
Technical report 15

Preliminary risk screening



REPORT

PRELIMINARY RISK SCREENING

HUNTER TRANSMISSION PROJECT

SSI-70610456

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ABBREVIATIONS

ADGC	Australian dangerous goods code
CSSI	critical State significant infrastructure
DG	dangerous goods
DPHI	NSW Department of Planning, Housing and Infrastructure
EIS	environmental impact statement
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
GHS	globally harmonized system
HTP	Hunter Transmission Project
kV	kilovolt
LPG	liquefied petroleum gas
MVA	megavolt ampere
NSW	New South Wales
PG	packing group
PHA	preliminary hazard analysis
REZ	Renewable Energy Zone
SEARs	Secretary's environmental assessment requirements
SEPP	State Environmental Planning Policy

GLOSSARY

Access tracks	Temporary and permanent tracks used to access the project. Refer to <i>Chapter 4 – Project description</i> of the EIS for further details.
Bayswater Power Station	Existing power station at Bayswater owned by AGL.
Bayswater South switching station	The new switching station that would be constructed south of Bayswater Power Station.
Construction impact area	The area that would be directly impacted by the construction of the project, including (but not limited to) transmission towers and lines, stringing sites, access roads, access tracks, substations, switching stations, adjustments and upgrades to existing lines, communications infrastructure, temporary worker accommodation, construction support sites, laydown areas and utility adjustments.
Construction access routes	Roads used by construction vehicles (light and heavy).
Construction support site	An area used as the base for construction activities, usually for the storage of plant/equipment and materials, processing facilities (concrete batching, aggregate crushing, grinding and screening), maintenance facilities/workshops, staff facilities, firefighting equipment, helicopter landing pad and support facilities, access and parking, and wastewater treatment. Some construction support sites would also include temporary worker accommodation. Construction support sites are discussed in <i>section 4.3.5</i> of the EIS.
Critical State significant infrastructure (CSSI) application area	The critical State significant infrastructure (CSSI) application for the HTP covers 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie).
Cumulative impact	The combined impacts of the project on a matter with other relevant future projects.
Disturbance area	This is used primarily to assess potential impacts on biodiversity values in <i>Technical Report 1 – Biodiversity development assessment report</i> . Includes the following categories: • Disturbance area A • Disturbance area A (centreline) • Disturbance area B • Disturbance area HZ.
Disturbance area A	The area where vegetation would be completely removed. It includes areas at and around transmission towers (including tower pads and batters), stringing sites, laydown areas, switching stations, substation upgrades, construction support sites, new and upgraded access tracks and road upgrades.

Impacts within this area would include sub-surface disturbance from construction activities such as grading, excavation, and full tree removal. With the exception of areas that only require temporary disturbance (i.e. temporary access tracks and stringing sites), this area would also be subject to ongoing maintenance during operation (including vegetation removal to ground level) for operational and safety requirements, including bushfire risk management.

Disturbance area A (centreline)	A 20 m wide centreline area between transmission towers where all vegetation would be removed to ground level during construction. This area would also be subject to ongoing maintenance during operation (i.e. removal to maintain vegetation clearance requirements) for operational and safety requirements, including bushfire risk management.
Disturbance area B	The area within the transmission line easement, excluding disturbance area A and disturbance area A (centreline), where partial clearing would be undertaken. Removal of vegetation (including trees) would be undertaken only where it has the potential to exceed vegetation clearance heights. These heights are set for operational and safety requirements, including bushfire risk management (a minimum of 13.5m below the conductors at maximum operating temperature). Vegetation with mature growth heights up to 2 m can remain, while vegetation exceeding 2 m will be managed to maintain these clearance heights. This area would be subject to ongoing maintenance during operation.
Disturbance area hazard tree zone (HZ)	Hazard trees are those that have the potential to pose a risk to safe operation of the transmission line by falling onto the transmission towers, conductors and associated infrastructure within the easement. A hazard tree zone has been identified in limited areas on either side of the transmission line easement through LiDAR analysis of tree heights and topography. Hazard tree management would occur during operation to maintain safe operating clearances for the conductors and tower structures. The hazard tree zone will be inspected for trees in the height range of 20 m or more, which is typically in the high-risk category. High-risk category trees will be assessed for structural instability and managed according to the risk present, including tree removal if required.
EnergyCo	The Energy Corporation of New South Wales constituted by section 7 of the <i>NSW Energy and Utilities Administration Act 1987</i> as the NSW Government controlled statutory authority appointed as the infrastructure planner under the <i>NSW Electricity Infrastructure Investment Act 2020</i> responsible for the delivery of NSW's Renewable Energy Zones. The proponent for the HTP.
Eraring Power Station	Existing power station at Eraring operated by Origin Energy.
Exclusion zone	A safe clearance area around the transmission line and towers to protect public safety, the network and to maintain access to the asset. It delineates the area where most land use activities are prohibited. The zone is located within the easement and is defined according to the operational voltage and design of the infrastructure.

Hunter Transmission Project (HTP) or the project	The HTP as described in <i>Chapter 4 (Project description)</i> of the EIS and identified in the overview figures of the EIS.
HTP corridor	Comprises: - the transmission line corridor connecting Bayswater South switching station to Olney switching station. - the transmission line corridor connecting the Bayswater South switching station to the existing 500 kV transmission line near Bayswater Power Station - the transmission line corridor connecting the Olney switching station to the existing 500 kV transmission line between Eraring and Kemps Creek. The HTP corridor is around 140 metres wide.
HTP North, HTP Central and HTP South	3 geographical zones defined as: - HTP North – Bayswater to Broke includes the Bayswater Power Station, major coal mining complexes in the Upper Hunter Valley, Mount Thorley Industrial Estate, Singleton Military Area, and several rural properties generally on the alluvial floodplains of the Hunter River - HTP Central – Pokolbin to Corrabare includes the Pokolbin and Corrabare State forests and the rural residential areas between these forests at Cedar Creek, Millfield and Laguna - HTP South – Olney to Eraring includes the Watagan and Olney State forests, Watagans National Park, the residential areas in Martinsville and Cooranbong, and Eraring Power Station.
Laydown areas	Established to allow for flexibility in construction and to minimise the need for vehicle movements to and from the construction support sites. These would act as temporary staging, storage, and complex plant/equipment setup areas. They would also act as traffic control nodes during construction of the HTP.
No clearing zone	Areas within the transmission line easement where vegetation removal is not required. These areas would occur where there is sufficient separation of 10m or more between the maximum operating temperature conductor position and the existing vegetation. This area is excluded from the disturbance area.
Operation impact area	The area that would be occupied by permanent components of the project and/or maintained, including transmission line easements, transmission lines and towers, substations, switching stations, communications infrastructure, maintenance facilities, permanent access roads to substations and switching stations and access tracks to the transmission line easement.
Pre-construction minor works	Activities with a low potential to impact the environment that may be permissible in advance of construction and without the requirement for an approved environmental management strategy/construction management plan.

Project impact area	The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
(the) proponent	The Energy Corporation of NSW (EnergyCo).
Refinement	A change that fits within the limits set by the project description contained in the EIS for the HTP and does not change what the proponent is seeking approval for and/or does not require an amendment to the application for the HTP.
Renewable Energy Zone (REZ)	A geographic area identified and declared by the NSW Government as a Renewable Energy Zone.
Stringing site	Used for the preparation, assembly and operation of stringing equipment to connect the transmission line to the towers. Stringing sites would be positioned along the HTP corridor. On other transmission projects, they may be referred to as 'brake and winch' sites.
Substation	A facility used to increase or decrease voltages between incoming and outgoing lines (e.g. 330 kV to 500 kV).
Switching station	A facility used to connect 2 or more distinct transmission lines of the same designated voltage.
Temporary worker accommodation	Temporary accommodation that would be erected and used during construction to house the construction workforce. Worker accommodation would be located at some construction support sites.
Transgrid	Preferred network operator for the HTP.
Transmission line easement	An area surrounding and including the transmission lines which is a legal proprietary right and allows for ongoing access and maintenance of the transmission lines. Landowners can typically continue to use most of the land within transmission line easements, subject to some restrictions for safety and operational reasons.
Transmission tower	For 500kV transmission lines, this is typically a free-standing steel lattice structure (suspension or tension tower). Transmission towers for the HTP would generally be up to 85 m high.

EXECUTIVE SUMMARY

The Hunter Transmission Project (HTP, the project) involves the construction of a new overhead 500 kilovolt (kV) transmission line of around 110 kilometres connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring in the Hunter region of New South Wales (NSW).

The NSW Minister for Planning and Public Spaces has declared the HTP to be critical State significant infrastructure (CSSI) under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) requiring an environmental impact statement (EIS) to address the Secretary's environmental assessment requirements (SEARs) issued on 13 August 2024. To support the EIS, a preliminary risk screening in accordance with Chapter 3 of the State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2021, (NSW Government 2021), and the Applying SEPP 33 guideline, (NSW Department of Planning 2011), was completed. The screening demonstrated that the HTP can be constructed and operated to ensure the development is not 'potentially hazardous', and a Preliminary Hazard Analysis (PHA) is not required through implementation of the risk mitigation measures detailed in *Chapter 6 (Conclusion and management of Impacts)*.

1. INTRODUCTION

The Hunter Transmission Project (HTP, the project) involves the construction of a new overhead 500 kilovolt (kV) transmission line of around 110 kilometres connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring in the Hunter region of New South Wales (NSW).

Due to its strategic importance, the NSW Minister for Planning and Public Spaces has declared the HTP to be critical State significant infrastructure (CSSI) under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Under this process, the Energy Corporation of NSW (EnergyCo, the proponent) is required to prepare an environmental impact statement (EIS) in accordance with the NSW Environmental Planning and Assessment Regulation 2021.

This preliminary risk screening report accompanies the EIS for the HTP and addresses the Secretary's environmental assessment requirements (SEARs) issued on 13 August 2024 (see Table 1.1).

In addition to the SEARs, advice from several government agencies was received on the HTP. No agency advice related to the preliminary risk screening was provided on the Major Projects website maintained by the NSW Department of Planning, Housing and Infrastructure (DPHI).

Table 1.1: HTP SEARs – Preliminary risk screening

Hazards	A preliminary risk screening completed in accordance with Chapter 3 of Resilience and Hazard SEPP 2021 and Applying SEPP 33 (DoP, 2011)
	A Preliminary Hazard Analysis (PHA) prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011), should the preliminary risk screening indicate that the project is “potentially hazardous”

2. THE HUNTER TRANSMISSION PROJECT

The Hunter Transmission Project (HTP, 'the project') is critical State significant infrastructure (CSSI). It must be built by the end of 2029 to protect energy security in NSW as the remaining coal-fired power stations close.

The HTP includes:

- a new overhead 500 kV double circuit transmission line of around 110 kilometres
- 2 new switching stations (Bayswater South and Olney)
- upgrades to the existing Bayswater and Eraring substations
- adjustments and upgrades to existing transmission lines
- property adjustment works to facilitate access to the transmission lines and switching stations
- utility adjustments required for the construction of the transmission network infrastructure
- ancillary works to support construction including road upgrades, establishment of new access tracks and upgrades to existing access tracks, construction support sites (some with temporary worker accommodation), and other construction facilities such as laydown areas.

The new transmission line would transport electricity generated in the Central-West Orana and New England Renewable Energy Zones (REZs). It would connect the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring. This would strengthen the State's core electricity grid and supply clean and reliable energy to NSW consumers for generations to come.

The HTP involves development across 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie). Most of this development would be concentrated in and around the HTP corridor.

An overview of the HTP is provided in Table 2.1 and shown in Figure 2.1. The key project elements are shown in Figure 2.2.

Further details are provided in *Chapter 4 (Project description)* of the HTP environmental impact statement (EIS).

Table 2.1: Project overview

Project component	Description
The project	• The critical State significant infrastructure application for the HTP covers 5 local government areas • Most development would be concentrated in and around the HTP corridor. Some ancillary development such as construction support sites and temporary worker accommodation, road upgrades and laydown areas would be outside the HTP corridor
Project impact area	• The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation
Construction and operation	• Construction impact area around 2351 ha • Operation impact area around 1261 ha
Disturbance area	• Disturbance area around 1266 ha • Disturbance area A around 683 ha • Disturbance area A (centreline) around 214 ha • Disturbance area B around 367 ha • Disturbance area HZ around 1.84 ha
New transmission line and transmission towers	• An overhead 500 kV double circuit transmission line of around 110 km between Bayswater South 500 kV switching station and Olney 500 kV switching station • Steel lattice towers generally up to 85 m high and spaced anywhere between 75 m to around 1.3 km apart (typically between 300 m and 600 m) • 500 kV transmission lines with a minimum ground clearance of 13.5 m • Ancillary infrastructure such as earth wire and communications systems • Construction easement of around 140 m wide • Operational easement around 70 m wide
Switching stations/ substation works	• New Bayswater South 500 kV switching station – construction impact area around 26.6 ha • Modifications at the existing Bayswater 500 kV/330 kV substation within the existing footprint • New Olney 500 kV switching station – construction impact area around 20 ha • Augmentation and modifications at the existing Eraring 500 kV/330 kV substation, including installation of 2 new transformers

Project component	Description
Adjustments and crossings – existing transmission lines	- Adjustments to existing double circuit 500 kV transmission lines: - Line 5A1 and 5A2: Eraring – Kemps Creek 500 kV at Ravensdale to connect to the new Olney 500 kV switching station - Line 5A3: Bayswater – Mt Piper 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station - Line 5A4: Bayswater – Wollar 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station - Adjustments to existing double circuit 330 kV transmission lines: - Line 31: Bayswater – Regentville 330 kV - Line 32: Bayswater – Sydney West 330 kV - Line 81: Newcastle – Liddell 330 kV - Crossing of existing double circuit 330 kV transmission lines: - Line 31: Bayswater – Regentville 330 kV at Bayswater - Line 32: Bayswater – Sydney West 330 kV at Bayswater - Line 81: 330 kV: Newcastle – Liddell 330 kV at Lemington and again at the Singleton Military Area - Line 82: 330 kV: Tomago – Liddell 300 kV at Warkworth and again at the Singleton Military Area
Upgrades – existing transmission lines and towers	- Upgraded earth wire on Line 5A3 and Line 5A4 - Upgraded earth wire and communications systems on Line 5A1 and Line 5A2 - Tower strengthening on various existing towers on Line 5A1, Line 5A2, Line 5A3 and Line 5A4
Road works	- Modifications to the existing public road network - New and upgraded access tracks for construction and operation
Construction support sites	- Five construction support sites: Hebden Road, Pikes Gully Road, Gouldsville Road, Wollombi Road and Freemans Drive - Helicopter pads (helipads) indicatively at: Hebden Road, Pikes Gully Road, Gouldsville Road and Freemans Drive
Ancillary sites	Laydown areas, which would be established to allow for flexibility in construction and to minimise the need for vehicle movements to and from the construction support sites
Utility adjustments	Third party utility works including gas, telecommunications, water, sewer and stormwater
Timing	- Construction to start in 2027 - Operation by end of 2029

Figure 2.1: Project overview

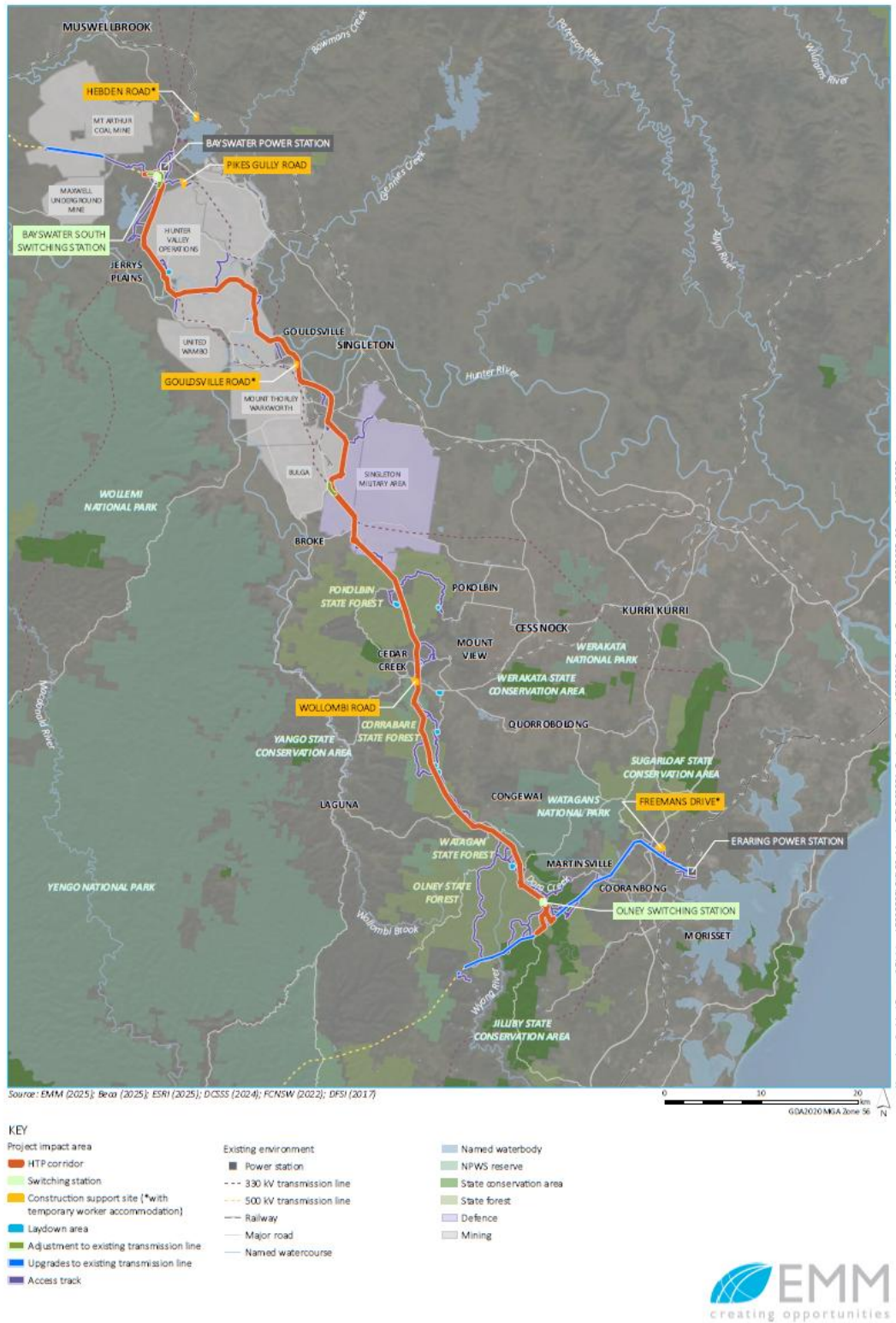
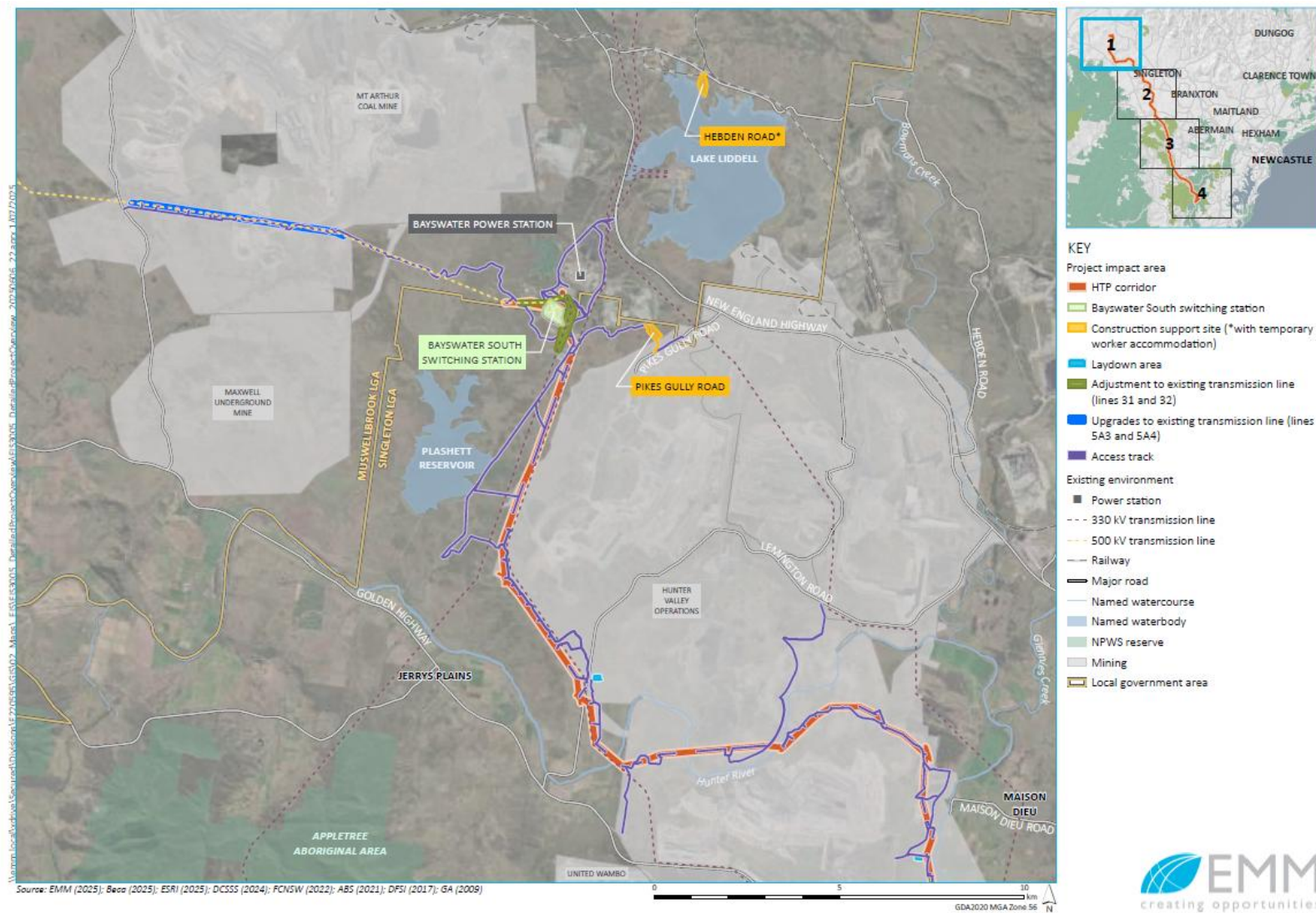
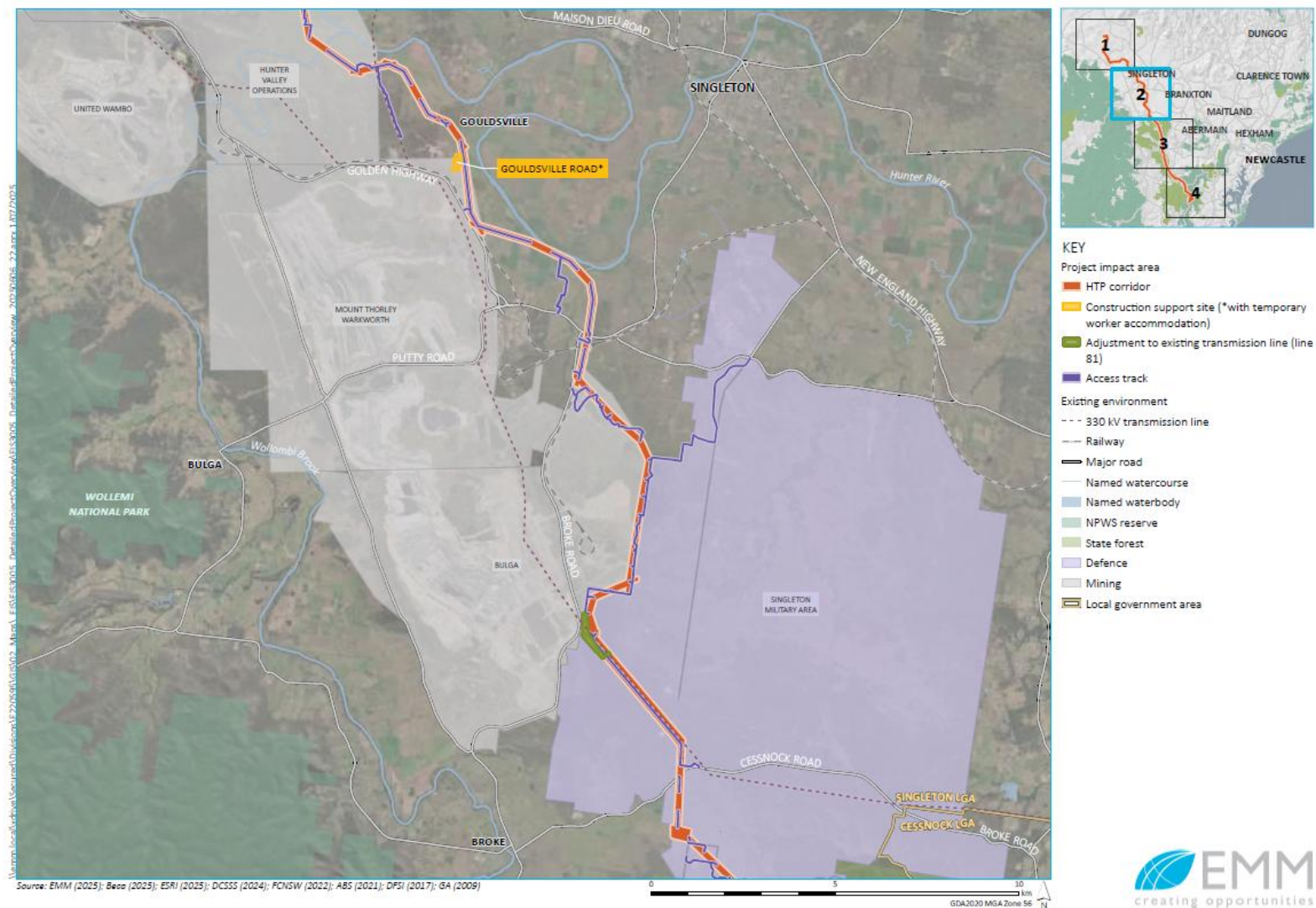
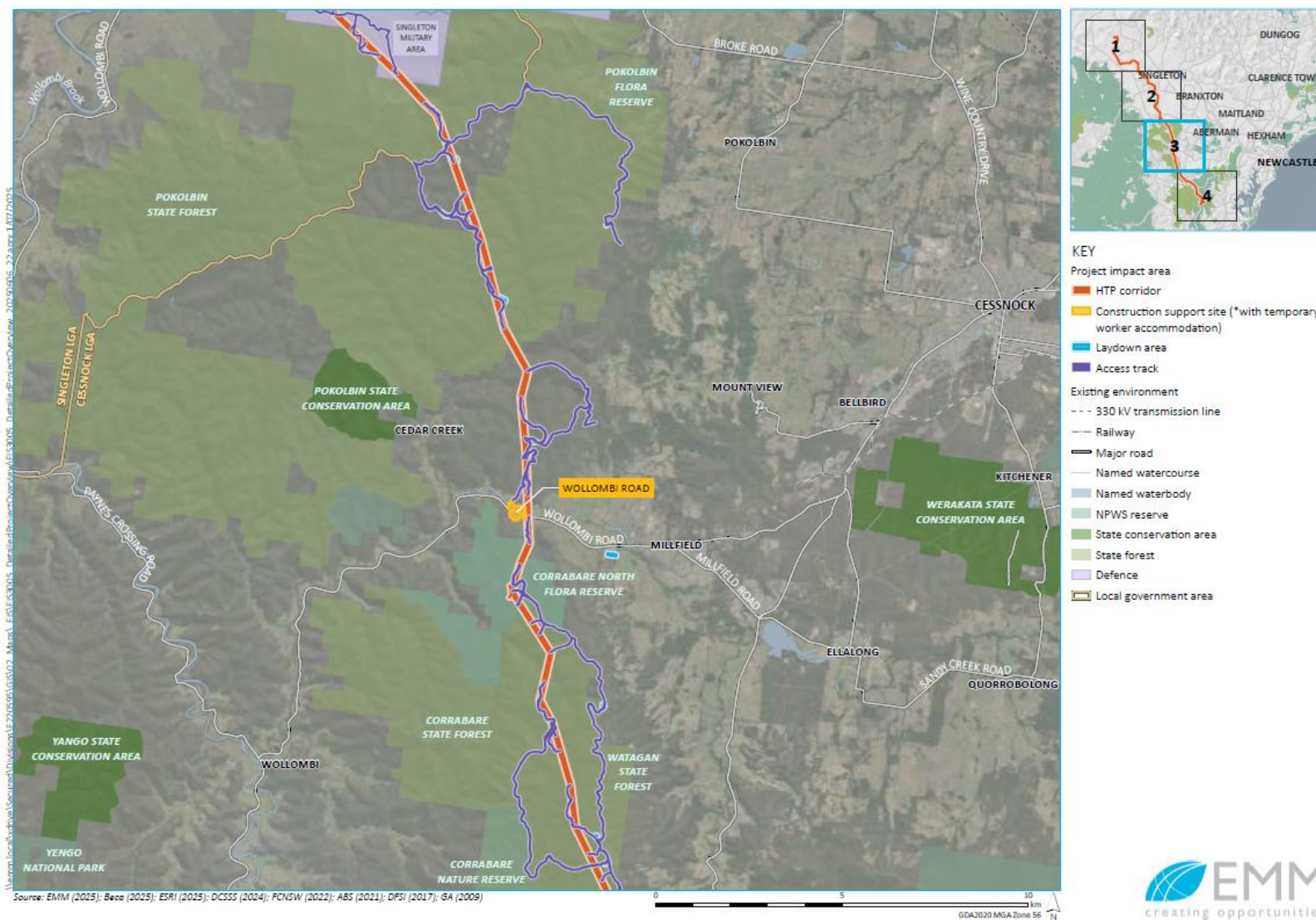
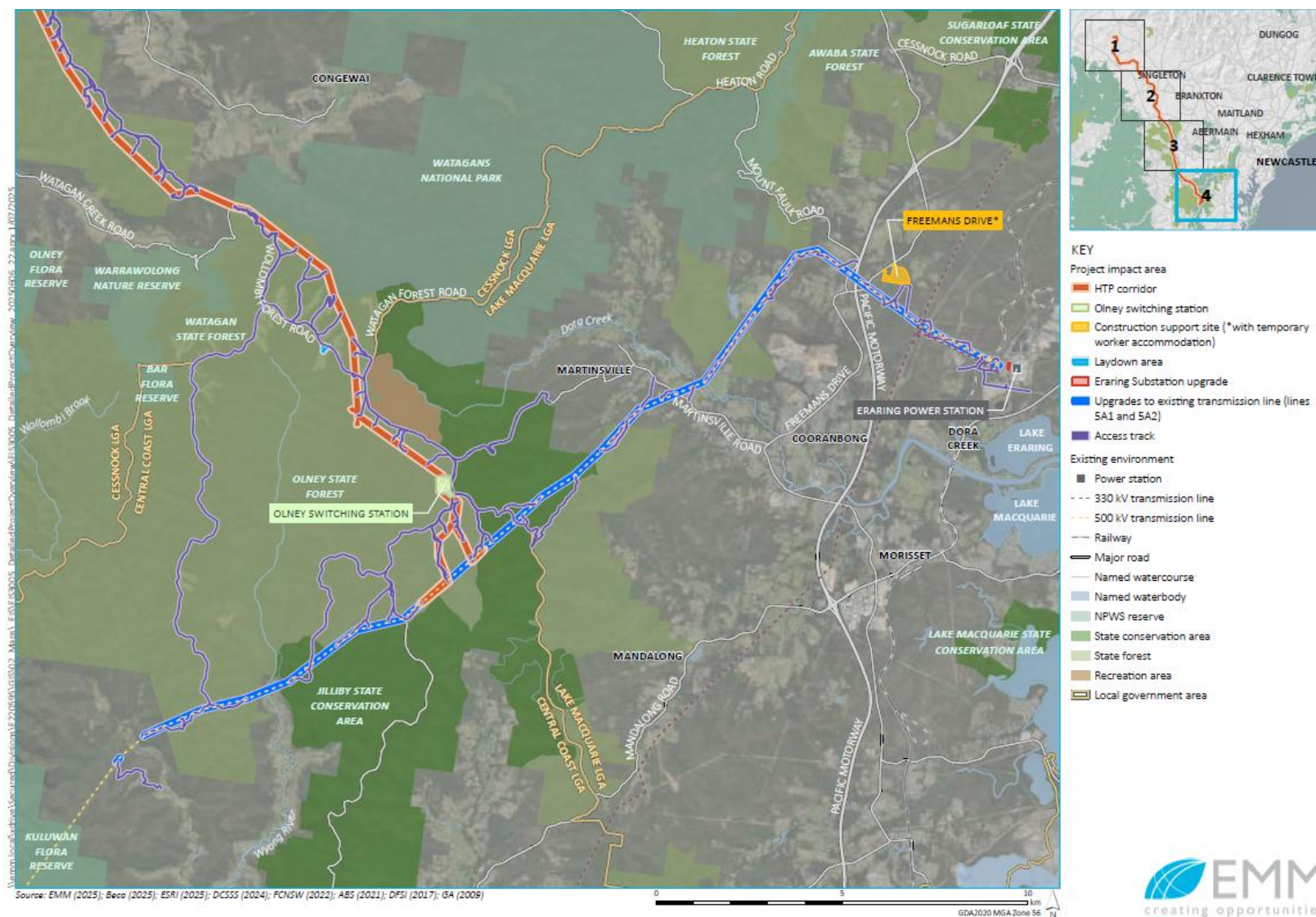


Figure 2.2: Project elements/construction overview









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3. APPROACH TO ASSESSMENT

The project includes a construction phase and an operational phase. Each phase is assessed independently in this document.

3.1. General

The Secretary's environmental assessment requirements (SEARs) include a preliminary risk screening to determine if the development is 'potentially hazardous' in the context of State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2021 based on the screening process in the Applying SEPP 33 guideline.

The preliminary risk screening process detailed in Applying SEPP 33 guideline is based on storage and handling of materials defined as Dangerous Goods (DG) under version 7 of the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (ADGC) and other factors listed in Appendix 2 and 3 of Applying SEPP 33.

While, the risk screening is applicable to the operations phase, the project has included as assessment of the construction phase in this document.

The Applying SEPP 33 guideline sets a threshold based on a combination of maximum storage quantities and minimum distances to:

- Sensitive users. The term 'sensitive' is stated as referring to residential or other more sensitive land uses
- Other users. The term 'other' is stated as applying to all other land uses (e.g. commercial or industrial).

To avoid future land use safety conflict and/or sterilisation of land, the intent of the screening is to ensure:

- For storage and handling on-site, any separation distances are achieved by setting back storage locations onto land associated with the development. The term 'on-site' is used throughout Applying SEPP 33 and is equivalent to any location within the project impact area defined for the project
- For transport to and from site, routes have been selected and assessed to ensure risk is acceptable.

3.2. Construction

During construction, potential hazards and risks to the surrounding community or environment may be associated with the onsite storage, handling and transport of dangerous goods and hazardous chemicals. Construction hazards would be temporary and would not contribute to the long-term operational risk profile of the project.

The transport, storage and use of DG and hazardous chemicals during the construction phase has been reviewed to inform the controls required during the construction phase.

Whilst there is no requirement to undertake a preliminary risk screening for the storage, handling and transport of dangerous goods in the construction phase, the project has applied the intent of the screening to the construction phase.

This assessment does not constitute a construction safety study and does not include a detailed identification and assessment of construction and commissioning risks.

The risk screening process identified:

- typical materials associated with the proposed construction activities
- potential storage locations
- transport routes.

The screening reviewed the material and locations in the context of surrounding land uses to identify controls appropriate to manage risks to surrounding land uses during construction.

3.3. Operation

The preliminary risk screening for the operational phase identified and assessed:

- the type and quantity of hazardous materials to be transported and stored, their DG class, location (where relevant to the screening tables) and the expected number of transport movements against defined criteria
- other risk factors (Appendix 2 of Applying SEPP 33)
- other industries that may be potentially hazardous (Appendix 3 of Applying SEPP 33).

The Applying SEPP 33 guideline is based on the 7th edition of ADGC, (National Transport Commission 2009), and refers to hazardous chemicals by their DG classification. In this document, substances are referred to by their DG classification rather than their classification under the Globally Harmonized System (GHS), which is used in the ADGC Edition 7.6 or newer, (National Transport Commission 2020).

3.4. Exclusions and limitations

The study exclusions and limitations are as follows:

- this study only covers the assessment and determination of the 'potentially hazardous' nature of the project to determine if the project requires a Preliminary Hazard Analysis (PHA)
- the assessment made in this study was based on information provided to Sherpa at the time of the report. The final locations, types and quantities of materials, and actual inventories to be stored and handled on site would be confirmed during detailed design of the project

- this study is a screening assessment only and excludes a review of codes and standards for storage and handling of DG, building code compliance, firefighting requirements, operations and emergency response (e.g. response to a loss of containment).

4. CONSTRUCTION RISK SCREENING

4.1. Context

4.1.1. Hazardous materials

During construction, various hazardous materials and chemicals would be required to be used and/or stored on site. Typically, hazardous materials and chemicals which would be utilised during construction would include, but not limited to:

- acetylene
- adhesives, glues, epoxies etc.
- concrete and other mortar products
- contact cleaners
- cold-galvanising spray
- fuels, oils and lubricants (such as diesel, unleaded petrol, thinners, etc.)
- paints and other paint markers.

4.1.2. Storage locations

Hazardous materials may be stored at Construction Support Sites and/or designated laydown areas. The project is proposing:

- 6 Construction Support Sites, located at:
 - Freemans Drive
 - Wollombi Road A and B
 - Gouldsville Road
 - Pikes Gully Road
 - Hebden Road.
- 13 laydown areas, located at:
 - Wollombi Forest Road
 - Crumps Road
 - Crumps Road Helicopter Site
 - North Road
 - Wollombi Road Sawmill Road Millfield
 - Mount Baker Road
 - Broken Back Road
 - Broken Back Trail A and B

- Springs Trail A and B
- Archerfield Road
- Lemington Road.

The proposed locations are shown on Figure 2.1 and Figure 2.2.

Materials will be stored across multiple locations, avoiding the concentration of risk at 1 location.

4.1.3. Transport routes

Materials would be transported by state and local roads to the Construction Support Sites from various locations including ports, local, regional, state and interstate. The proposed main routes used to transport hazardous materials are presented in Table 4.1.

Table 4.1: Main transport routes

Construction Support Site	General delivery route	General transport laydown to work-front and laydowns
Freemans Drive	Via M1 Pacific Motorway and Freemans Drive	Via Freemans Drive, Martinsville Road, Martinville Hill Road and local access tracks
Wollombi Road	Via Wollombi Road	Via Wollombi Road, Mount View Road, Hayes Road, local access tracks
Gouldsville Road	Via Golden Highway and Gouldsville Road	Via Gouldsville Road, Golden Highway, Putty Road, Long Point Road, Broke Road, Cessnock Road, local access tracks
Pikes Gully Road	Via New England Highway and Pikes Gully Road	Via New England Highway, Pikes Gully Road and local access tracks
Heden Road	Via New England Highway and Hebden Road	Via New England Highway and Hebden Road and local access tracks

4.2. Proposed controls

The Construction Support Sites and laydown areas would be planned so that hazardous materials are stored appropriately and at a suitable distance from sensitive and residential land uses.

The basis for determining risk acceptability will be the application of the SEPP33 screening tables to determine minimum separation distances.

In the unlikely event that minimum distances cannot be achieved (e.g. due to land constraints, or a requirement to store volumes of hazardous materials in excess of storage thresholds), a risk management strategy would be developed to confirm that the project would not have a significant off-site risk during construction.

Storage of dangerous goods and hazardous substances would be secure and in accordance with the supplier's instructions, and would comply with applicable legislation,

guidelines and Australian Standards. This includes the NSW *Work Health and Safety Act 2011*, the NSW Work Health and Safety Regulation 2017 and the Storage and Handling of Dangerous Goods (DG) Code of Practice (WorkCover NSW 2005).

DGs would be transported in accordance with the NSW *Dangerous Goods (Road and Rail Transport) Act 2008* and NSW Dangerous Goods (Road and Rail Transport) Regulation 2014, and extended routes would avoid areas (such as road tunnels) prohibited by NSW Road Rule 300-2 (carriage of dangerous goods in prohibited areas). Small quantities (below transport thresholds) would be transported by site vehicles to the work fronts for use during construction.

Refuelling of construction plant and equipment via tanker truck could occur at work fronts during construction. The truck would travel on state, local and private roads.

The contractor would manage DG in accordance with relevant legislation and standards via implementation of a Construction Environmental Management Plan including spill prevention and response measures.

The project may also require the handling and transport of contaminated soil, hazardous waste and asbestos waste. The handling and transport of contaminated soils, hazardous waste and asbestos waste would be adequately managed by the measures identified in the environmental impact statement (EIS) and relevant legislative requirements.

4.3. Conclusion

The risk associated with DGs during the construction phase can be managed to an acceptable level primarily through the management of inventories in line with the preliminary risk screening process and application of Australian standards.

5. OPERATIONS PRELIMINARY RISK SCREENING

5.1. Context

Operation of the project would not involve the manufacture of Dangerous Goods (DG) and hazardous materials and does not include energy storage devices.

During operation of the project, hazardous materials and DG would be stored and used. The type and purpose of the materials are listed in Table 5.1, with an initial screening to identify material carried forward for further assessment.

5.2. Notes on screening

Materials with the following DG classes are not listed in Applying SEPP 33 and the materials are not considered as being potentially hazardous:

- Class 2.2 (non-flammable, non-toxic gas) – not considered potentially hazardous
- Class 9 (miscellaneous dangerous goods) storage quantities – considered to pose minimal threat to people or property.

Combustible liquids that are segregated from flammable liquids are not considered as potentially hazardous under Applying SEPP 33. If a combustible liquid is stored in the same area as a flammable liquid, it is considered flammable for the purposes of the screening. For the analysis, it was conservatively assumed there would be no segregation between diesel and petrol and diesel was included as a flammable liquid.

Transformer oil (combustible liquid) in transformers or storage was assumed to be segregated from flammable liquids and was treated as a combustible liquid for the screening.

Where a material has a subclass (for example oxygen is a Class 2.2 with a subclass 5.1), the subclass was also considered in the screening.

For some classes of DG, Packing Groups (PGs) are used to inform the level of hazard, with PGI the most hazardous and PGIII the least.

Where materials are grouped and generically described (for example disinfectant treatment chemicals), the most hazardous packing group was used in the assessment (i.e. PGI). Where Class 3 petroleum (flammable liquid) can be PGII or PGIII depending on the grade, the assessment used the higher hazard level PGII.

Table 5.1: Initial screening

Material	DG Class	PG	Category	Purpose	Carried forward to SEPP risk screening	
					Storage	Transport
Liquefied Petroleum Gas (LPG) – stored aboveground	2.1	N/A	Flammable gases	Steel cutting needed for construction, maintenance or emergency works.	Yes	Yes
Acetylene (pressurised)	2.1	N/A	Flammable gases	Welding and hot works needed for maintenance or emergency works.	Yes	Yes
Oxygen (compressed)	2.2 5.1	N/A	Non-flammable, non-toxic gas & oxidising agent	Welding and hot works needed for maintenance or emergency works.	Yes (assessed as Class 5.1 DG as Class 2.2 DG are excluded from risk screening)	
Chlorine	2.3	N/A	Toxic gases	Treatment of the cooling water for switching station equipment.	Yes	Yes
Diesel or petrol (fuel pod)	3	II or III	Flammable liquids	Conservatively assessed as flammable Class 3 PGII. For use as back-up electricity generation for operations and maintenance.	Yes	Yes
Lubricating oils and greases	3	II or III	Flammable liquids	Conservatively assessed as flammable Class 3 PGII. For general maintenance of plant, vehicles and equipment.	Yes	Yes
Biocides, algaecides and bio dispersants	6.1	Mixed packing groups	Toxic substances	Treatment of the cooling water for switching station equipment.	Yes	Yes
Pesticides and herbicides	6.1	Mixed packing groups	Toxic substances	Weed control.	Yes	Yes

Material	DG Class	PG	Category	Purpose	Carried forward to SEPP risk screening	
					Storage	Transport
Insulator cleaning solvent	Mixed	Mixed	Typically corrosive, flammable	Insulator cleaning .	Yes	Yes
Corrosion/scale inhibitors	8	Mixed packing groups	Corrosive substances	Treatment of the cooling water for switching station equipment.	Yes	Yes
Sulfur hexafluoride gas (SF6)	2.2	-	Non-flammable, non-toxic gases	Insulating gas for high voltage switching gears.	No – excluded from risk screening (not considered to be potentially hazardous with respect to off-site risk)	
Flocculants	N/A	N/A	Non-DG	Treating and dewatering basins.	No – not classified as DG	
pH adjustment (alkalinity adjusters)	N/A	N/A	Non-DG	Treatment of the cooling water for switching station equipment.	No – not classified as DG	
Degreasers/cleaning agent	N/A	N/A	Non-DG	Washing of parts and equipment.	No – not classified as DG	
Transformer oil	N/A	N/A	Combustible liquid	To support operation of transformers. Segregated from flammable liquids.	No – not classified as DG	

5.3. DG quantity and location screening

DG handled or stored for operation of the project are screened against the Applying SEPP 33 thresholds, as detailed in Table 5.2.

For flammable liquids and combustible liquids stored with flammable liquids, the DG screening is based on the location of the store relative to surrounding land uses.

Figure 9 in the Applying SEPP 33 guideline sets a threshold for minimum distances to:

- Sensitive users. The term 'sensitive' is stated as referring to residential or other more sensitive land uses.
- Other users. The term 'other' is stated as applying to all other land uses (e.g. commercial or industrial').

To avoid future land use safety conflict and/or sterilisation of land, the intent of the screening is to ensure any separation distances are achieved by setting back storage locations on land associated with the development. The term 'on site' is used throughout Applying SEPP 33 and is equivalent to any location within the project impact area defined for the project.

For the proposed upper limit of 20 tonnes of mixed flammable/combustible liquid, the storage must be:

- more than 10 m from sensitive receivers (e.g. residential, schools and hospitals) and
- more than 3 m from commercial or industrial land uses.

The distance is minor in relation to the project impact area and would be incorporated at detailed design to ensure the project is not potentially hazardous.

For all other hazardous materials, the DG screening is not based on the distance to sensitive receivers or other land uses, and there are no restrictions on the location of the storage within the project impact area.

5.4. DG Transport

The risk screening for transportation of hazardous materials with DG classification is presented in Table 5.3.

The transport screening thresholds for all relevant DG classes would not be exceeded as only minor quantities are required for the continued operation and maintenance of the switching stations and transformers. Thus, the project is not considered 'potentially hazardous' with respect to transportation, and a route evaluation study is not required.

Table 5.2: Risk screening summary – Storage

Material	DG Class	PG	Category	Upper bound of quantity proposed for HTP	SEPP threshold	Threshold exceeded	Minimum distance
LPG	2.1	N/A	Flammable gases	Above ground storage <10 tonnes or <16 m ³	<10 tonnes or <16 m ³	No	None defined
Acetylene	2.1	N/A	Flammable gases	<100 kg	100 kg	No	None defined
Chlorine	2.3	N/A	Toxic gases	1 tonne (chlorine and sulphur dioxide stored as a liquefied gas in containers <100 kg)	1 tonne (chlorine and sulphur dioxide stored as a liquefied gas in containers <100 kg)	No	None defined
Diesel or petrol (fuel pod)	3	II or III	Flammable liquids	20 tonnes stored more than 10 m from site boundary	20 tonnes (based on minimum distance in this table entry)	No	10 m to sensitive uses (e.g. residential, schools, hospitals) 3 m to other uses (e.g. commercial or industrial)
Insulator cleaning solvent							
Lubricating oils and greases							
Oxygen (compressed)	5.1	N/A	Oxidising substances	<100 kg	5 tonnes	No	None defined
Biocides, algaecides and bio dispersants	6.1	Assume all PG I	Toxic Substances	<0.5 tonne	0.5 tonne	No	None defined

Material	DG Class	PG	Category	Upper bound of quantity proposed for HTP	SEPP threshold	Threshold exceeded	Minimum distance
Pesticides and herbicides					(Class 6.1 PG I threshold)		
Corrosion/scale inhibitors	8	Assume all PG I	Corrosive substances	<5 tonnes	5 tonnes	No	None defined
Insulator cleaning solvent							

Table 5.3: Risk screening summary - Transport

Material	DG Class	PG	Category	Transportation screening threshold		Threshold exceeded
				Vehicle Movements	Minimum quantity per load ^(a)	
LPG	2.1	N/A	Flammable gases	<30 per week <500 annual	2 tonnes (bulk) 5 tonnes (packages)	No
Acetylene (pressurised)						
Chlorine	2.3	N/A	Toxic gases	<6 per week <100 annual	1 tonne (bulk) 2 tonnes (packages)	No
Diesel or petrol (fuel pod)	3	II	Flammable liquids	<45 per week <750 annual	3 tonnes (bulks) 10 tonnes (packages)	No
Insulator cleaning solvent						
Lubricating oils and greases						
Oxygen (compressed)	5.1	N/A	Oxidising substances	<30 per week <500 annual	2 tonnes (bulk) 5 tonnes (packages)	No
Biocides, algacides and bio dispersants	6.1	PG I assumed	Toxic substances	Any movements that exceed minimum quantity per load	1 tonne (bulk) 3 tonnes (packages)	No
Pesticides and herbicides						
Corrosion/scale inhibitors	8	Mixed packing group assumed	Corrosive substances	<30 per week <500 annual	2 tonnes (bulk) 5 tonnes (packages)	No
Insulator cleaning solvent						

5.5. Other risk factors

Appendix 2 of Applying SEPP 33 outlines other risk factors for consideration to identify hazards outside the scope of the DG risk screening method. An assessment against other risk factors is presented in Table 5.4.

Table 5.4: Assessment against other risk factors

Risk Factor	Commentary	Additional risk?
1. Incompatible materials (hazardous and non-hazardous materials)	The materials to be stored on site are typical for switching stations and transformers. Chemical storage and use would be in minor quantities.	No
2. Any wastes that could be hazardous	The operation of the project would not generate any hazardous waste.	No
3. Existence of dusts in confined areas	The operation of the project would not generate combustible dust.	No
4. Types of activities the hazardous materials are associated with	Hazardous materials are typical for energy transmission projects. There is no manufacturing or processing of hazardous materials.	No
5. Storage or processing operations involving high (or extremely low) temperatures and/or pressures	The project would not involve storage or processing operations.	No
6. Incompatible, reactive or unstable materials and process conditions that could lead to uncontrolled reaction or decomposition	The materials to be stored on site are typical for switching stations and transformers. Chemical storage and use would be in minor quantities.	No
7. Details of known past incidents involving hazardous materials and processes in similar industries	The project would handle and store DG. By nature, DG have the potential to lead to incidents and harm. The screening has demonstrated the materials are below the screening threshold and hence the project is not considered potentially hazardous.	No

5.6. Industries that may fall within SEPP 33

Appendix 3 of Applying SEPP 33 provides a list of industries that may be potentially hazardous. It is noted that this list is illustrative rather than exhaustive. The guideline does not include electricity transmission equipment in the example industry listing that may be potentially hazardous.

6. CONCLUSION AND MANAGEMENT OF IMPACTS

6.1. Conclusion

During construction, various Dangerous Goods (DG), hazardous materials and chemicals would be required to be used and/or stored on site. Quantities, storage locations and movements will be defined and assessed as the development progresses subject to the mitigation measures in Table 6.1.

During operations, a preliminary risk screening has demonstrated that the development is not potentially hazardous industry under Applying SEPP 33 and a Preliminary Hazard Analysis is not required subject to the mitigation measures in Table 6.1.

6.2. Mitigation measures

Mitigation measures proposed to avoid or minimise potential hazards and risk during construction and operation are listed in Table 6.1. These measures will be included in the issue-specific environmental management plans for the Hunter Transmission Project (HTP).

Table 6.1: Mitigation measures

Identification No.	Issue	Mitigation measures	Phase	Relevant locations
DG1	Storage and use of dangerous goods	Dangerous goods will be stored in accordance with suppliers' instructions and relevant legislation, Australian Standards, and applicable guidelines. Dangerous goods storage may involve bulk storage tanks, chemical storage cabinets/ containers or impervious bunds. Any storage areas will be designed in accordance with Australian Standard AS1940: The storage and handling of flammable and combustible liquids where applicable. The storage and use of dangerous goods will be carried out in line with the following: • All personnel required to work with dangerous goods and other hazardous material will be trained in their safe use and handling • All chemicals or other dangerous goods will be stored in a bunded area and away from any drainage lines or pits. The capacity of the bunded area will be at least 130% of the largest chemical volume contained within the bunded area • No refuelling or bulk herbicide preparation will occur within 40 m of natural drainage lines • In the event that minimum distances cannot be achieved (e.g. due to land constraints or a requirement to store volumes of hazardous materials in excess of storage thresholds), a risk management strategy will be developed as required to confirm that the project would not have a significant off-site risk	Construction Operation	All locations
DG2	Accidental spills of dangerous goods	Environmental spill kits containing spill response materials suitable for the works being undertaken will be kept on site at all times and be used in the event of a spill. Any spills will be contained, cleaned up promptly and immediately reported to the relevant site representative.	Construction Operation	All locations

DG3	Transport of dangerous goods	Dangerous goods and hazardous substances will be transported in accordance with relevant legislation and codes, including the Dangerous Goods (Road and Rail Transport) Act 2008, Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2018).	Construction Operation	All locations
DG4	Storage and transport of dangerous goods during operation	During operation, storage and transport of dangerous goods will be managed to ensure the development remains below the potentially hazardous screening criteria in applying SEPP 33.	Operations	All locations

7. REFERENCES

National Transport Commission, 2009. *Australian Code for the Transport of Dangerous Goods by Road and Rail Edition 7*, s.l.: s.n.

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