equipment has a 60/60/60 fire rating, and (c) the Licensor provides the Licensee with an engineer's certificate to this effect.

	4. The 120/120/120 fire rating and 60/60/60 fire rating must be achieved without the use of fire fighting systems such as automatic sprinklers. 5. The Licensor must not erect or install or permit to be erected or remain: (a) within 3 metres from the Electrical Equipment any doors or opening windows on the external surface of an Improvement; or (b) any metal structure within the Restriction Site (except for metallic fencing if the fence panels are insulated from the fence posts and from the ground).]

Schedule 2 – Licence Terms

1. The Licensor grants to the Licensee an exclusive licence of the Licensed Area to:

   (a) construct, install, build, maintain, remove from and repair the Electrical Equipment in the Licensed Area;

   (b) excavate the Licensed Area to install the Electrical Equipment;

   (c) use and operate the Electrical Equipment for the transmission of electricity;

   (d) enter the Land using the most practical route over the Land owned by the Licensor (with or without vehicles, machinery or materials) at all reasonable times (and at any time in the event of an emergency) and remain there for any reasonable time;

   (e) trim or remove any vegetation from the Land that interferes with or prevents reasonable access to the Licensed Area site or the Electrical Equipment, and

   (f) remove any encroachments from the Licensed Area and recover the costs of carrying out the removal work and repairing any damage done to the Electrical Equipment by the encroachment.

2. In exercising its rights under this licence the Licensee will take reasonable precautions to minimise disturbance to the Licensor.

3. Subject to its rights in this licence, the Licensee will repair any damage it causes to the Licensed Area.

4. At the end and of this Licence the Licensor will at its cost remove the Electrical Equipment and restore the Licensed Area as nearly as practicable to its former condition.

5. The Licensor acknowledges receipt of the Licence Fee from the Licensee for the Term.

6. The Licensor must obtain the Licensee's prior written consent and comply with the Licensor's reasonable conditions, prior to:

   (a) installing or permitting to be installed any services or structure within the Licensed Area,

   (b) altering the surface level of the Licensed Area, or

   (c) doing or permitting to be done anything that interferes with the Electrical Equipment or restricts the Licensors' access to the Licensed Area.

7. If the Licensee requires that the Electricity Equipment remain on the Land at the end of the Term the Licensor:

   (a) must if requested by the Licensee grant a further licence of the Licensed Area to the Licensee for a new 'Term' nominated by the Licensee but otherwise on the same terms as this licence with a new 'Commencing Date' being the day after the Expiry Date; and

   (b) otherwise acknowledges and does not object to the Licensee's rights to retain the Electrical Equipment on the Licensed Area under Section 28 of the Electricity Supply Act 1995

8. Subject to clause 7 this licence terminates automatically at the end of the Term or the removal of the Electricity Equipment (whichever occurs first).

9. If the Licensor sells the Land it must at the Licensor's cost novate this licence to the purchaser of the Land. The Licensee may novate this licence to another party on notice to the Licensor. The Licensor must do all things reasonably required by the Licensee to document a novation of this Licence in accordance with this clause 9.

10. The Licensor releases Licensee and agrees that the Licensee is not liable for, any cost, claim, loss, liability, damage, proceeding, order, judgment or expense (Claim) arising from, or incurred in connection with the Licensee's use of the Licensed Area, this licence or the Electrical Equipment except to the extent arising due to the negligent act or omission or the default of the Licensee.

11. The Licensor indemnifies the Licensee from and against all Claims for death, injury, loss, interference or damage arising from, or which the Licensee incurs or is liable for as a result of or in connection with the act, omission, negligence or default of the Licensor (or its employees, agents, contractors or invitees) or failing to keep the Licensed Area secure.

12. Any notice must be in writing and sent to the address or email address of the party as shown in Schedule 1 (as varied by notice). If sent by post, the notice is taken to have been received 3 business days after being posted.

13. This Licence is governed by the laws of the state or territory in Australia in which the Licensed Area is located. The parties submit to the non–exclusive jurisdiction of courts exercising jurisdiction in that state or territory.

14. GST means any goods and services tax imposed under A New Tax System (Goods and Services Tax) Act 1999 (Cth) in respect of taxable supplies made under this Licence.

15. Capitalised expressions used in this licence are defined in Schedule 1.

16. Reference to a statute includes any amendments, re–enactments or replacements of it.

17. Each party must bear its own costs of and incidental to the negotiation, preparation and execution of this licence.

18. This licence does not confer upon the Licensee any estate or interest in the Licensed Area or the Land and in particular this licence will not operate as a demise or constitute any contract of tenancy.

19. This Licence may be executed in any number of counterparts. All counterparts taken together will be taken to constitute one agreement.

Background to Distribution Network Lease

20. On 14 June 2017, Epsilon Distribution Ministerial Holding Corporation (as Lessor), on behalf of the State of New South Wales, entered into a 99 year lease of Endeavour Energy's Distribution Network (refer to NSW Government Gazette No 62 of 14 June 2017). The Lessee is the Asset Partnership, which has sub-leased its interest in the lease to the Operator Partnership which operates the business, trading as Endeavour Energy.

21. **Asset Partnership** means the Endeavour Energy Network Asset Partnership ABN 30 586 412 717, consisting of the following entities in each of their respective shares as tenants in common.

Entity	Share
Edwards A Pty Limited ACN 618 642 961	50.4%
ERIC Epsilon Asset Corporation 1 Pty Ltd ACN 617 221 575	12.4%
ERIC Epsilon Asset Corporation 2 Pty Ltd ACN 617 221 655	12.4%
ERIC Epsilon Asset Corporation 3 Pty Ltd ACN 617 221 708	12.4%
ERIC Epsilon Asset Corporation 4 Pty Ltd ACN 617 221 726	12.4%

22. **EDMHC** means the Epsilon Distribution Ministerial Holding Corporation ABN 59 253 130 878.

23. **Operator Partnership** means the Endeavour Energy Network Operator Partnership ABN 11 247 365 823, consisting of the following entities in each of their respective shares as tenants in common.

Entity	Share
Edwards O Pty Limited ACN 618 643 486	50.4%
ERIC Epsilon Operator Corporation 1 Pty Ltd ACN 617 221 735	12.4%
ERIC Epsilon Operator Corporation 2 Pty Ltd ACN 617 221 744	12.4%
ERIC Epsilon Operator Corporation 3 Pty Ltd ACN 617 221 753	12.4%
ERIC Epsilon Operator Corporation 4 Pty Ltd ACN 617 221 771	12.4%

24. Notwithstanding any other **provision** of this Licence the Licensor acknowledges and agrees that the Asset Partnership (or any entity forming part of the Asset Partnership, jointly and severally) and any nominee of that partnership (which may include the Operator Partnership or any entity forming part of the Operator Partnership, joint and severally) may, without the need for any further approvals or agreements, exercise the rights and perform the obligations of the EDMHC under this License as if the Asset Partnership and Operator Partnership (as applicable) was the EDMHC, but for only so long as the Asset Partnership continues to be the Lessee of EDMHC's distribution system.

Plan page/s:
Plan
[insert plan]

Executed as a deed

[insert execution clause for Licensor]

……..as agent for Michael Pratt, NSW Treasury Secretary (NSW Treasurer's delegate under delegation dated 24 November 2015), on behalf of the **Epsilon Distribution Ministerial Holding Corporation** ABN 59 253 130 878.

_____
Signature of witness

_____
Name of witness

(BLOCK LETTERS)

17.0 EXECUTION CLAUSES

17.1 Execution Clause for 88B

I certify that the attorney signed this instrument in my presence.

Signed by the attorney named below who signed this instrument pursuant to the power of attorney specified for **Endeavour Energy Network Asset Partnership (ABN 30 586 412 717)** on behalf of **Epsilon Distribution Ministerial Holding Corporation (ABN 59 253 130 878)** pursuant to section 36 of the *Electricity Network Assets (Authorised Transactions) Act 2015* (NSW)

Signature of witness:

_____

Name of witness:

_____

Address of witness:
c/- Endeavour Energy
51 Huntingwood Drive
Huntingwood NSW 2148

Signature of attorney:

_____

Attorney name: _____

Attorney position: _____

Power of attorney: Book _____

No _____

EE reference: _____

Date: _____

17.2 Execution Clause for RPA Dealing

I certify that I am an eligible witness and the attorney signed this instrument in my presence.

Certified correct for the purposes of the Real Property Act 1900 by the attorney named below who signed this instrument pursuant to the power of attorney specified for **Endeavour Energy Network Asset Partnership (ABN 30 586 412 717)** on behalf of **Epsilon Distribution Ministerial Holding Corporation (ABN 59 253 130 878)** pursuant to section 36 of the *Electricity Network Assets (Authorised Transactions) Act 2015* (NSW)

Signature of witness:

_____

Name of witness:

_____

Address of witness:
c/- Endeavour Energy
51 Huntingwood Drive
Huntingwood NSW 2148

Signature of attorney:

_____

Attorney name: _____

Attorney position: _____

Power of attorney: Book _____

No _____

EE reference: _____

Date: _____

Standard Conditions for Development Applications and Planning Proposals

Version 9 – August 2023

Prepared by Sustainability and Environment
Endeavour Energy
T 133718
E Property.Development@endeavourenergy.com.au

Endeavour Energy

POWER together

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 (Transport and Infrastructure) 2021* (NSW), Division 5 'Electricity transmission or distribution', Subdivision 2 'Development likely to affect an electricity transmission or distribution network', Section 2.48 'Determination of development applications—other development'.

2.48 Determination of development applications—other development

(1) This section 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 section 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:

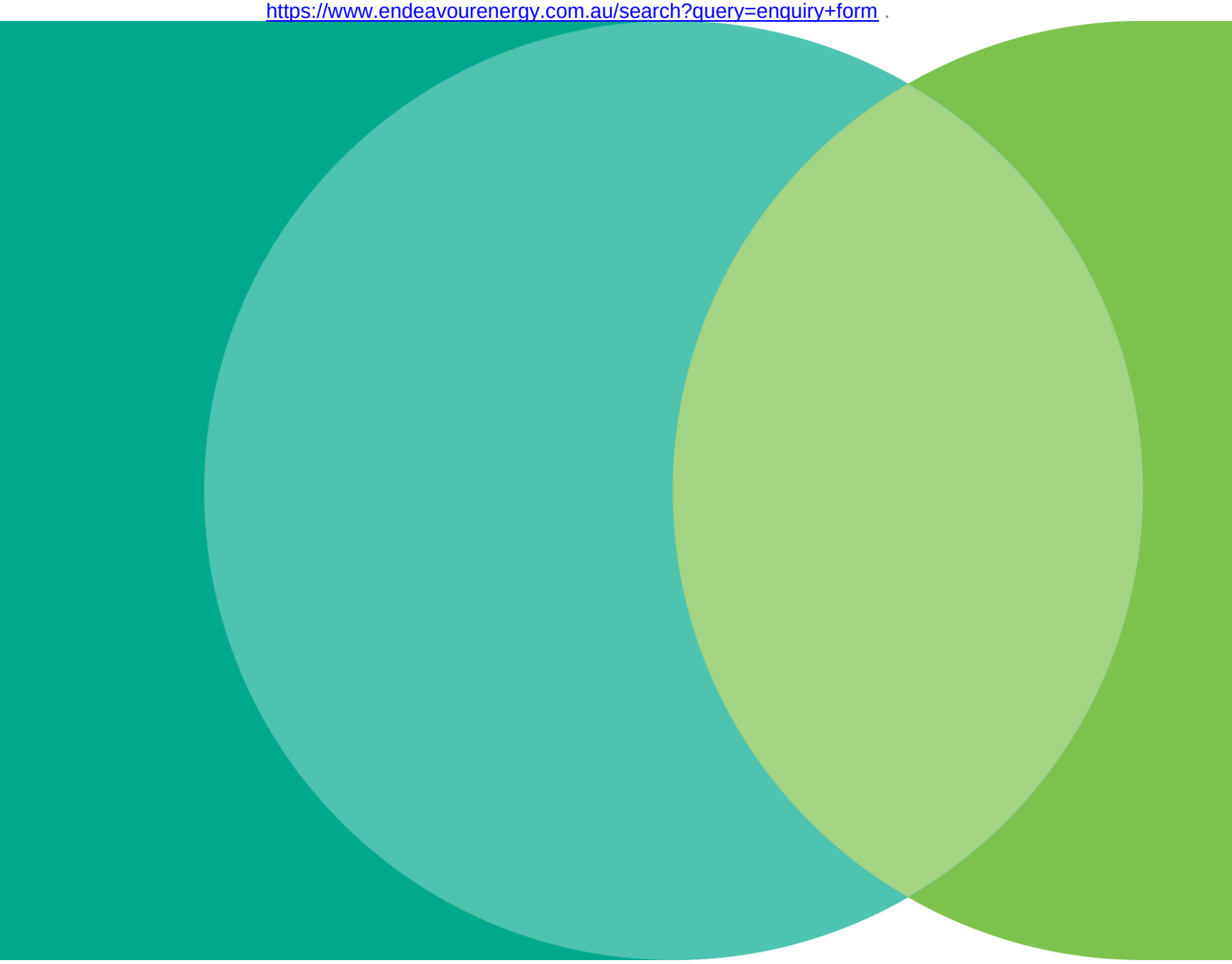
- Endeavour Energy's website http://www.endeavourenergy.com.au .

  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.

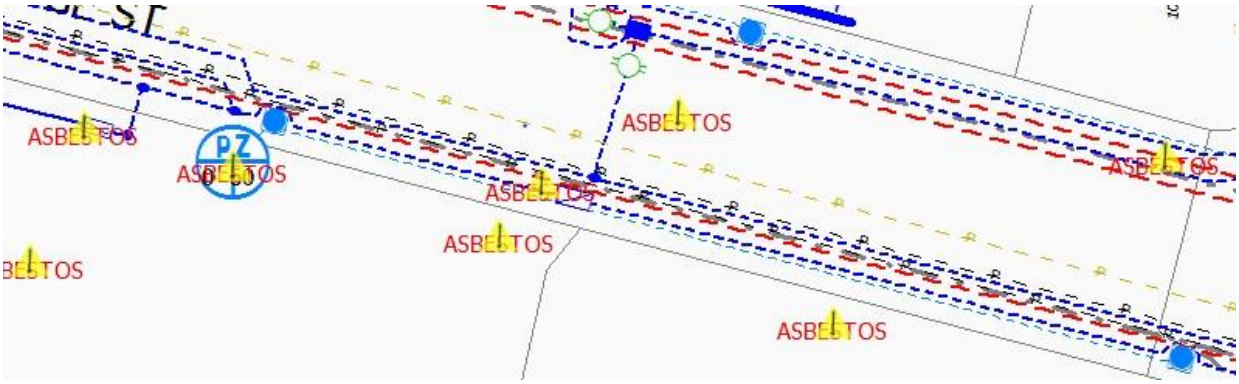
Endeavour Energy is generally opposed to any sensitive development in close vicinity of its properties which could potentially to limit its ongoing operations from the site. As the electricity network is operational 24/7/365 ie. all day, every day of the year (please refer to the below point 'Prudent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

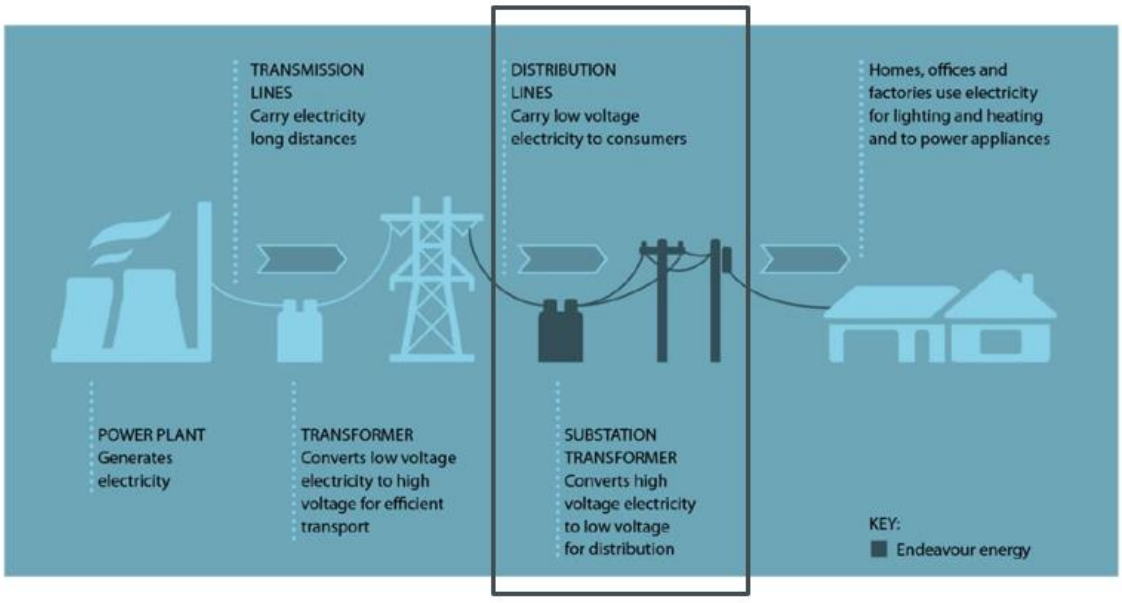
Distribution substations are divided into:

- 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

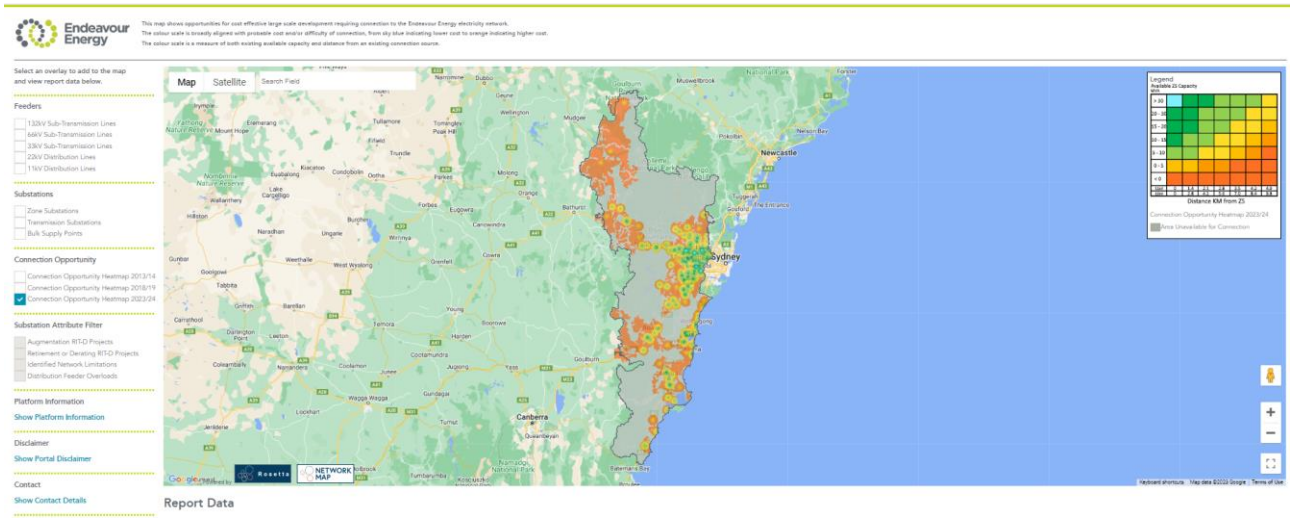
The electricity distribution network also provides a 'two way' service which enables customers with solar photovoltaic panels to export electricity generated into Endeavour Energy's network for supply to other customers for which the customer is credited / paid a solar feed-in tariff as determined by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

3.1 Distribution Annual Planning Report Map

The DAPRM (Distribution Annual Planning Report Map) is an interactive geospatial map that has been developed to provide indicative information regarding Endeavour Energy's high voltage electricity network topology, forecast loads and capacities, and network constraints. The DAPRM does not show details of the low voltage electricity distribution network. The DAPRM is an information service available to the public via the following link to Endeavour Energy's website:

https://dapr.endeavourenergy.com.au/connections/# .

This map shows opportunities for cost effective large scale development requiring connection to the Endeavour Energy high voltage electricity network. By loading a marker of the proposed connection location, a line will be generated between the marker and the nearest zone substation. By selecting the Connection Opportunity Heatmap the colour scale shown is broadly aligned with probable cost and/or difficulty of connection, from sky blue indicating lower cost to orange indicating higher cost. The colour scale is a measure of both existing available capacity and distance from an existing connection source.



Endeavour Energy Distribution Annual Planning Report Map includes a Connection Opportunity Heatmap providing an indication of probable cost and/or difficulty of connection.

4 Asset Relocation

To facilitate development, some existing electricity infrastructure may need to be decommissioned / relocated or undergrounded. 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) or by completing an online application on Endeavour Energy's website under 'Home > Connections > Connect online' or via the following link:

https://www.endeavourenergy.com.au/connections/connect-online .

The developer is encouraged to approach a Level 3 Accredited Service Provider (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 ASP scheme please refer to the below point 'Network Capacity / Connection'.

5 Before You Dig

Before commencing any underground activity the applicant is required to obtain advice from the ***Before You Dig*** service in accordance with the requirements of the *Electricity Supply Act 1995* (NSW) and associated Regulations.

The applicant must obtain plans 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 Before You Dig website via the following link (lodging enquiries by phone is no longer available):

https://www.byda.com.au/ .

6 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.

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 > Safety > Vegetation management' or via the following link:

https://www.endeavourenergy.com.au/safety/vegetation-management .

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.

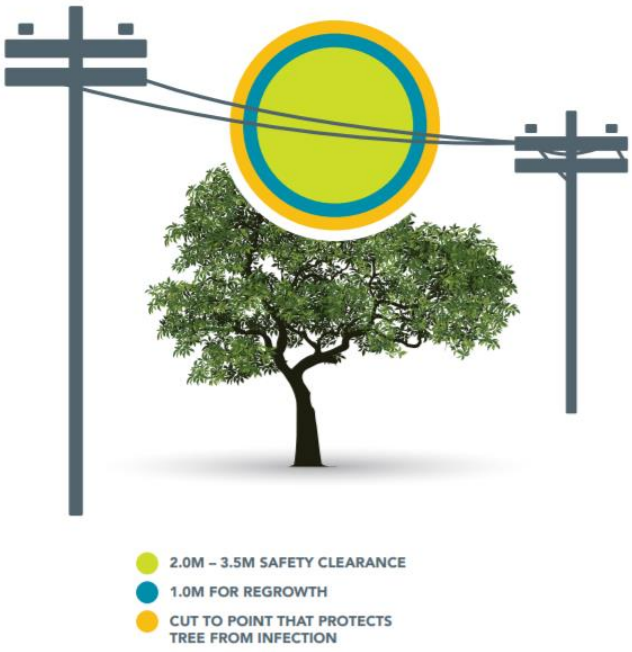
> *"Vegetation management around electricity poles, wires and infrastructure is a critical bushfire mitigation measure. Historically the NSW Rural Fire Service (NSW RFS) has been satisfied that electricity distribution businesses have been appropriately addressing bush fire risks"*
>
> – Commissioner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



7 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.

8 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 Sustainability and Environment Branch have advised 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 Sustainability and Environment Branch via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666.

8.1 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. If that occurs, 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. If the use of the site is proposed to change, it would be assessed under the then relevant scenario.

9 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 planned for demolition, removal or relocation 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.

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.

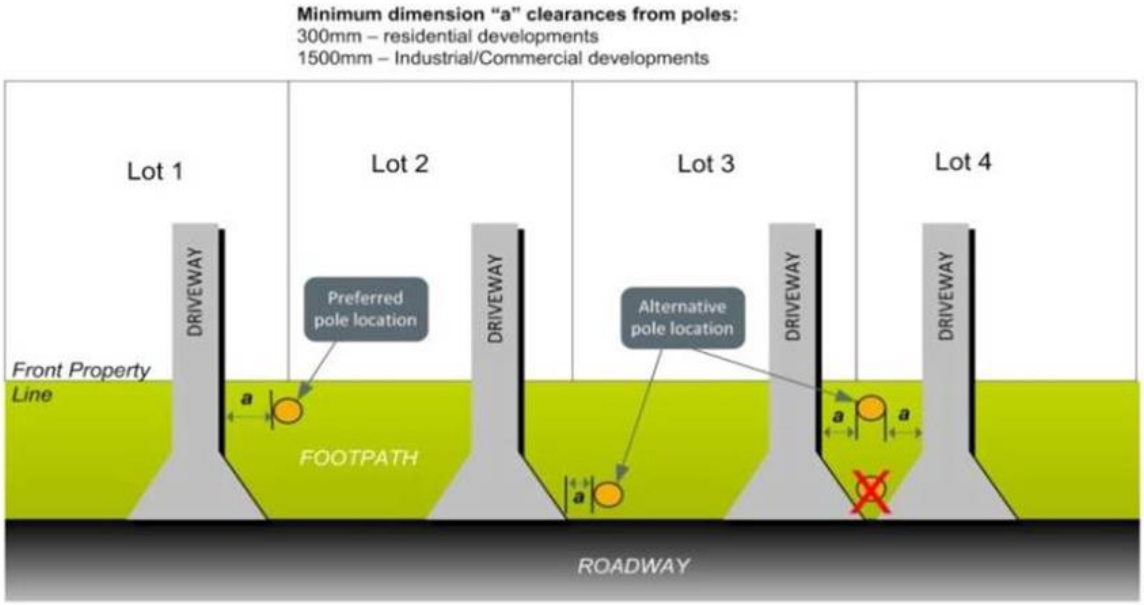
The request should be made to the relevant Endeavour Energy stakeholder eg. if it relates to an easement management matter to the Easement Officers, for an application for connection of load to Customer Network Solutions Branch etc.

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 or affecting an easement, restriction or protected works (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 Rating Restriction

If part of a building encroaches the fire rating 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.

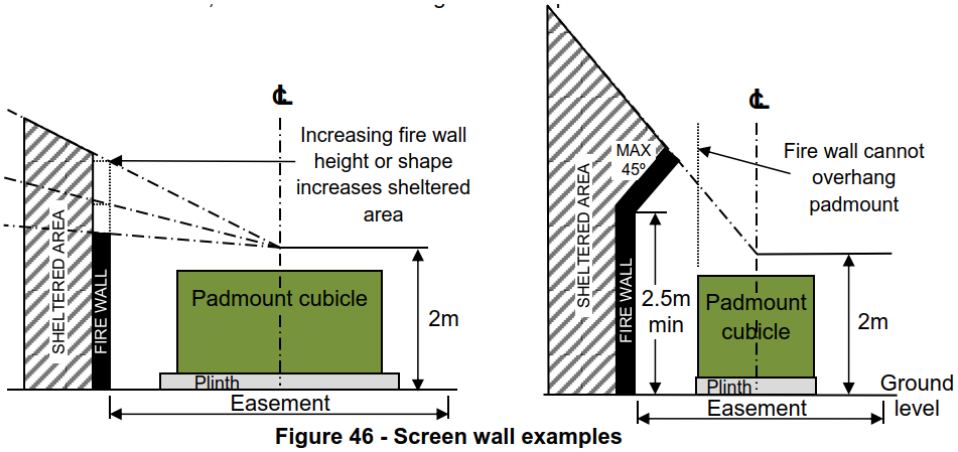


Figure 46 - Screen wall examples

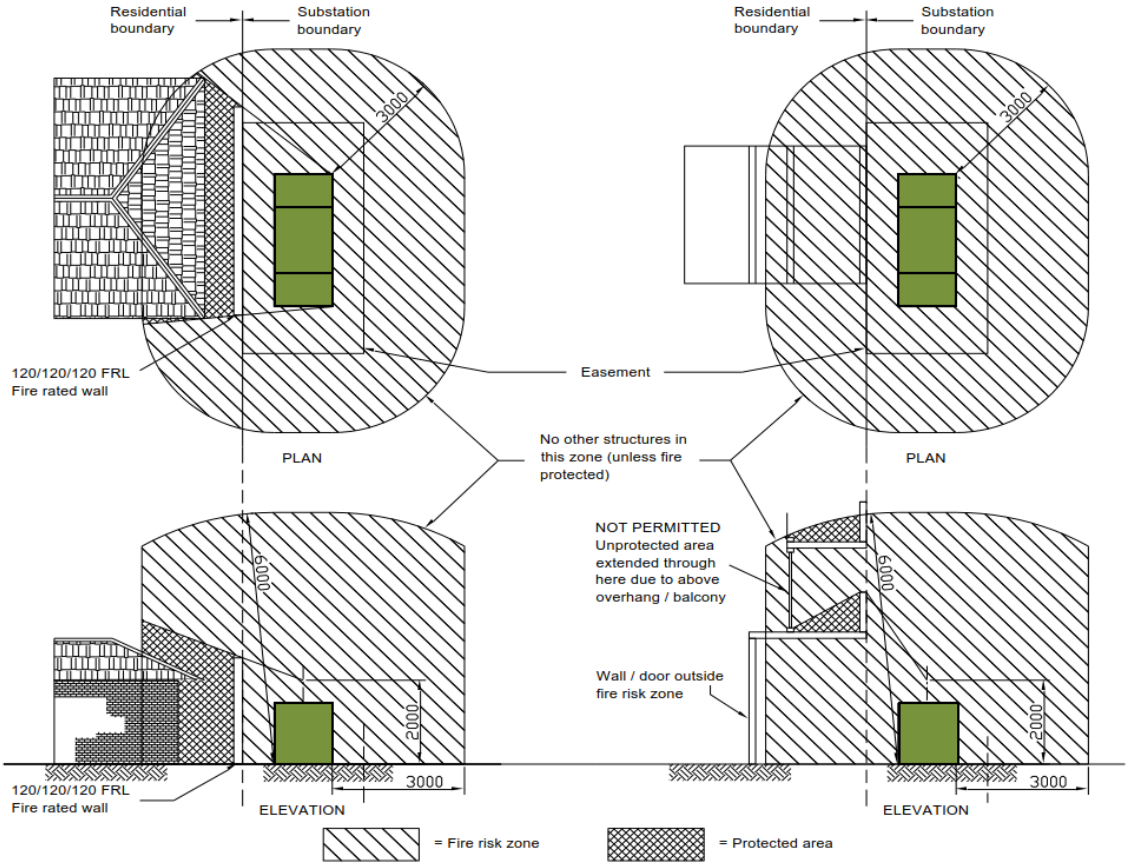


Figure 47 - Typical effect of screen walls

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.

Partly for this reason the Terms of Restriction on the Use of Land for Fire Rating of Buildings was amended in 2022 to include the following additional requirement.

> *No doors or opening windows are permitted to be erected within the restriction site on the external surface of a building within 3 metres from the substation footing.*

Although this additional requirement is not included in the restriction registered on title to all properties, given the problem in achieving the required fire rating, it essentially will apply.

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

13.2 Site Specific Conditions

Land interests benefitting Endeavour Energy must be provided where any part of the distribution system is or will be located on land that is not a dedicated public road or reserve. Depending on the type of development and the location of electricity assets being installed, there are different pathways to providing land interests for contestable works. All land interest requirements are outlined in Endeavour Energy's 'Land Interest Guidelines for Network Connection Works'.

Although land interests are still created by registration of the approved Endeavour Energy, there are also unregistered land interests in the form of Site Specific Conditions, which may be appropriate for certain types of distribution network assets, where the connection assets are positioned on the public road frontage within the land parcel being supplied and with direct access from the public road. Endeavour Energy's Customer Network Solutions Branch maintain a register of the Site Specific Conditions and will apply for the life of the 'Premises Connection Assets'.

These Site Specific Conditions are imposed in lieu of the customer creating a registered Land Interest in the form of an easement. Essentially the Conditions are the same as that for the easement for the type of distribution network asset and the assets are managed on the same basis as if an easement is in place.

Further details of the land interest requirements 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 > Connections > Land interest for contestable works' or via the following link:

https://www.endeavourenergy.com.au/connections/land-interest-for-contestable-works.

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 McGiff 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.

Poor subdivision of easements restricts 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

.

.

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 Resilience and Hazards (Resilience and Hazards SEPP) Chapter 3 'Hazardous and offensive development' 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 the Resilience and Hazards SEPP 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.

Figure 4: Service Station Facility Following Fire

Extract of Statement of Environmental Effects for a Development Application notification received by Endeavour Energy in July 2023 for the rebuilding of a service station at Campbelltown following a fire in February 2023 which was near low voltage and 11,000 volt / 11 kilovolt high voltage overhead power lines. Note the fire damage to the pole.

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 the Resilience and Hazards SEPP 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.

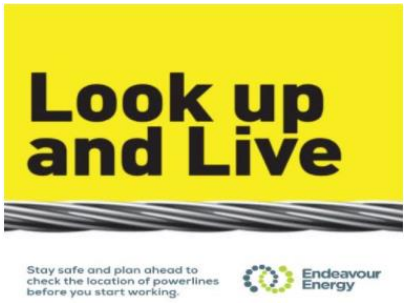
Although the risk cannot be eliminated entirely, Endeavour Energy's aim is to reduce the residual risk of these potential hazardous events to 'As Low As Reasonably Practicable'.

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.

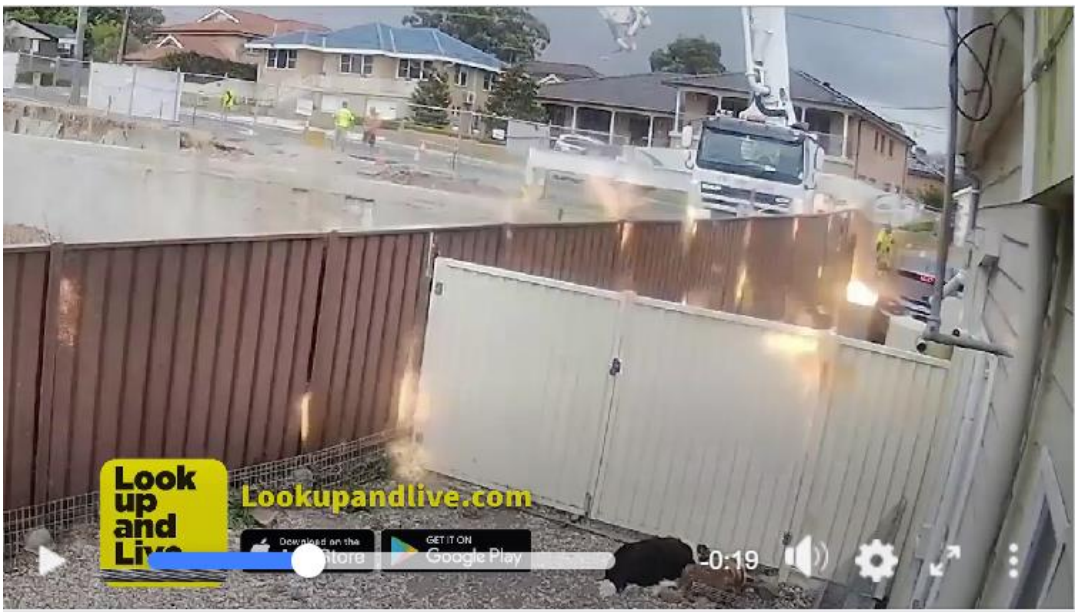
20 Look Up and Live



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:

www.lookupandlive.com.au .

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.

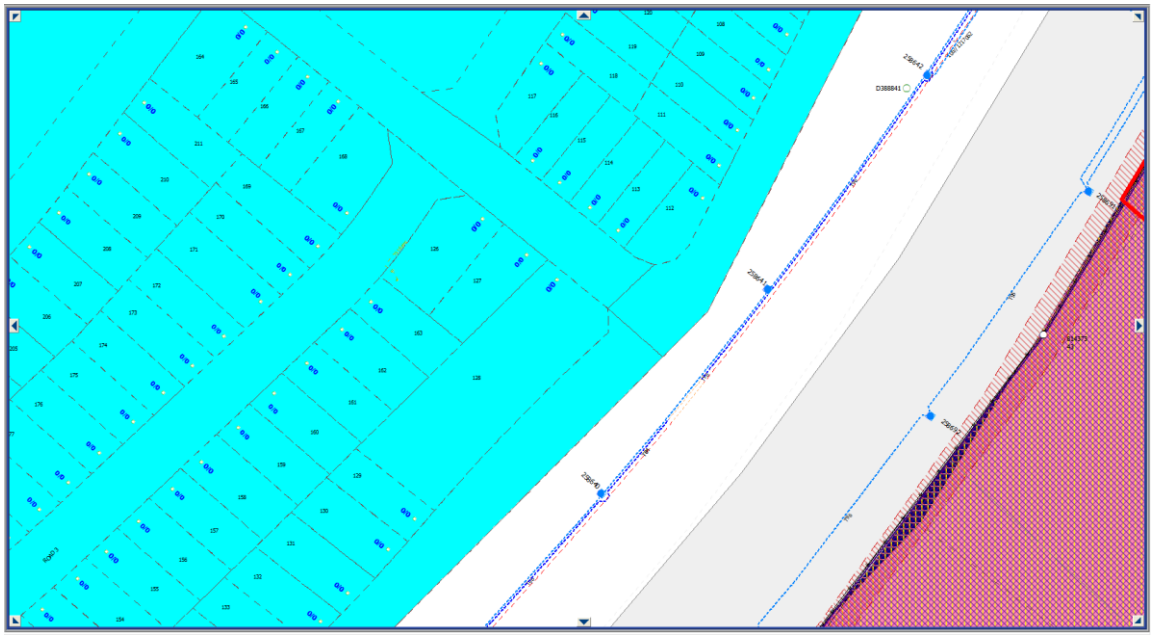


In December 2022 a concrete boom truck in Western Sydney came into contact with a 33,000 volt / 33 kilovolt high voltage overhead powerlines causing an electrical explosion that energised the immediate area with potentially fatal consequences. Thankfully no one was killed or seriously hurt. Source: Too often Endeavour Energy (NSW) is... - Endeavour Energy | Facebook

21 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.



Extract of Endeavour Energy's G/Net master facility model showing 'Work Polygon' and 'Developer Area'.

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.

22 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.

23 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.

Overhead power lines are progressively undergrounded as subdivisions progress. Source: Google Maps Street View.

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.

24 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.

Generally, customers wishing to connect a typical low voltage load up to 100 amps single phase or 63 amps three phase in an existing urban area will be offered to connect under a low voltage (LV) basic connection service even though out minimal extensions or augmentation works may need to be carried out to the network in order to facilitate the connection.

Many other types of LV connections, such as loads in non-urban locations or loads above 100 amps single phase or 63 amps three phase, may also be offered a LV basic connection service if it is assessed that the connection can be supported by the network without the need to extend or enhance the network.

In cases where the non-urban or larger LV loads are deemed to be requiring enhancement or extension works to the network, the offer will be in the form of a standard connection service.

When considering applications, Endeavour Energy will determine which areas are urban and rural based on the criteria specified within the definition of rural and urban below and the local government planning instruments.

Applications for a new connection services need to be completed online. Further details of the entire range of connection services including high voltage installations; temporary builder's supply; asset relocation and removal; multi occupant developments; 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 > Connections > Connect online > Connection of load > Connecting to our network' or via the following link:

https://www.endeavourenergy.com.au/connections/connect-online/connection-of-load .

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 who can be contacted via Head Office enquiries on business days from 9am - 4:30pm on telephone: 133 718 or (02) 9853 6666 or by completing an online application on Endeavour Energy's website under 'Home > Connections > Speak to an engineering expert' or via the following link

https://www.endeavourenergy.com.au/connections/speak-to-an-engineering-expert .

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 .

24.1 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.

24.2 High Voltage Customer

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.

24.3 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.

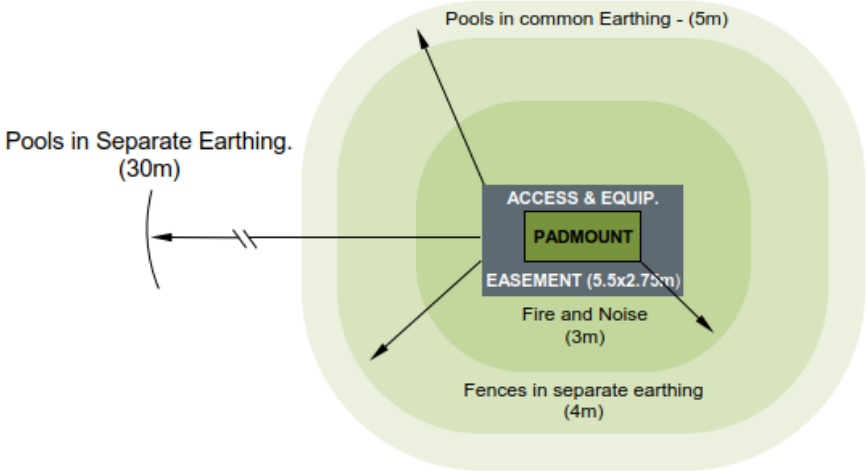
> **4.4 SUBSTATIONS FOR URD**
>
> Substations in URD's must be padmounts, 500 kVA must be the standard size for transformers. 315 kVA transformers must be installed where the capacity of a 500 kVA transformer cannot be adequately utilised by this and adjacent developments and the deferment of expenditure 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.
- 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.

24.4 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.

25 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.

26 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'.

26.1 Special / Sensitive Uses

Regarding 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.

26.2 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.

26.3 Electronic 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.

27 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 under 'Home > Safety' or via the following link:

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

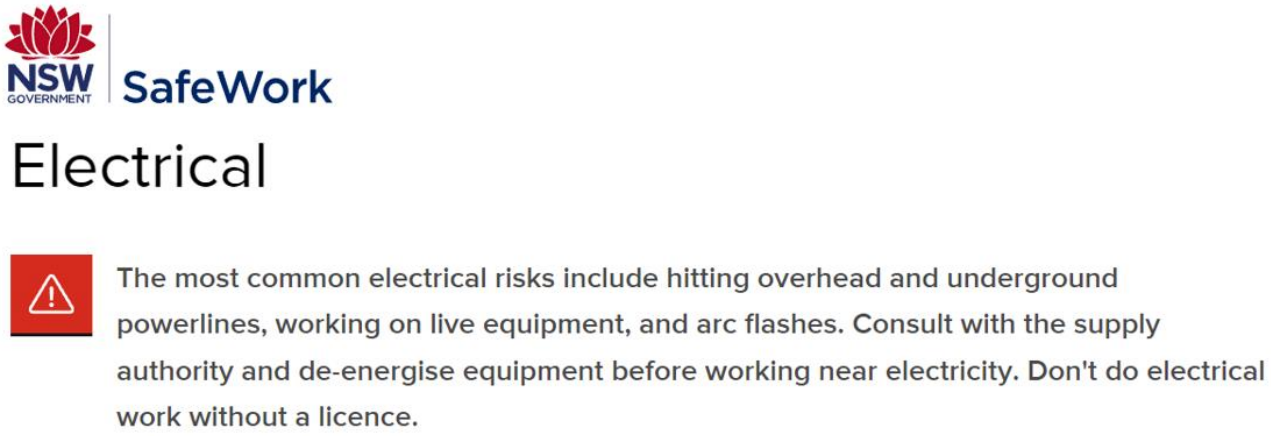
Endeavour Energy provides safety advice to the building industry, councils or any other organisation or individuals working near our overhead or underground network. Enquiries for parts of the network which are not subject to easements can be made by completing the attached Request for Safety Advice 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 .

SafeWork NSW provides key safety information on how to protect persons from the risks arising when working or undertaking activities near overhead power lines and underground cables including:

- SafeWork NSW 'Work Near Underground Assets – Guide 2007'; and
- WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006'.

These documents as well as other useful resources are available via the following link to the SafeWork NSW website.

https://www.safework.nsw.gov.au/your-industry/construction/safety-topics/electrical .



28 Removal of Electricity

Approval for the permanent disconnection and removal of supply and meters eg. when premises are planned for demolition, removal or relocation, or the replacement of a temporary builder's supply with a permanent connection, 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)] and the works completed by Accredited Service Providers (ASP) with the relevant class of Authorisation for the type of work being carried out. For details of the ASP scheme please refer to the above point 'Network Capacity / Connection'.

The work could involve:

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

The Authorised Level 2 ASP will complete an online application on Endeavour Energy's website for Removal of All Gear Notification of Service Works (NOSW) for approval to undertake the works. The ASP must also follow the Retailer / Meter Providers' process for the permanent removal of supply.

29 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.

29.1 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.

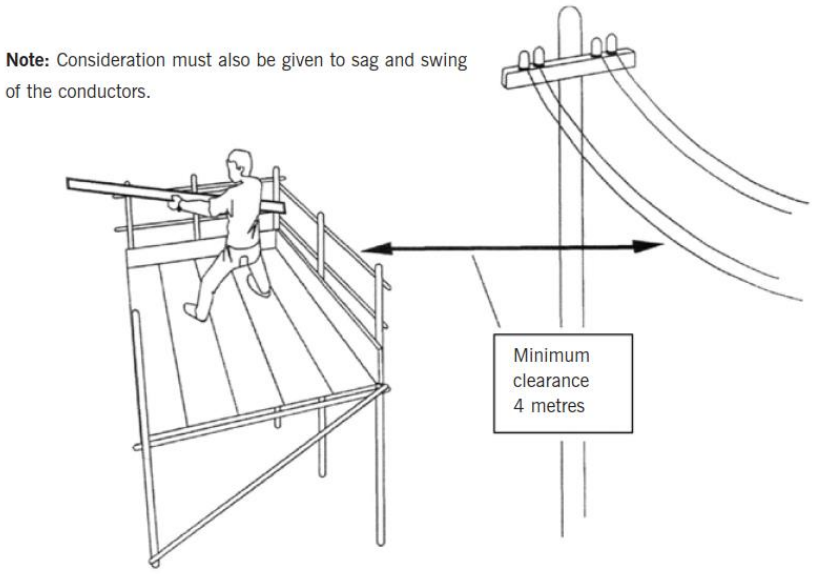
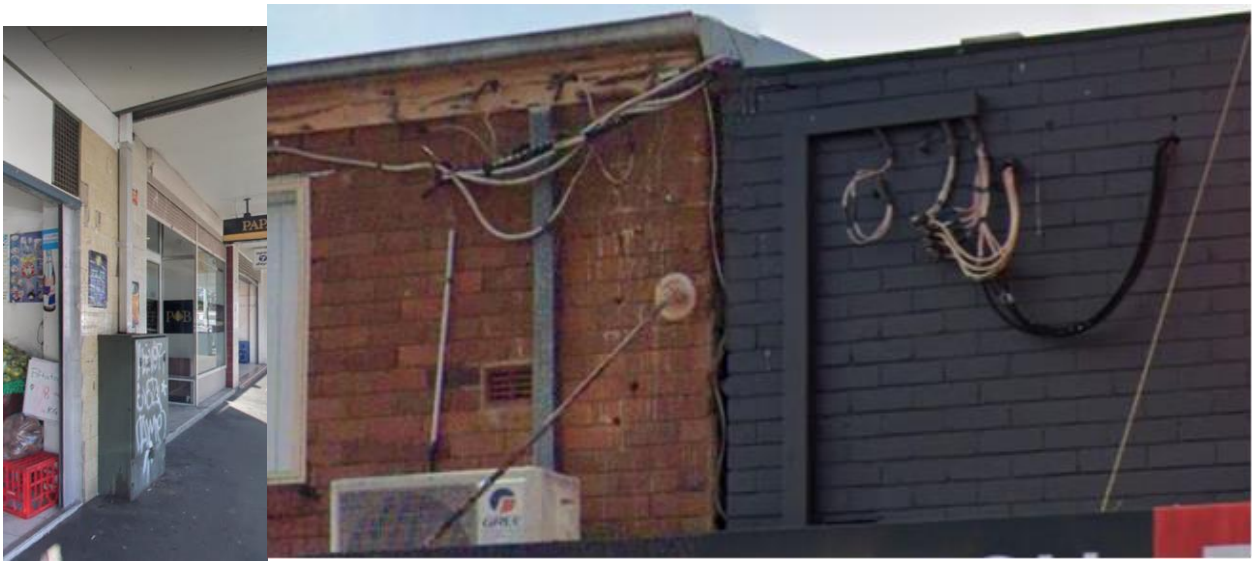


Figure 10 – A 4 metre approach distance applies in any direction where metallic scaffold is erected, used or dismantled near overhead power lines.

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.

29.2 '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'.

29.3 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.

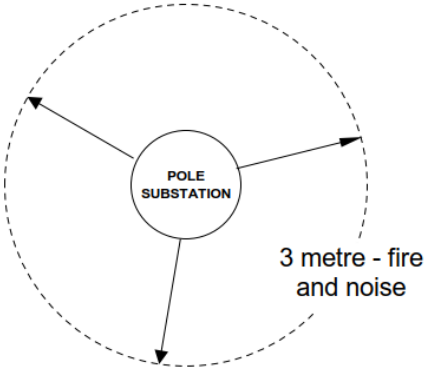


Figure 13 – Fire and noise separation

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.

29.4 Building Setbacks

As the electricity distribution network partially relies on the retention of appropriate building setbacks relative to the use / zoning of the land to the road frontages to provide safety clearances to overhead power lines on the road verge / roadway, the encroachment of building setbacks is generally not supported by Endeavour Energy.

Particular regard needs to be had to secondary road frontages or where overhead power lines are located near side or rear boundaries where lesser building setbacks apply. Multi-dwelling development with subsequent subdivision should assess building setbacks based on the proposed subdivision layout. Consideration must be given in rezonings reducing building setbacks and subdivisions changing the primary road frontage to secondary road / side or rear boundaries to which reduced building setbacks usually apply under the councils' Development Control Plans. Even if there is no existing electricity infrastructure, the encroachment of building setbacks may affect future required line routes. This may also apply to underground cables.

As a guide, the minimum easement widths in Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights', Table 1 – 'Minimum easement widths', should be considered. Although the safety clearances to a building or structure are less than the minimum easement width, the greater separation will assist in addressing issues for ordinary persons maintaining a minimum safe approach distance; prudent avoidance etc.

The encroachment of building setbacks by dwellings, structures etc. may also result in the encroachment of safety clearances to overhead power lines on the road verge / roadway or on the site itself. In this example located in The Hills Shire Local Government Area (LGS), there are both low voltage and 11,000 volt / 11 kilovolt high voltage overhead power lines. Source: Google Maps Street View.

30 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 / object 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.

31 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.

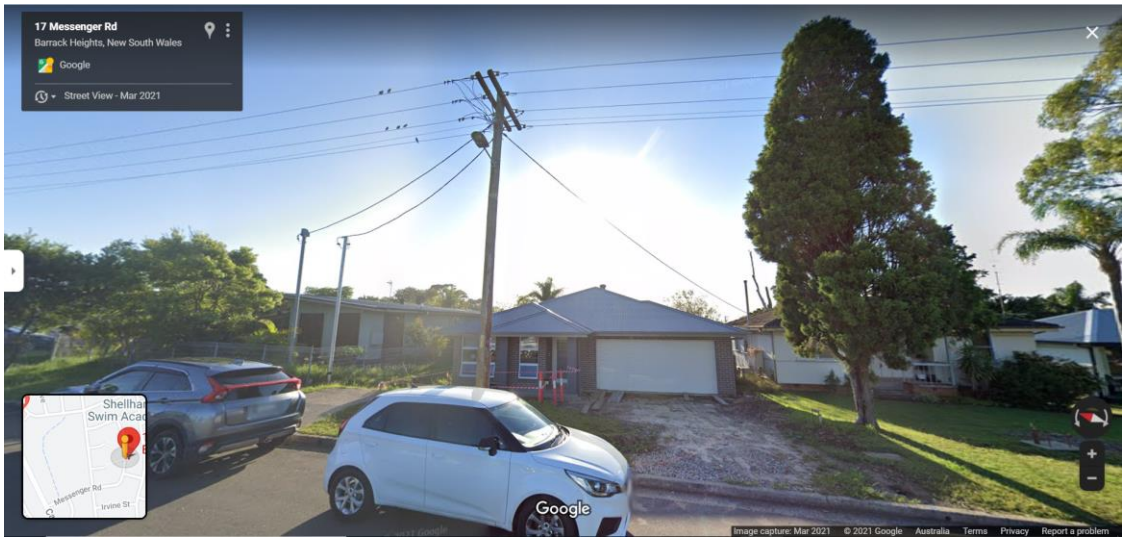
Clauses 2.2.2 'Service Route' and 3.2.4 'Crossing of Adjoining Property' of the Service and Installation Rules of NSW state that service mains or consumer's mains crossing an adjoining property must have a suitable easement. Endeavour Energy generally requires this easement to adopt the standard terms 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, for certain types of conductors and in some circumstances a lesser easement width may be allowed.

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:

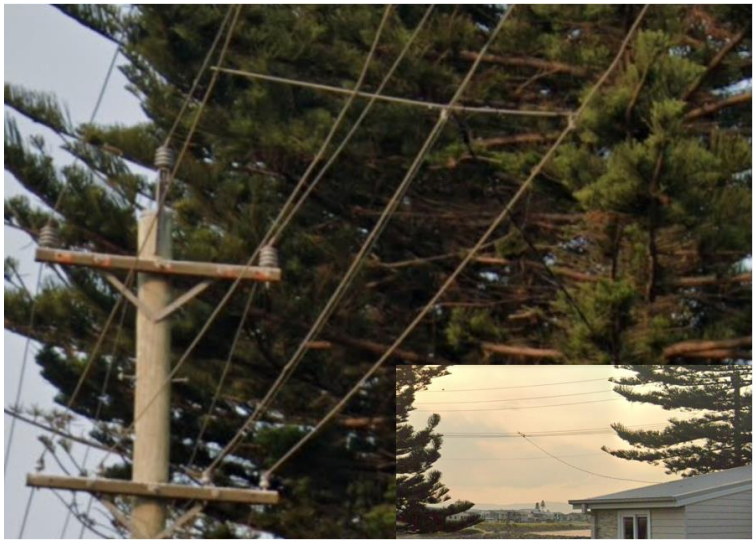
https://energy.nsw.gov.au/government-and-regulation/legislative-and-regulatory-requirements/service-installation-rules .



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.

31.1 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.

32 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 > Connections > Connect online > Small and medium embedded generator connection service’ via the following link:

https://www.endeavourenergy.com.au/connections/connect-online/small-and-medium-embedded-generator-connection-service .

33 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 .

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/ .

33.1 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:

- Endeavour Energy's Mains Design Instruction MDI 0044 'Easements and Property Tenure Rights' includes the following requirements.

5.4 Assets within special areas

5.4.1 Assets within the road verge

Assets installed within a road carriageway cannot be provided with an easement. However, overhead assets proposed to be installed within the road verge still require the clearances specified in Table 1 and Clause 5.3.1.

5.3.2 Minimum easement required for network assets

The table below details the minimum easement widths for various network assets. Refer to Annexure 4 for graphical representation for a cable joint system; pole stay and padmount clearances.

Table 1 - Minimum easement widths

	Voltage	Asset Type	Construction	Minimum Easement (m)
Other		Streetlight Column / Service Pillar		1.0 x 1.0

(The network asset must be positioned in the centre of the easement).

- NSW Streets Opening Coordination Council 'Guide to Codes and Practices for Streets Opening' includes the following:

> **5.8. SERVICES AROUND POLES**
>
> Underground services and other obstructions around poles are to be kept a minimum distance of 300mm from the periphery of the pole to allow inspections by utility/service provider staff and the safe replacement of the pole.

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

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.

34 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/modern-grid/sustainability .

35 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.

36 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 affected.

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.

37 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 urbanisation 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. Source: Google Maps Street View.

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.

Although the spread of the tree on the opposite side of the road did not encroach safety clearances to the overhead power lines, the height meant that when the tree fell during a storm, it damaged the overhead power lines requiring repairs to restore electricity supply to customers. Source: https://web.yammer.com/main/org/endeavourenergy.com.au

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 the details of which can be accessed via the following link to the NSW Planning & Environment website:

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

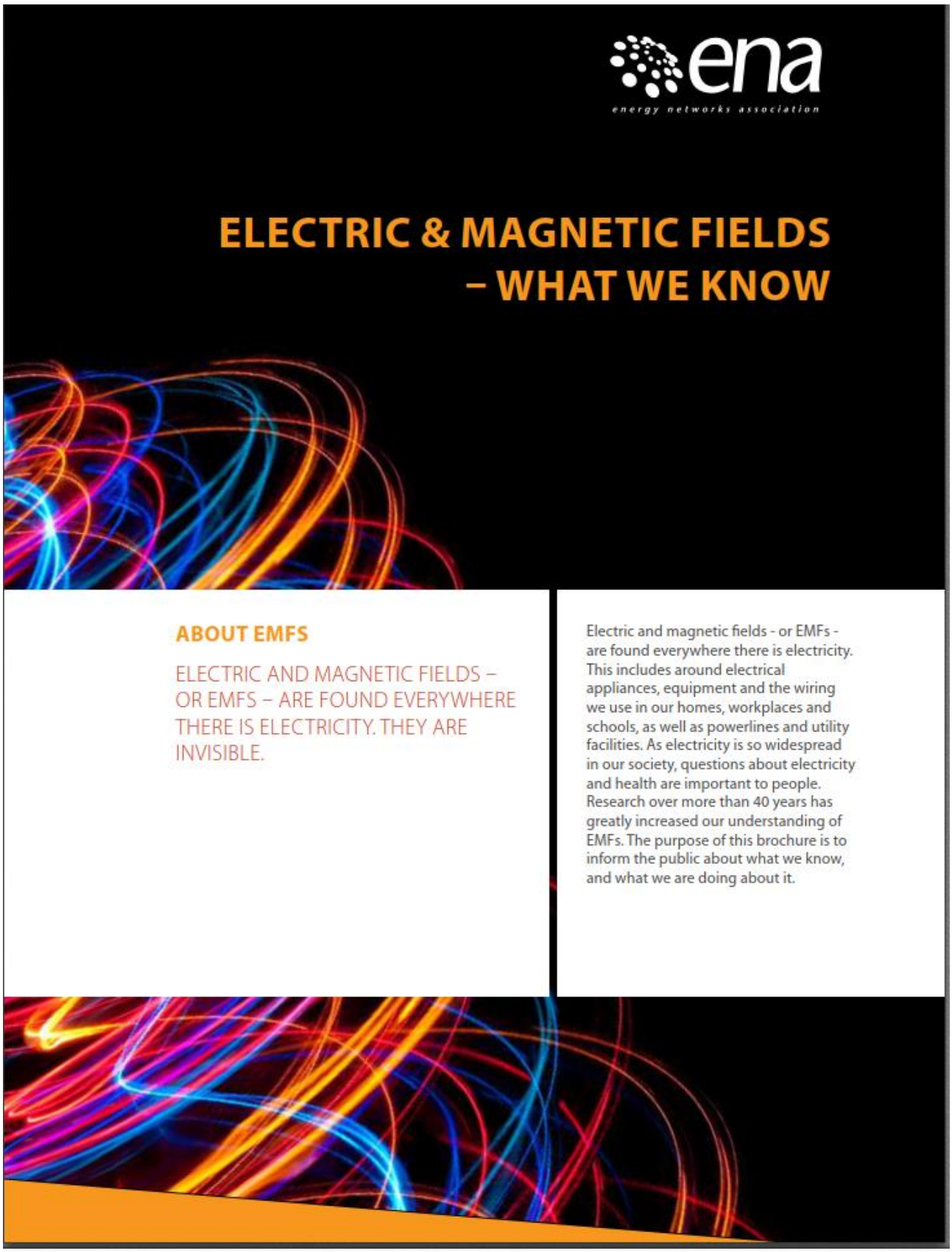
Whilst trees growing into the safety clearance zones for overhead power lines is the focus of Endeavour Energy's vegetation management program, while trees and underground cables often coexist well together, it is also important to keep trees a safe distance away from the cables to prevent the root system 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.

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 (Transport and Infrastructure) 2021 (NSW)
State Environmental Planning Policy (Resilience and Hazards) 2021 (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
SafeWork NSW 'Work Near Underground Assets – Guide 2007'
WorkCover (now SafeWork NSW) 'Work Near Overhead Power Lines Code of Practice 2006'

39 Appendices

39.1 Energy Networks Association (ENA) ‘Electric & Magnetic Fields – What We Know’


ena
energy networks association
ELECTRIC & MAGNETIC FIELDS
– WHAT WE KNOW
ABOUT EMFS
ELECTRIC AND MAGNETIC FIELDS – OR EMFS – ARE FOUND EVERYWHERE THERE IS ELECTRICITY. THEY ARE INVISIBLE.
Electric and magnetic fields - or EMFs - are found everywhere there is electricity. This includes around electrical appliances, equipment and the wiring we use in our homes, workplaces and schools, as well as powerlines and utility facilities. As electricity is so widespread in our society, questions about electricity and health are important to people. Research over more than 40 years has greatly increased our understanding of EMFs. The purpose of this brochure is to inform the public about what we know, and what we are doing about it.

WHAT ARE ELECTRIC FIELDS?

Electric fields are related to the voltage, or the pressure which pushes electricity along wires. The higher the voltage, the higher will be the electric field. Electric fields are present in any appliance plugged into a power point which is switched on. Even if the appliance itself is turned off, if the power point is on, an electric field will be present.

Electric fields are strongest closest to their source, and their strength diminishes rapidly as we move away from the source. The many common materials such as brickwork or metal will block electric fields. Walls, tables and bench tops can act as shields.

WHAT ARE MAGNETIC FIELDS?

Magnetic fields are produced by the flow of electricity, commonly known as current. Unlike electric fields, magnetic fields are only present when electric current is flowing. In other words, if an appliance is operating (even while in 'standby' mode), a magnetic field is produced.

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. While electric fields are shielded by many common materials, this is not the case with magnetic fields. This is one reason why power lines may contribute to magnetic fields in the home and why burying power lines will not eliminate magnetic fields.

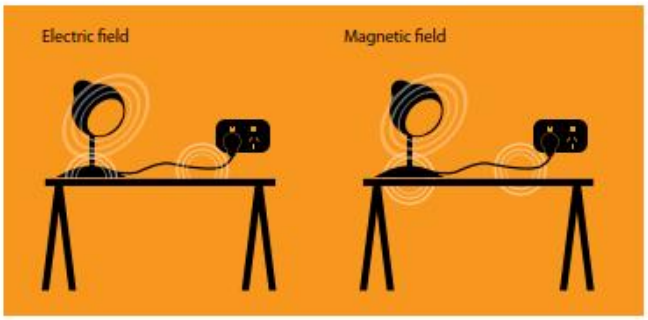
EMFS AND HEALTH

Research on EMFs and health has been conducted for over 40 years. This includes over 2,900 studies at a cost of more than $490 million internationally.

The research has generally focused on the magnetic fields with two main areas of research, *epidemiology* and *laboratory* studies. Both areas would need to provide links between EMFs and adverse health effects for causality to be accepted by health authorities.

Epidemiology (population).

This research looks at statistics to see if there are patterns of disease in large groups of people. The difficult with large statistical studies is that they take several years to produce meaningful results and even then, there are different opinions about how the results should be interpreted.



There may be other factors in the study which could complicate the interpretation of the results. Scientists generally agree that epidemiological studies aren't strong enough by themselves to establish that adverse health effects exist.

Laboratory

In the laboratory researchers have studied animals cells, as well as human volunteers under controlled circumstances to see if EMFs have any effects.

There have been many hundreds of these studies, and scientists look for results which can be successfully repeated in different laboratories. In over 40 years of research there have been no such consistently reproducible results for exposures below the guidelines.

AUTHORITATIVE REVIEWS

It is well accepted by scientists that no one study considered in isolation will provide a meaningful answer to the question of whether or not EMF can contribute to adverse health effects. In order to make an informed conclusion from all of the research, it is necessary to consider the science in its totality.

All of the research is reviewed periodically by expert panels which are established by national or international bodies with the purpose of trying to determine whether or not human exposure to EMF is related to adverse health effects.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Commonwealth Government agency charged with the responsibility for protecting the health and safety of people and the environment from EMF. ARPANSA advises that:

"The scientific evidence does not establish that exposure to ELF EMF found around the home, the office or near powerlines and other electrical sources is a hazard to human health".

"There is no established evidence that ELF EMF is associated with long term health effects. There is some epidemiological research indicating an association between prolonged exposure to higher than normal ELF magnetic fields (which can be associated with residential proximity to transmission lines or other electrical supply infrastructure, or by unusual domestic electrical wiring), and increased rates of childhood leukaemia.

However, the epidemiological evidence is weakened by various methodological problems such as potential selection bias and confounding. Furthermore this association is not supported by laboratory or animal studies and no credible theoretical mechanism has been proposed."

These findings are consistent with the views of other credible public health authorities. For example the World Health Organisation (WHO) advises that:

"Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."

Similarly, the US National Cancer Institute concludes that:

Currently, researchers conclude that there is little evidence that exposure to ELF-EMFs from power lines causes leukemia, brain tumors, or any other cancers in children."

"No mechanism by which ELF-EMFs could cause cancer has been identified. Unlike high-energy (ionizing) radiation, ELF-EMFs are low energy and non-ionizing and cannot damage DNA or cells directly."

"Studies of animals exposed to ELF-EMFs have not provided any indications that ELF-EMF exposure is associated with cancer, and no mechanism has been identified by which such fields could cause cancer."

EMF GUIDELINES FOR ESTABLISHED HEALTH EFFECTS

The two internationally recognised exposure guidelines are:

- International Commission in Non-Ionizing Radiation Protection (ICNIRP) 2010; and
- International Committee on Electromagnetic Safety, Institute of Electrical and Electronics Engineers (IEEE) 2002.

ARPANSA's advice is:

- *"The ICNIRP ELF guidelines are consistent with ARPANSA's understanding of the scientific basis for the protection of the general public (including the foetus) and workers from exposure to ELF EMF".*
- Under the ICNIRP guidelines of 2010 the recommended magnetic field public exposure limit is 200 microtesla.

Under the IEEE Standard of 2002 the recommended magnetic field public exposure limit is 904 microtesla.

FIGURE 1: TYPICAL MAGNETIC FIELD MEASUREMENT RANGES

Magnetic Field Source	Range of Measurements in μT*
Electric stove	0.2 – 3
Refrigerator	0.2 – 0.5
Electric kettle	0.2 – 1
Toaster	0.2 – 1
Television	0.02 – 0.2
Personal computer	0.2 – 2
Electric blanket	0.5 – 3
Hair dryer	1 – 7
Pedestal fan	0.02 – 0.2
Substation	
» substation fence	0.1 - 0.8
Distribution line	
» under line	0.2 – 3
» 10m away	0.05 – 1
Transmission Line	
» under line	1 – 20
» edge of easement	0.2 - 5

* Note: Levels of magnetic fields may vary from the range of measurements shown. Appliance measurements at normal user distance.

Source: ARPANSA, Measuring magnetic fields

GUIDE TO COMMON EMFS

It is possible to measure magnetic fields using a gaussmeter.

The fields are measured in a unit of microtesla (μT) or milligauss (mG). 1 Microtesa (μT) equals 10 milligauss (mG).

To give you an idea of the relative strengths of EMF, the following guide shows the typical magnetic fields close to appliances and under power lines.

Due to variations in the design of electrical appliances / powerlines and the power consumed or transmitted, the levels of magnetic fields will vary.

ENA'S RESPONSE?

Electricity utilities review scientific developments related to EMFs and are guided by relevant health authorities. In Australia, the Energy Networks Association (ENA) recommends that electricity utilities provide balanced and accurate information to the community and design and operate electrical power systems prudently within relevant health guidelines. This includes such actions as:

- providing training to staff;
- informing the community;
- ensuring that fields are within established guidelines set by health authorities; and
- practising "prudent avoidance" when building new electrical facilities.

Prudent avoidance involves reducing magnetic field exposure where this is practicable and can be done at no cost or very low cost.

The industry has followed this reasonable, common sense approach for many years.

INDIVIDUALS RESPONSE

There are some things you can do very easily to reduce exposure to EMF. Since EMFs drop off rapidly as you move away from their source, you can modify your use of electrical appliances such as clock radios. You can locate beds away from a wall that has a switchboard outside and you can switch off your electric blanket before you get into bed. These actions may reduce exposure to EMFs but it cannot be said that doing any of these things will have any health benefit.

For further information about EMFs:

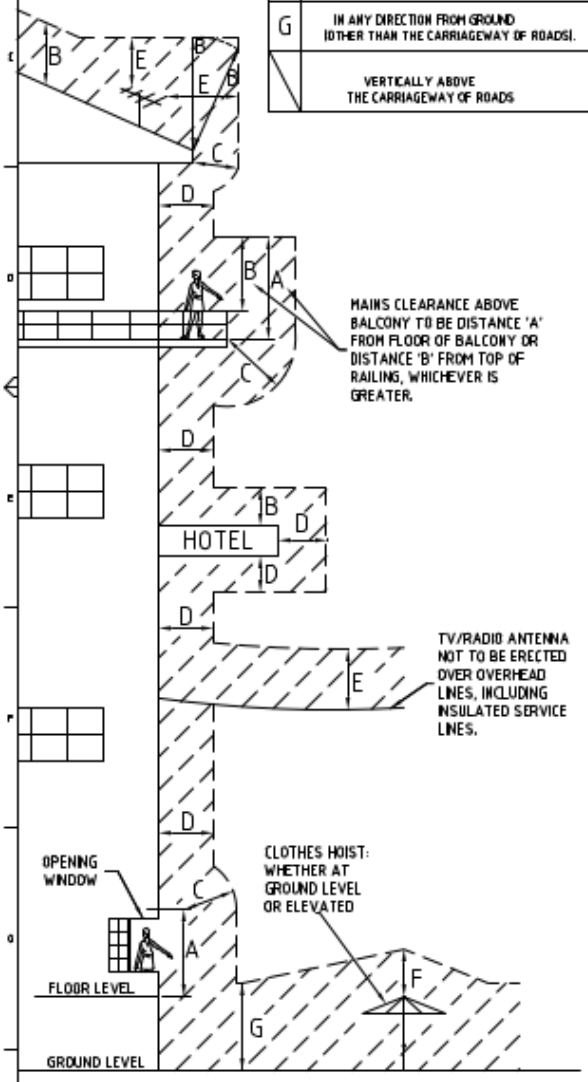
- your local electricity utility or the Energy Networks Association (ENA) www.ena.asn.au;
- the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) - www.arpansa.gov.au
- the World Health Organisation (WHO) – www.who.int

Energy Networks Association Ltd
P +61 2 6272 1555 E info@ena.asn.au
Level 1, 110 Giles St, Kingston ACT 2604
www.ena.asn.au

UPDATED DEC 2015 PUBLISHED FEB 2016

39.2 Endeavour Energy Drawing 86232 ‘Overhead Lines Minimum Clearances Near Structures’

APPLICATION \ NOMINAL VOLTAGE (U) & CONDUCTOR		U ≤ 1000V			U > 1000V		1000V < U ≤ 33kV	33kV < U ≤ 132kV
		INSULATED (mm)	BARE NEUTRAL (mm)	BARE ACTIVE (mm)	INSULATED WITHOUT EARTHED SCREEN (mm)	INSULATED WITH EARTHED SCREEN (mm)	BARE CONDUCTORS (mm)	BARE CONDUCTORS (mm)
A	VERTICALLY ABOVE THOSE PARTS OF ANY STRUCTURE NORMALLY ACCESSIBLE TO PERSONS	2700	2700	3700	3700	2700	4500	5000
B	VERTICALLY ABOVE THOSE PARTS OF ANY STRUCTURE NOT NORMALLY ACCESSIBLE TO PERSONS BUT ON WHICH A PERSON MAY STAND	2000	2700	2700	2700	2700 NOTE 4	3700	4500
C	IN ANY DIRECTION (OTHER THAN VERTICALLY ABOVE) FROM THOSE PARTS OF ANY STRUCTURE NORMALLY ACCESSIBLE TO PERSONS, OR FROM ANY PARTS NOT NORMALLY ACCESSIBLE TO PERSONS BUT ON WHICH A PERSON CAN STAND	1000	900 NOTE 5 (1200)	1500	1500	1500 NOTE 4	2100	3000
D	IN ANY DIRECTION FROM THOSE PARTS OF ANY STRUCTURE NOT NORMALLY ACCESSIBLE TO PERSONS	100 NOTE 2	300 NOTE 2	600 NOTE 2	600	100	1500	2500
E	IN ANY DIRECTION FROM ANY PART OF AN OUTDOOR TELEVISION ANTENNA OR PART OF A STAYWIRE	1800	1800	1800	3000	3000	3000	3000
F	IN ANY DIRECTION FROM CLOTHES LINE	2000	3000	3000	3000	3000	3000	3000
G	IN ANY DIRECTION FROM GROUND (OTHER THAN THE CARRIAGEWAY OF ROADS).	5500 NOTE 6	5500	5500	5500 NOTE 5 (7500)	5500	5500 NOTE 5 (7500)	6700 NOTE 5 (7500)
	VERTICALLY ABOVE THE CARRIAGEWAY OF ROADS	5500	5500	5500	6000 NOTE 5 (7500)	5500	6700 NOTE 5 (7500)	6700 NOTE 5 (7500)



GENERAL NOTES

1. THE POINT OF ATTACHMENT IS HERE DEFINED AS THE POINT AT WHICH Endeavour Energy'S AERIAL SERVICE MAINS JOIN ONTO THE CONSUMERS BUILDING OR STRUCTURE OR ELSE THE FIRST POLE PAST THE BOUNDARY OF THE CONSUMERS PREMISES.
2. THIS CLEARANCE MAY BE REDUCED TO ALLOW FOR TERMINATION AT POINT OF ATTACHMENT.
3. FOR CLEARANCE REQUIREMENTS OF INSULATED AERIAL SERVICE MAINS, REFER Endeavour Energy'S DRAWING 011985.
4. HIGH VOLTAGE NON-METALIC SCREENED AERIAL BUNDLED CONDUCTOR (NMS-HV ABC) IS CLASSIFIED AS INSULATED WITH EARTHED SCREEN FOR CLEARANCE PURPOSES, EXCEPT FOR DIMENSIONS B & C.
5. TO KEEP LINES BEYOND THE REACH OF PERSONS, THE DESIGN CLEARANCES (SHOWN IN BRACKETS) REQUIRED BY Endeavour Energy IN THESE SITUATIONS ARE GREATER THAN THOSE REQUIRED BY INDUSTRY GUIDELINES.
6. DOES NOT INCLUDE INSULATED SERVICE LINES.

MINIMUM CLEARANCE REQUIREMENTS

MINIMUM SAFE CLEARANCES ARE SPECIFIED IN ELECTRICITY SUPPLY (SAFETY & NETWORK MANAGEMENT) REGULATION 2008, & GUIDELINES FOR DESIGN & MAINTENANCE OF OVERHEAD DISTRIBUTION & TRANSMISSION LINES (ENA C(b)1-2006). DETAILS SHOWN ON THIS DRAWING COMPLY WITH ENDEAVOUR ENERGY PRACTICE.

THESE CLEARANCES ARE THE MINIMUM NECESSARY WHEN ANY Endeavour Energy OVERHEAD LINE WILL BE IN ITS CLOSEST POSITION TO THE BUILDING OR OTHER STRUCTURE DURING STRONG WINDS OR MAXIMUM OPERATING TEMPERATURE (EXCLUDING FAULT CURRENTS OR EMERGENCY LOAD CURRENTS). UNDER THESE CONDITIONS, CONDUCTOR MAY SWING OR SAG CONSIDERABLY TOWARDS THE BUILDING OR STRUCTURE COMPARED WITH NORMAL CONDITIONS. ADEQUATE ALLOWANCE SHOULD BE MADE FOR THIS POSSIBLE SWING OR SAG OF CONDUCTORS.

OVERHEAD LINES MUST NOT COME WITHIN HATCHED AREAS. MINIMUM CLEARANCES SHOWN ARE FOR Endeavour Energy OVERHEAD LINES UP TO THE POINT OF ATTACHMENT (AS DEFINED IN NOTE 1). MINIMUM CLEARANCES PAST THE POINT OF ATTACHMENT ARE TO BE IN ACCORDANCE WITH SAA WIRING RULES (AS/NZS3000).

Endeavour Energy

DO NOT SCALE DIMENSIONS IN MILLIMETRES

ORIGINAL SCALE NONE

APPROVED C.BROWN

AUTHORISED W.ISLEY

DRAWN C.R.T. 16-3-95

DATE 16-3-95

CHD

Endeavour Energy OVERHEAD LINES
MINIMUM CLEARANCES NEAR STRUCTURES

A2P 086232 K

SHEET No 1 OF 1 SHEETS

endeavourenergy.com.au

Endeavour Energy

POWER together

Transport for NSW

TfNSW Reference: SYD24-00315

Mr Fadi Shakir and Stuart Withington
Department of Planning, Housing and Infrastructure
4 Parramatta Square, 12 Darcy Street
Locked Bay 5022
Parramatta NSW 2124

Via email aerotropolis.tap@dpie.nsw.gov.au
CC fadi.shakir@planning.nsw.gov.au and stuart.withington@planning.nsw.gov.au

RESPONSE TO THE DRAFT BRADFIELD CITY CENTRE MASTER PLAN EXHIBITION 5 March 2024

Dear Fadi Shakir and Stuart Withington,

Transport for New South Wales (TfNSW) appreciates the opportunity to comment on the draft Bradfield City Centre Master Plan exhibited for public comment from 5 February to 4 March 2024.

TfNSW has been part of the Department of Planning, Housing and Infrastructure (DPHI)'s Technical Assurance Panel (TAP), established to oversee and advise on the preparation of draft master plans within the Western Sydney Aerotropolis. Accordingly, TfNSW reviewed and provided feedback upon the draft Bradfield City Centre Master Plan during the TAP process concluding in August 2023.

TfNSW has also reviewed the draft Bradfield City Centre Master Plan during this exhibition to confirm it has adequately addressed advice provided by TfNSW as part of the TAP process. Please see enclosed a comment register (Attachment A) with minor changes to be reflected in the next issue of documents. Additionally, please note that further feedback relevant to transport planning, road design and servicing requirements will be addressed in the Access and Servicing Plan, an undertaking within the Bradfield City Centre Master Plan.

TfNSW notes, as stated in the Bradfield City Centre Master Plan, the proponent is to work with TfNSW to develop the Access and Servicing Plan together with key stakeholders, including DPHI and Liverpool City Council. The Transport Management Accessibility Plan (TMAP), submitted with the draft Bradfield City Centre Master Plan, details the scope of the Access and Servicing Plan which includes, but is not limited to:

- Refinement of road design to inform subsequent planning applications
- Consideration of intersection treatments
- Bus servicing and operational needs (local and rapid services) to ensure identified roads are bus capable in line with TfNSW standards
- Freight Access and Loading
- Active transport connections
- Network prioritisation and staging elements
- Consideration of future speed zones
- The conversion of the transit boulevards to bus only
- Development of individual Green Travel Plans for future development sites post-TMAP and Master Plan to examine how mode share targets can be achieved
- Integration of public transport and land use for accommodating bus stops on BLMR if high-density development is to be adequately served by public transport

- Examine potential to convert the Transit Boulevard Bus Zone to bus only as it may not be feasible to operate with mixed traffic from day one
- Review street designs, tree canopy priorities and street carriageway space to ensure efficient bus and city centre traffic operations and pedestrian-friendly environments
- Review the need and options for service vehicles access to the Metro station.

TfNSW has identified the following additional matters, in its review of the draft Master Plan, to be included in the Access and Servicing Plan:

- Encouraging on-demand transit
- Advancing bus priority and mode share outcomes through effective bus infrastructure, coach access and facilities and timely provision of bus access and infrastructure
- Ensuring roads achieve safe and effective bus access in addition to overall safety and efficiency
- Enabling seamless connections between active and public transport
- Providing for freight access and a future logistics hub
- Integrating the outputs of TfNSW Strategic Dynamic Traffic Assignment model.

The Access and Servicing Plan will set out how to deliver a connected and accessible transport network to support the movement of people and freight to and across Bradfield City Centre. TfNSW looks forward to productive discussions with WPCA and key stakeholders relevant to the Access and Servicing Plan and incorporation of the outcomes in the future planning and delivery of Bradfield.

Up-to-date transport modelling based on validated and endorsed assumptions is a critical tool to manage and plan for effective movements and appropriate infrastructure provision in the transport network. Please note contemporary transport modelling, including the latest forecasts, road network and land use assumptions are required, as part of any future development applications. Intersection arrangements will also be subject to further approval by TfNSW and be informed by the Access and Servicing Strategy. TfNSW can make available access to the newly developed Strategic Dynamic Traffic Assignment (SDTA) model for the Western Sydney Aerotropolis to support future planning applications.

Any queries, please do not hesitate to contact us via TfNSW.Aerotropolis.TAP@transport.nsw.gov.au.

Sincerely,

Graham Richardson
Director Program Management & Integration
Western Sydney Aerotropolis
Greater Sydney Division

Attachment A

#	Document	Section / Page Number	Action to be provided to WPCA
1	Noise & Vibration	Table 7 & 8	The lane volume estimates should reflect modelling in the TMAP
2	Noise &Vibration	6.1.4; 6.3.2	Add the following wording - Any development adjacent to the future transport corridors must comply with *Development Near Rail Corridors and Busy Roads – Interim Guidelines*. There may be greater attenuation required for sensitive or residential development.
3	Design Excellence	Page 8, 12, 14	Following note to be added to the design excellence strategy - 'Development within 25m of the SP2 zoned Infrastructure Corridor or within 25m of the Sydney Metro - Western Sydney Airport "rail corridor" must first consult with Transport for NSW and Sydney Metro and consider Rail Requirements'.
4	Design Excellence	Page13	Add future Transport Corridors to the list on Page 13.
5	TMAP	General	Change wording - replace ‘secondary bus' with ‘local bus’.
6	Flood Impact Assessment	Page 12	Note: all figures within Appendix 1 of the FIA, dated Oct. 2023, are draft. WPCA to provide TfNSW final document when available.
7	Master Plan	Page 44	Show SEPP Transport corridor as a land use.
8	Master Plan	Page 44	Retitle Character Area map to "Land Use and Character Areas".
9	Master Plan	Page 84 & 85	Show pedestrian and cyclist crossings on Pedestrian and Cycling Network maps.
10	Master Plan and associated Planning reports	General	All road cross sections are to include the following disclaimer consistent with the TMAP - The overall form and road space allocation shown will be subject to detailed design. The intersection design and bus stops will be developed in consultation with TfNSW and are subject to future approvals. Tree Planting will not preclude the operation of double-decker buses on bus-capable roads