Mt Piper BESS

EIS summary

EnergyAustralia

Reference: P521009

Revision: B

19 April 2024

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Bringing ideas to life

EIS summary

Overview

EnergyAustralia NSW Pty Ltd (EnergyAustralia) is investigating the development of a grid-scale battery energy storage system (BESS) with a capacity of up to 500 Megawatts (MW) and a duration of up to four hours (or an alternate battery configuration capable of dispatching up to an equivalent of 2,000 Megawatt hours (MWh)), along with associated infrastructure (the Project). It is proposed that the Project be located within existing EnergyAustralia landholdings adjacent to the EnergyAustralia Mt Piper power station in New South Wales (NSW).

The Project is considered State Significant Development (SSD) under Part 4, Division 4.7 Section 4.36 of the *Environment and Planning Assessment Act 1979* (EP&A Act). This Environmental Impact Statement (EIS) has been prepared to accompany the Development Application (DA) to the New South Wales (NSW) Department of Planning, Housing and Infrastructure (DPHI) (formerly NSW Department of Planning and Environment). The EIS has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the Project (Application No. SSD 50903958), issued on 23rd December 2022 and the relevant provisions of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

The objectives of the Project include the following:

- Provide a significant energy storage asset to the NSW grid as coal-fired generation is phased out
- Contribute to facilitating the transition by providing much needed backup power and grid stability, vital to maintaining a reliable supply of electricity, and to support the addition of further renewable generation into the NSW energy grid and identified Renewable Energy Zones (REZs)
- Maximise and repurpose of suitable, available land near strong and established grid connection infrastructure with the aim of lowering social and environmental impacts and avoiding the need to construct on private land.

This EIS considers the potential impacts of the Project in accordance with the objects of the EP&A Act, including on matters of environment and social relevance during Project construction, operation, and decommissioning.

The applicant

The Project applicant is EnergyAustralia NSW Pty Ltd, a wholly owned subsidiary of EnergyAustralia Holdings Limited. EnergyAustralia is a leading energy retailer and generator with around 1.6 million customers across eastern Australia. As the world moves to cleaner forms of energy, EnergyAustralia wants to lead the transition in a way that maintains that same reliable access to energy for everyone.

Project location

During the preliminary Project development stages five potential site locations for the Project were identified within EnergyAustralia landholdings. The preferred location for the Project was selected following a comprehensive Multi Criteria Assessment (MCA) process, which examined each location in detail.

The Project is proposed to be located within EnergyAustralia landholdings (except for the point of grid connection to the existing adjacent Transgrid substation) south of the EnergyAustralia Mt Piper power station, in an area previously used as the construction compound and laydown area during power station construction.

Regionally, the Project is located on land which sits in the Wiradjuri Aboriginal Country that is geographically located in the Central Tablelands region of NSW. It is located about 170 kilometres (km) north-west of the Sydney Central Business District (CBD) in the Lithgow Local Government Area (LGA). The regional area is characterised by diverse infrastructure with a long history of industrial land uses.

Locally, the Project is located at 350 Boulder Road in the suburb of Blackmans Flat, approximately 17 km north-west of Lithgow, around 4 km east of the closest town of Portland and about 6 km north-west of Wallerawang. It is near the Great Western Highway (A32), the Main Western railway line and the Castlereagh Highway (B55). Boulder Road is located to the north of EnergyAustralia landholdings and provides the main access point to the Project. The Project is surrounded by areas used mainly for power generation or mining purposes with primary agriculture and commercial forestry activities found in the wider locality.

The Project is located on land zoned as SP2 (Infrastructure) Electricity generating works under the Lithgow Local Environment Plan 2014 (LEP) and traverses the following lots/ DPs:

- Lot 101 DP 1164619
- Lot 103 DP 1164619
- Lot 1 DP 829065
- Lot 191 DP 629212
- Lot 2 DP 702619
- Lot 1 DP 1092737 (connection to the existing Transgrid substation).

Project features

Key features of the Project include:

- Grid-scale BESS compound including concrete footings under the BESS containers (with gravel in between battery modules), and a concrete platform beneath the transformers, inverters, and other high voltage infrastructure.
- A substation with two step-up transformers (or a combination of smaller transformers), and four earthing / distribution transformers.
- Five grid connection options connecting the BESS to the adjacent existing Transgrid Mt Piper 330 / 500 kV Terminal Station (referred to from here as the Transgrid substation) located to the west of the BESS site. Options for grid connection would be via overhead line or underground cable and would necessitate internal works to the existing Transgrid substation. Only one of the grid connection options would be constructed, but for the purposes of assessment in the EIS the maximum impact area of all five options has been included within the Project footprint to provide a conservative assessment.
- Bushfire asset protection zone (APZ) (associated with minimising impacts to biodiversity).
- Ancillary features including:
  - a perimeter road encompassing the BESS compound, and internal roads for access
  - a control room, four switch rooms, and operation and maintenance facilities
  - utilities, lightning and fire protection infrastructure, signage, security systems, and fencing
  - settlement ponds.

Figure 1 illustrates the proposed Project layout, which has formed the basis for the assessment documented by this EIS, while Figure 2 illustrates the existing environmental constraints at the Project location.

Esri, TomTom, Garmin, FAO, NOAA, USGS,Nearmap Capture 18/02/2023,

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Inset 1

Indicative Auxiliary Transformer

Indicative Car Parks

Existing Mount Piper Power Station

DP629212

DP1164619

BLACKMANS FLAT

Gate

Existing Transgrid Substation

DP1092737

DP829065

DP702619

Gate

APZ

Gate

Inset 2

DP1151441

WALLERAWANG

DP751638

Indicative Auxiliary Transformer

Legend

- Roads
- Indicative Fence Line
- Asset Protection Zone (APZ)
- Substation works
- Possible laydown options for substation
- 500kV Switchyard & Harmonic Filter
- Indicative Bioretention Basin
- Indicative Car Parks
- Indicative Maintenance Workshop
- No-go zone
- Temporary Construction Zone
- Construction Footprint
- Project Footprint
- Suburb
- Cadastre

HV alignment options

- 330kV underground line alignment (Option 1)
- 330kV overheard line alignment (Option 2)
- 500kV underground cable alignment (Option 3)
- 500kV overhead line and 33kV underground cable (Option 4)
- 500kV overhead line alignment (Option 5)
- HV alignment buffer

Transformers

- Indicative 330kV substation extension
- Indicative 500kV step up transformer
- Indicative auxiliary transformer
- Indicative 500/33kV transformer

Battery/Switchrooms/Control Room

- Indicative 33kV Switchrooms
- Indicative 500MW / 2000 MWh BESS
- Indicative Control Room

Date: 1/04/2024 Version:0

Map by: KDC \521009 - Mt Piper BESS Tech and Enviro - S1-P3-GIS Geographic information system\Pro\EIS Date: 1/04/2024 23:13

A3 scale:1:3,500

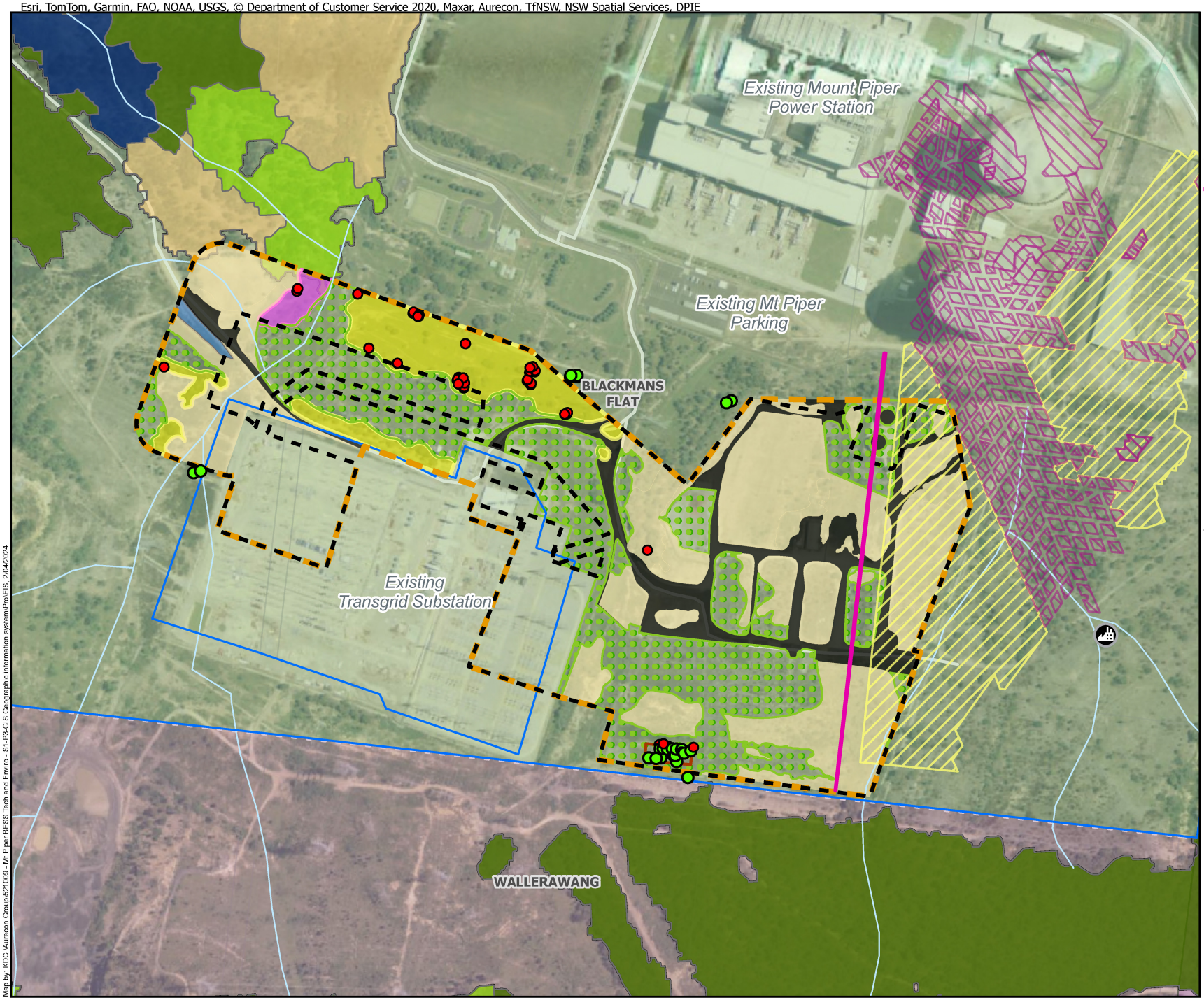
0 50 100 150Metres

Job No: 521009

Coordinate system: GDA 1994 MGA Zone 56

Mt Piper BESS

Figure 1: Site Layout



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Legend

- Veolia Water Treatment Plant
- Eucalytus aggregata (Black Gum - to be removed)
- Eucalytus aggregata (Black Gum - to be retained)
- Drainage
- 20m wide allowance for additional mine workings
- Undermining (GOAF - Pillars Extracted)
- Undermining (Pillars Retained)
- Cadastral boundaries
- EnergyAustralia Landholding Boundary
- Construction Footprint
- Project Footprint
- APZ

Land Zoning

- RU1 - Primary Production
- RU3 - Forestry
- SP2 - Infrastructure

Plant Community Types (NSW State Vegetation Type)

- Capertee Uplands Enriched Stringybark Forest
- Central Tableland Granites Grassy Box Woodland
- Not native vegetation
- Southern Tableland Creekflat Swamp Woodland
- Southern Tableland Western Hills Scribbly Gum Forest

Validated Vegetation (EP 2022) - PCTs

- Central Tableland Granites Grassy Box Woodland
- Exotic grassland
- Infrastructure/Cleared
- Planted native vegetation
- Southern Tableland Western Hills Scribbly Gum Forest
- Typha wetland

A4 scale: 1:6,000

0 50 100 200 Metres

Job No: 521009

Coordinate system: GDA 1994 MGA Zone 56

Date: 2/04/2024 Version: 0

Mt Piper BESS

Figure 2: Environmental Constraints

Consultation

Nation Partners was engaged by EnergyAustralia to lead the consultation process for the Project with consultation activities commencing in 2022 and continuing through 2024. The overriding objectives of the Project's consultation approach were to:

- Inform communities and stakeholders about the Project, the EIS process and opportunities to participate.
- Actively involve communities and stakeholders in the Project's development, planning and EIS preparation to understand concerns, tap into local knowledge and data, and to improve overall Project outcomes.
- Demonstrate how community and stakeholder issues and feedback are being captured and used to inform Project development and assessment.

The principles for engagement were as follows:

- Be transparent and accountable.
- Be honest and open about Project considerations, impacts and opportunities.
- Share timely information that allows people with an interest to provide informed feedback.
- Provide effective channels for feedback and input.

Consultation has involved informing people about the Project and consulting or involving communities and stakeholders throughout the Project's development process. EnergyAustralia has also consulted with relevant agencies, councils and other government departments, which are directly involved in the Project as assessment and approval decision-makers.

A Community Engagement Plan was developed to guide appropriate, transparent and strategic engagement with all relevant stakeholders, including the local community.

The Project received minimal adverse feedback from the community and stakeholders, a factor attributed to the Project's location on previously disturbed land and wholly within a site utilised for energy generation.

Impact assessment findings

Biodiversity

Native vegetation mapped by DPE (2022) within the Project footprint included Plant Community Type (PCT) 3367 (Central Tableland Grassy Box Woodland) and PCT 3385 (Southern Tableland Creekflat Swamp Woodland). Neither of these PCTs are associated with a threatened ecological community. Additionally, PCT 3747 (Southern Tableland Western Hills Scribbly Gum Forest) is mapped just outside the Project footprint to the south.

Field validated vegetation mapping was carried out, which found that vegetation within the Project footprint is comprised of PCT 3367 and PCT 3747. These PCTs were identified across 9.76 ha (40 per cent) of the Project footprint, with a further 8.60 ha determined to be made up of exotic grassland and planted native vegetation (not assigned to a PCT).

Habitat assessment was undertaken for all predicted candidate threatened flora and fauna species to determine if the species were likely or unlikely to occur within the Project footprint. Following this, targeted surveys were carried out for the confirmed candidate threatened flora and fauna species. Two endemic threatened flora species were recorded within the Project footprint during the targeted surveys (*Eucalyptus aggregata* and *Eucalyptus cannonii*). Three additional threatened native flora species were also identified within the Project footprint, but the tree species had been planted outside their naturally occurring range and therefore, have not been assessed further.

Six threatened microbat species were recorded during targeted surveys as ‘definite’ or ‘possible’ species occurring within the Project footprint. Of these species, *Chalinolobus dwyeri* (Large-eared Pied Bat) was a definite identification, whilst Southern Myotis (*Myotis Macropus*) and Eastern Cave Bat (*Vespadelus troughtoni*) were possible species. Presence of these latter two species has been assumed and retained as a candidate species based on the likely presence of habitat features.

Additionally, ten species listed as either vulnerable or endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) were considered to have a moderate or high potential to occur within the Project footprint. Assessments of significance were carried out for these Matters of National Environmental Significance (MNES), which concluded that none of the MNES are likely to be subject to significant impact from the Project. Furthermore, an EPBC Act referral was undertaken with the regulatory authority identifying the Project is not considered to be a controlled action.

Aquatic habitat within the Project footprint is limited to two concrete-lined and channelised drains on the eastern and western extents of the Project footprint. They provide habitat for common aquatic species, including some common frog species; the calls of which were confirmed during targeted surveys. These drains are not hydrologically connected to any known populations of threatened frog species.

The Project would include direct impacts of up to 9.76 ha of native vegetation and 8.60 ha of exotic and planted native vegetation. This represents the highest impact scenario associated with assessment of all five grid connection options. Up to eight *Eucalyptus aggregata* trees, listed as vulnerable under the *Biodiversity Conservation Act* 2016 (BC Act) and EPBC Act, would be cleared for construction. The single *Eucalyptus cannonii* has been avoided and would be retained. Impacts to aquatic ecology are anticipated to be minimal during the construction phase with the implementation of mitigation measures.

During operation, impacts to biodiversity are anticipated to be minimal, including minor edge effects on native vegetation, minor noise, dust and light spill impacts, and minor impacts from the invasion and spread of weeds and pests. Appropriate management measures would be implemented to minimise impacts to biodiversity during both the construction and operation phases.

An assessment of the biodiversity offset requirements were also carried out for residual impacts associated with the Project. The credits have been calculated for each of the proposed grid connection options (Option 1 to Option 5) and the BESS compound area separately to allow for the staged retirement of credits for the option(s) selected once the detailed design for the Project has been completed. A final decision on how the credits would be secured would be made as the Project progresses.

Noise and vibration

The Project is immediately surrounded by areas used mainly for power generation or mining purposes, with primary agriculture and commercial forestry activities found in the wider locality. The region is predominantly rural with some residential receivers and existing industrial developments. The closest residential receivers to the Project are located around 1.6 km to 2 km to the northwest, while the closest industrial receivers are located within 100 metres (m) (Veolia Water Operations Water Treatment Plant and Mt Piper power station).

Unattended noise measurements were captured at the three closest noise sensitive receivers using noise loggers placed at the property boundary of each receiver to understand the existing noise environment.

Noise impacts during the construction phase would be predominantly from construction equipment within the Project footprint and from construction traffic. Noise modelling outcomes indicate that Phase 1 of construction (site establishment works) has the lowest potential for noise impacts on receivers while Phase 4 of construction (equipment installation and grid connection works) indicates the highest noise levels. Noise modelling illustrates that noise impacts during all construction phases would be within the relevant noise criteria, with and without staging, during standard hours as well as outside standard hours of construction. The increase in noise due to construction activities would be short term in duration and inaudible at nearby sensitive receivers. It is anticipated that construction traffic during Phase 3 of construction (main civil construction works) would result in the worst-case construction traffic noise impacts, however noise from construction traffic during this phase is anticipated to be below the relevant noise criteria, meaning impacts to nearby sensitive receivers would be minimal.

Based on estimated vibration levels, the nearest residential and industrial receivers are unlikely to be affected by vibration for human comfort and structural damage.

It is anticipated that the operational noise impacts will be predominantly from the BESS components such as the battery units, transformers, and the inverters. Modelled outcomes for the operational noise impacts at all nearby sensitive receivers are within the relevant noise criteria, including sleep disturbance criteria. While the duration of the impact will be long term, the modelling outcomes indicate that the effects will be minor at the noise sensitive receivers. Appropriate management measures for potential noise and vibration impacts are included in Chapter 7 of the EIS.

Hazards and risks

The assessment of hazards and risks for the Project involved a preliminary risk screening to determine whether the Project is a potentially hazardous industry. The types and quantities of all hazardous goods associated with the Project have been screened against thresholds included in The Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (SEPP 33 Guideline). The hazardous goods associated with the Project would include lithium-ion batteries, petrol, diesel, pesticides, transformer oil, refrigerant and cleaning chemicals. The estimated quantities for each hazardous good were determined to be below the thresholds set out in the SEPP 33 Guideline to be considered potentially hazardous, however as lithium-ion batteries present a possible overall thermal overload hazard, a preliminary hazard analysis, including a risk assessment, is still required and has been prepared for this EIS.

The risk assessment carried out for the Project demonstrated that, while there is potential for major off-site consequences, implementation of recommended risk controls, including adequate separation distances, would make these consequences unlikely, including for off-site effects. Safeguards and management measures for the potential hazards and risks associated with the Project have been included in Chapter 8 of the EIS.

Bushfire risk

Areas adjoining the southern boundary of the Project footprint are mapped as bushfire prone land (BFPL). A desktop review of vegetation within and surrounding the Project footprint indicated that further areas of BFPL, not mapped by the NSW Rural Fire Service, were located on the embankment between the Project footprint and the Mt Piper power station.

Bushfire impacts have been assessed in terms of ignition sources, asset protection zones (APZs), transmission line vegetation management, access, and services. APZs were developed for the Project as described in Chapter 9 of the EIS and would be required to be maintained throughout the life of the Project. APZs provide a buffer around assets and are designed and maintained to reduce fuel near assets, and to reduce the potential for damage from direct flame contact, smoke, radiant heat, and ember attack.

Management measures for potential ignition sources would be included in a Bushfire Emergency Management and Evacuation Plan.

Cultural heritage

The assessment of cultural heritage impacts included assessment of the potential impacts of the Project to both Aboriginal cultural heritage and historic (non-Aboriginal) heritage. The assessment of Aboriginal cultural heritage impacts involved background research and assessment of evidence and information about material traces of Aboriginal land use in the Project footprint, a significance assessment of potential Aboriginal sites, places, landscapes and other values, as well as an impact assessment and the provision of management recommendations. In addition, consultation with Aboriginal stakeholders was carried out in line with the processes outlined in the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010). The assessment of historic heritage impacts involved a search of relevant historic registers and databases, a literature review of relevant archaeological reports, and identification of the potential for historic heritage sites to be impacted by the Project.

Identified Aboriginal cultural heritage values associated with the Project footprint included scarred trees on river flats and by rivers, stone artefacts in the broader region, nearby waterways, the presence of native flora and fauna, and archaeological material. Following a search of the Aboriginal Heritage Information Management System (AHIMS) on 8th December 2022, 6th July 2023 and 14th February 2024, it was determined that there are no Aboriginal sites recorded within the Project footprint. There are 109 Aboriginal sites located within 5 km of the Project footprint and one Aboriginal site within close proximity (350 m south-east). It was determined that there is a very low potential for intact Aboriginal sites to be present within the Project footprint. The significance assessment of the Project footprint determined that it has moderate-high social significance due to its proximity to known Aboriginal sites, and a low aesthetic significance due to past disturbance.

A search of historic heritage registers indicated that no historic heritage items exist within the Project footprint and there are no historic heritage items in close proximity to the Project footprint.

Given no known Aboriginal sites exist within the Project footprint and there is a very low potential for unknown Aboriginal sites to be present, the Project is not anticipated to result in harm to Aboriginal sites. Additionally, due to the highly disturbed nature of the Project footprint, intact archaeological deposits are not likely to be present below the ground surface, meaning excavations and other construction works are unlikely to harm Aboriginal objects. Although no Aboriginal sites exist within the Project footprint, relevant cultural heritage inductions and unexpected finds procedures would be implemented before and during Project works.

Surface water and groundwater

The Project is located within the wider Hawkesbury-Nepean catchment. There are two identified watercourses within the Project footprint. The watercourse on the west side of the Project footprint is defined as a 3rd order watercourse, and the watercourse of the east side of the Project footprint is defined as a 2nd order watercourse. The 2nd order watercourse has been removed as a result of past filling in the area with a concrete stormwater channel constructed in its place. There is an existing stormwater network within the Project footprint consisting of several drainage lines including grassed swales, the unnamed 3rd order watercourse and concrete channels.

The Project footprint lies within the Angus Place hydrogeological landscape. The Project footprint is located within the Sydney Basin Coxs River groundwater source, which has a depth to the water table ranging between 5 m to 20 m below ground level. Under natural conditions, groundwater would likely follow the site topography and flow in a northerly direction towards Wangcol Creek. However historical mining activities have altered the flow direction and control the local groundwater system.

Sensitive receiving environments surrounding the Project footprint include groundwater users, groundwater dependent ecosystems, and key fish habitat, including within the unnamed 3rd order watercourse on the west side of the Project footprint.

Impacts to surface water and groundwater during the construction phase may include increases in sediment laden runoff, the mobilisation of sediment into downstream watercourses, mobilisation of construction materials from stockpiles into drainage lines, and disturbance of acid sulphate soils and contaminants as a result of deep excavations. However, these impacts would all be temporary and would be negligible to minor in nature following the implementation of appropriate mitigation measures. Possible moderate impacts may result from cement laden runoff from concreting activities being accidentally released into receiving environments due to poor handling, storage or disposal, however these impacts are considered unlikely.

Impacts during the operation phase may include impacts from potential fuel leaks leading to the mobilisation of chemicals into waterways, contaminants in firefighting water potentially mobilising into drainage networks, increased impacts on the drainage system as a result of an increase in impervious surfaces, and changes to overland flows as a result of additional infrastructure, leading to potential localised flooding. Each of these impacts would be negligible following the implementation of appropriate safeguards and are all considered unlikely to occur.

The required management measures are outlined in Chapter 11 of the EIS, including erosion and sediment control plans, sedimentation basins and scour protection.

Traffic and transport

The Project is located near the Great Western Highway (A32), the Main Western railway line, and the Castlereagh Highway (B55). Boulder Road, which is located to the north of the Project footprint, provides the main access point for the Project. Within EnergyAustralia landholdings at Mt Piper power station, there is an existing surfaced and sealed access road, which provides internal circulation and would connect to the Project.

An assessment of the performance of roads surrounding the Project indicates that these are operating within design capacities and are able to comfortably accommodate existing traffic growth in the area. An assessment of the performance of intersections surrounding the Project indicated that all intersections currently perform at a good level of service (below 14 seconds delay per vehicle).

During construction there would be a temporary increase in the number of vehicles accessing the Project footprint. This is anticipated to vary over the course of the construction program with both light and heavy construction vehicles required. Assessment of road network performance and intersection performance with peak construction traffic indicates that the surrounding road network would still comfortably accommodate traffic volumes and that intersections would still perform at a good level of service.

During operation there would be a minor increase in the number of vehicles accessing the Project footprint for maintenance activities. During standard inspection and maintenance activities, which may occur four times per month, a crew of two persons would be present on site. The low volume of traffic associated with operation and maintenance activities is expected to have minimal impact on existing road network performance and safety.

Socio-economic

The Project is located within the City of Lithgow LGA (Lithgow LGA), which has a population of 20,842 (ABS, 2021). The top industry sectors by output for the Lithgow LGA in 2020/2021 were mining ($1.2 billion), electricity, gas, water, and waste services ($446 million), manufacturing ($263 million) and construction ($237 million). Mining makes up 36 per cent of the revenue within Lithgow LGA, representing 3.8 per cent of the total mining revenue in NSW. The Project is located near the townships of Portland and Wallerawang. These townships cater for the day to day needs of the local population and the existing Mt Piper power station. The settlements of Cullen Bullen and Meadow Flat also contain some supporting community services and facilities.

Positive socio-economic impacts associated with the construction phase of the Project would include employment and labour impacts, resulting from the opportunity to employ local civil, mechanical and electrical tradespeople, and impacts to local businesses, resulting from increases in local economic activity as a result of local businesses being involved in the supply of goods and services for the construction of the Project, and increased patronage of local shops and services by workers. Potential negative socio-economic impacts resulting from the construction phase could include a sense of disruption to the community, increased anxiety and annoyance about the potential amenity impacts of the Project, and a temporary reduction in available housing supply and visitor accommodation due to the need to supply accommodation for workers outside the Lithgow LGA. These negative impacts are all anticipated to be low.

During operation, the Project should support the increased uptake of renewable energy in the electricity grid and should help contribute to the State’s objective of delivering reliable electricity at lower prices for consumers. The Project would support existing land uses, including electricity generation, within EnergyAustralia’s landholding and benefit communities, businesses and industries by increasing the reliability of electricity.

Contamination and waste

A search was carried out of the contaminated land record of notices, listed under the Section 58 of the Contaminated Land Management Act 1997 for properties within 1 km of the Project footprint. No notified sites were identified as significantly contaminated. A review of previous contamination investigations at the Project footprint was also carried out. This determined that contaminants of potential concern (COPCs) were generally below the relevant limits of reporting, with the exception of some elevated levels of heavy metals in soils and groundwater. A review of an investigation into polyfluoroalkyl substances (PFAS) determined that all areas of concern relating to PFAS are downgradient of the Project footprint, meaning there is a low-negligible risk of PFAS migrating to the Project footprint.

Potential sources of contamination within the Project footprint include fill of unknown origin, stockpiles, staining on surface soils, ponded water, and former sheds and buildings. Potential exposure pathways for COPCs include inhalation, ingestion, dermal contact, groundwater contamination, surface water contamination and exposure to hazardous ground gases (HGG) in confined spaces.

During the construction phase, human health risks are considered low given COPCs have been determined to be below relevant human health-based criteria and no direct contact with elevated heavy metals in groundwater or PFAS would be required. Additionally, asbestos has not been identified within the Project footprint, however an unexpected finds protocol for asbestos would be included in the Construction Environmental Management Plan (CEMP). Concentrations of HGG within the Project footprint have been assessed as being below the relevant human health criteria, with the exception of carbon dioxide, which was reported above the relevant criteria at four monitoring locations. Potential impacts from elevated levels of carbon dioxide would include the possibility for asphyxiation in poorly ventilated areas, meaning the CEMP should consider HGG accumulation during construction, and HGG monitoring data should be provided to the BESS design team for consideration in the safety in design process.

During the construction phase potential risks include site soils (due to fill material of unknown origin) and potential interception of groundwater with elevated heavy metal concentrations. Consideration should be given as to whether groundwater treatment is required to render water quality as being suitable for beneficial reuse on site (eg for dust suppression) or if off-site disposal is more appropriate.

No human health or ecological risks associated with soil or groundwater contamination are anticipated during the operation phase.

Appropriate management measures are included in Chapter 14 of the EIS to minimise the potential for contamination impacts.

Soils and geology

Soil of particular concern for management and stability would be those that are dispersive, erosion-prone soils. The soils encountered in the Project footprint present a low risk of erosion, however erosion risk would be increased where vegetation is cleared, where there are localised changes to stormwater flows, in instances of excavation, cuttings or stockpiling, and where construction takes places during periods of high rainfall or through areas with high erodibility risks. Soil stability on the site is considered reasonable. Acid sulphate soils were not encountered within the Project footprint, however some mild to strongly acidic subsoils were encountered, which are likely the result of leaching of bases from the soil materials. Provided these materials remain buried or are treated with lime at appropriate rates, these soils pose minimal risk to the Project. The soils present in the Project footprint are not saline and therefore do not present a salinity hazard.

Operational impacts to soils posed by the Project would be minimal due to the static nature of the Project infrastructure and likely low traffic through the Project footprint for its lifespan. Elements such as concrete slabs for infrastructure and the use of gravel or sealed roads for any access tracks would minimise the risk of soil erosion during operation of the Project. Water use, including for cleaning of Project infrastructure, poses a minimal erosion risk due to the probable stable and non-erosive nature of soils within the Project footprint.

Landscape character and visual impacts

Land use in the surrounding area predominantly consists of grazing native vegetation, production native forestry, utilities, mining, and other minimal use. The Project footprint itself is currently vacant industrial land to the south of the Mt Piper power station. The landscape is strongly characterised by evidence of disturbance associated with its former use as the construction compound and laydown area for the adjacent Mt Piper power station construction. Beyond the immediate Project footprint, the overall EnergyAustralia landholdings are surrounded by vegetated areas, particularly to the south and southeast. The prominent vegetation within the Project footprint, as viewed from Castlereagh Highway and Boulder Road, comprises native trees with an exotic grass understorey.

The assessment of landscape character impacts involved the use of landscape character types (LCTs) to differentiate between the varying landscapes surrounding the Project footprint. Impacts to each LCT as a result of the Project has been deemed negligible due to the Project involving a scale and type of development that is largely consistent with surrounding infrastructure and due to the Project not being visible from some LCTs. A visual impact assessment was also carried out, which used publicly accessible locations and viewpoints to determine the impacts of views of the Project footprint following the construction of the Project. This assessment concluded that impacts to all viewpoints of the Project footprint would be negligible due to there being no locations where the Project would be visible from publicly accessible areas due to intervening topography and vegetated hills.

Electromagnetic fields

Electromagnetic fields (EMFs) are created by differences in voltage (electric fields) or when electric current flows (magnetic fields). EMFs are produced wherever electricity or electrical equipment is in use with exposure generally from powerlines, distribution wires or household electrical wiring. The Project would introduce a BESS, a BESS substation, high voltage transmission lines and power conversion equipment, all of which would contribute to the EMF environment.

During construction, the project components would not be operational and therefore would not contribute to the EMF environment. During operation, EMF levels inside BESS units would only be accessible to authorised workers and would be designed within the relevant guidelines. Typical EMFs outside the BESS in areas accessible to the public are expected to be similar to that of a large substation and would meet relevant guidelines. EMF levels from the BESS substation are anticipated to be highest at the Project footprint boundary, originating from incoming and outgoing transmission lines. The application of electrical safety standards and codes would exclude exposure of the general public to substation and transformer sources. EMFs from transmission lines and other sources such as underground transmission cables would be within the relevant criteria and would not pose a risk to the general public.

The Project will be designed and constructed in accordance with the relevant industry standards and guidelines, the electric and magnetic fields associated with Project components are expected to comply with the *International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields*.

Land use

The Project site is zoned SP2 Infrastructure (Electricity generating works) pursuant to the Lithgow Local Environment Plan 2014. The Project site is surrounded by land zoned SP2 Infrastructure to the north, east and west, RU1 Primary Production to the south and RU3 Forestry to the south-east.

The Project is located within EnergyAustralia landholdings within the boundary of a site with a long history of industrial use for power generation purposes. The area was previously used as the construction compound and laydown area during Mt Piper power station construction.

The Project is surrounded by properties used mainly for power generation or mining purposes with primary agriculture and commercial forestry activities also found in the broader locality. Existing industrial developments in the area also include the Centennial-owned coal mines and the decommissioned and demolished Wallerawang power station. Accordingly, the proposed use of the Project footprint would not be considered incompatible in the context of adjacent land uses.

Potential land use conflicts as a result of the Project could include dust and odour impacts for nearby receivers, hazardous development and the storage of hazardous materials, potential contamination of groundwater or soil, threatened species habitat impacts, impacts from the spread of weeds, and bushfire risks. However, with the implementation of management measures identified in Chapter 18 of the EIS, all potential land use conflict activities can be reduced to a low-risk rating. Accordingly, the potential for land use conflicts is unlikely or of minimal consequence and the Project is considered appropriate in its context.

Cumulative impacts

The Project would be consistent with the function and character of the established land uses across the broader area, which largely relate to electricity generation and mining. Searches of the NSW Major Projects portal and the Lithgow City Council development application register found 15 developments within the Lithgow LGA with the potential for cumulative impacts alongside the Project. These developments are outlined in Chapter 20 of the EIS. The potential for cumulative impacts of these developments alongside the Project has been considered in Appendix C-N of the EIS.

In general, there is minimal potential for cumulative impacts of the Project and other nearby developments largely due to the location of the Project within an already disturbed area, the implementation of safeguards and management measures as part of the Project and other nearby developments, and the distance of the Project from other developments. Cumulative socio-economic impacts have been identified for the Project and the Wallerawang BESS and Great Western BESS projects, due to the possible overlap in construction periods. This has the potential to place pressure on the regional construction workforce, although cumulative impacts are anticipated to be low given peak labour demands for each development are likely to be offset and fluctuate in terms of skill requirements. In addition, potential positive cumulative socio-economic impacts are anticipated as a result of the Project and the Airly Mine Modification 5, due to the possibility for greater employment opportunities to arise within the Lithgow LGA as a result of minimal skillset conflicts for both developments.

All other factors considered as part of this EIS have been assessed as not resulting in cumulative impacts for the Project alongside other developments.

Project justification

EnergyAustralia is seeking SSD approval under Part 4, Division 4.7 of the EP&A Act. In accordance with Section 4.12(8) of the EP&A Act, the application is required to be accompanied by an EIS that meets the requirements of Part 8 of the EP&A Regulation (notably Division 5 therein) and any other relevant legislative requirements that relate to the EIS.

This EIS has been prepared to address the SEARs for the Project and reflects the form and content requirements of the EP&A Regulation. This has included consideration of the objects of the EP&A Act.

The Project as described in this EIS best meets the Project objectives resulting in minimal environmental and social impacts.

The Project would provide a range of important energy firming services to the National Electricity Market and would assist in strengthening the supply of electricity across the market with the ability to discharge stored energy in periods of supply shortages or peak demand. The Project would contribute to maximising consumer benefits through the energy transition by providing a secure and reliable supply of energy in a cost competitive manner.

The Project is consistent and compliant with the relevant statutory requirements, including local, State and Commonwealth strategic planning documents. The Project impacts can be appropriately managed through mitigation measures to an acceptable level, ensuring positive outcomes would be achieved.

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