



Eraring Battery Energy Storage System

State Significant Development

SSD 15950052

May 2022



Published by the NSW Department of Planning and Environment

dpe.nsw.gov.au

Title: Eraring Battery Energy Storage System

Subtitle: State Significant Development

Cover image: Source: Origin Energy Eraring Pty Ltd

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Executive Summary

Origin Energy Eraring Pty Ltd (Origin) proposes to develop a new 700 megawatt (MW) / 2800 MW-hour (MWh) battery energy storage system (BESS) on land within the landholding of the Eraring Power Station, Eraring, approximately 40 kilometres (km) southwest of Newcastle in the Lake Macquarie local government area (LGA).

The Department exhibited the Environmental Impact Statement (EIS) for the project and received no public submissions. In addition, 17 government agencies, including Lake Macquarie City Council (Council) provided advice.

The key assessment issues identified for the project are energy transition and land use compatibility.

The project would capture and store energy, including energy generated from renewable sources, and distribute this energy back into the grid during peak demands. The project would also provide firming capacity to the National Energy Market (NEM) as well as additional services to assist grid stability, including frequency control ancillary facilities.

The project site is located on non-operational rehabilitated land associated with the Eraring Power Station landholding, which is used for energy generation purposes. Lands surrounding the Eraring Power Station site includes a railway line, a coal mine, and the residential areas of Eraring to the south and Dora Creek to the west. The project is located in an area already used for electricity generation and largely shielded from nearby residences and the project is compatible land use in this location.

The Department has also undertaken a comprehensive assessment of the full range of other potential impacts, including biodiversity, noise, visual, land contamination, hazards, bushfire, water, heritage, and traffic. The Department has recommended a range of detailed conditions, developed in conjunction with agencies and Council, to ensure all potential impacts are effectively minimised, managed or offset.

Overall, the Department considers the site to be suitable for the project as it is located close to the existing electricity network and would capture, store and distribute energy to support the reliability of energy supply to New South Wales. The project would also facilitate energy transition following the recently announced closure of the Eraring Power Station, currently scheduled for August 2025.

The project is consistent with the Commonwealth's *Renewable Energy Target* and NSW's *Climate Change Policy Framework* and the *Net Zero Plan Stage 1: 2020 – 2030*, as it would contribute 700 MW / 2800 MWh of energy storage, to dispatch energy to the grid when the energy generation from renewable resources is limited, which would increase grid stability and energy security.

The project would also provide flow-on benefits to the local community, including up to 128 construction jobs and a capital investment of about \$798 million. Council is also supportive of the project as it would enable the continued use of the Eraring Power Station landholding for electricity supply purposes.

The Department considers that the project would not result in any significant impacts on the local community or the environment, and any residual impacts can be managed through the implementation of the recommended conditions.

The project would result in benefits to the State of NSW and is therefore in the public interest.

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1 Introduction

Origin Energy Eraring Pty Ltd (Origin) proposes to develop a new State significant development battery energy storage system (BESS) within the existing Eraring Power Station landholding, Eraring, approximately 40 kilometres (km) southwest of Newcastle and 1 km northeast of Dora Creek township in the Lake Macquarie local government area (LGA). Origin owns and operates the Eraring Power Station landholding (see **Figure 1**).

The Eraring Power Station has been operating since 1982 and is Australia's largest power station, with a generation capacity of 2,880 megawatts (MW). The Eraring Power Station provides approximately 14% of the power requirements of the National Electricity Market and 25% of the power requirements of New South Wales.

In February 2022, Origin announced their intent to close the Eraring Power Station by late 2025, seven years ahead of the original closure timeframe.

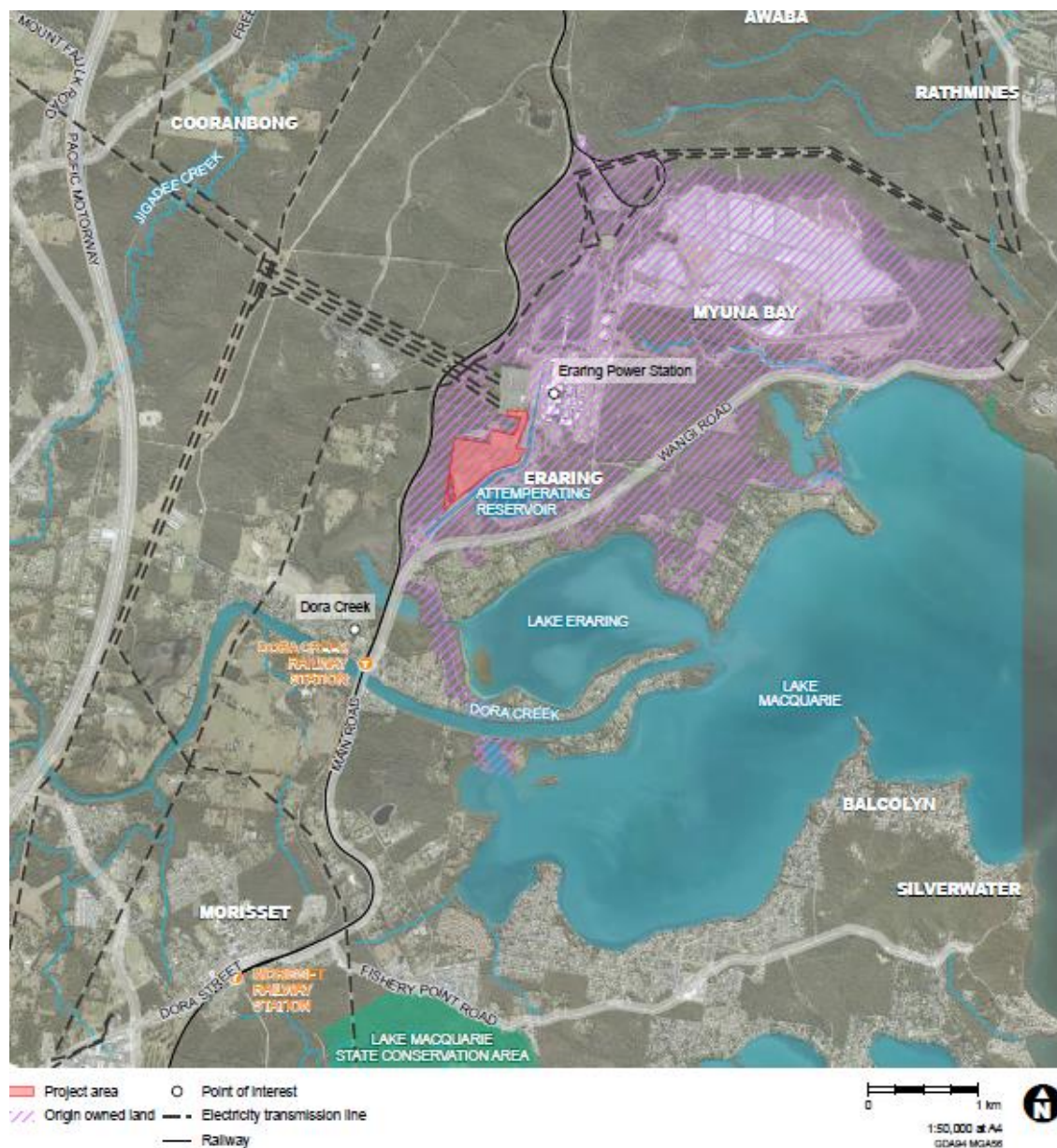


Figure 1 | Regional Context Map

2 Project

The project involves the construction of a new BESS, with a storage capacity of up to 700 MW / 2800 MWh, and a new 330 kilovolt (kV) overhead transmission line connection, and augmentation works to Transgrid's existing Eraring switchyard, located approximately 400 m north of the project site (see **Figure 4**). It also involves the upgrading and decommissioning of equipment over time.

The BESS would be constructed in three stages over approximately 54 months.

The key components of the project are summarised in **Table 1**, shown in **Figure 4**, and described in detail in the Environmental Impact Statement (EIS) (see **Appendix B**) and Submissions Report (see **Appendix D**). **Figure 2** shows the site and **Figure 3** provides an example of a typical BESS (illustrative only).



Figure 2 | View north to Eraring Power Station across the site (Source: EIS)



Figure 3 | Illustrative image of BESS (not specific to the Eraring BESS; Source: Origin)

Table 1 | Main Components of the Project

Aspect	Description
Project summary	The project includes: • construction and operation of a Battery Energy Storage System with up to 700 MW / 2800 MWh capacity (capable of providing 700 MW for up to four hours), comprising up to 8,500 pre-assembled lithium-ion battery enclosures with integrated control systems, inverters, heating, ventilation and air conditioning units and transformers on level hardstand surface and cut and fill to create a level surface; • an on-site substation and compound area, including single storey office building, control rooms, switch rooms, amenities, access tracks, laydown areas, car park and security fencing • completion of an approximately 400 m long 330kV overhead transmission line connecting to the switchyard at the adjacent Eraring substation operated by Transgrid
Project area	• Site: 1200 ha • Development footprint: 25 ha (including transmission line corridor)
Access route	• The primary heavy vehicle haulage route is from Port Botany (Sydney), M1 Pacific Motorway, Mandalong Road, Main Road, Wangi Road, and then Rocky Point Road. • The over-dimensional vehicle haulage route is from the Port of Newcastle, M1 Pacific Highway, thence via approved routes either through Morisset to the south or through Toronto to the North.
Site entry and road upgrades	• All vehicles would access the site via the existing entry point off Rocky Point Road • No road or intersection upgrades are proposed.
Construction	• The construction period would occur in three, 18 month stages (total 54 months), with a peak construction period of up to 5 months for each stage. • Construction hours would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	The expected operational life of the infrastructure is approximately 20 years. However, the project may involve infrastructure upgrades that could extend the operational life.
Decommissioning and rehabilitation	The project also includes decommissioning at the end of the project life, which would involve removing all infrastructure.
Hours of operation	24 hours a day, seven days a week
Employment	Up to 128 construction jobs and up to 10 operational jobs.
Capital investment value	\$798.8 million

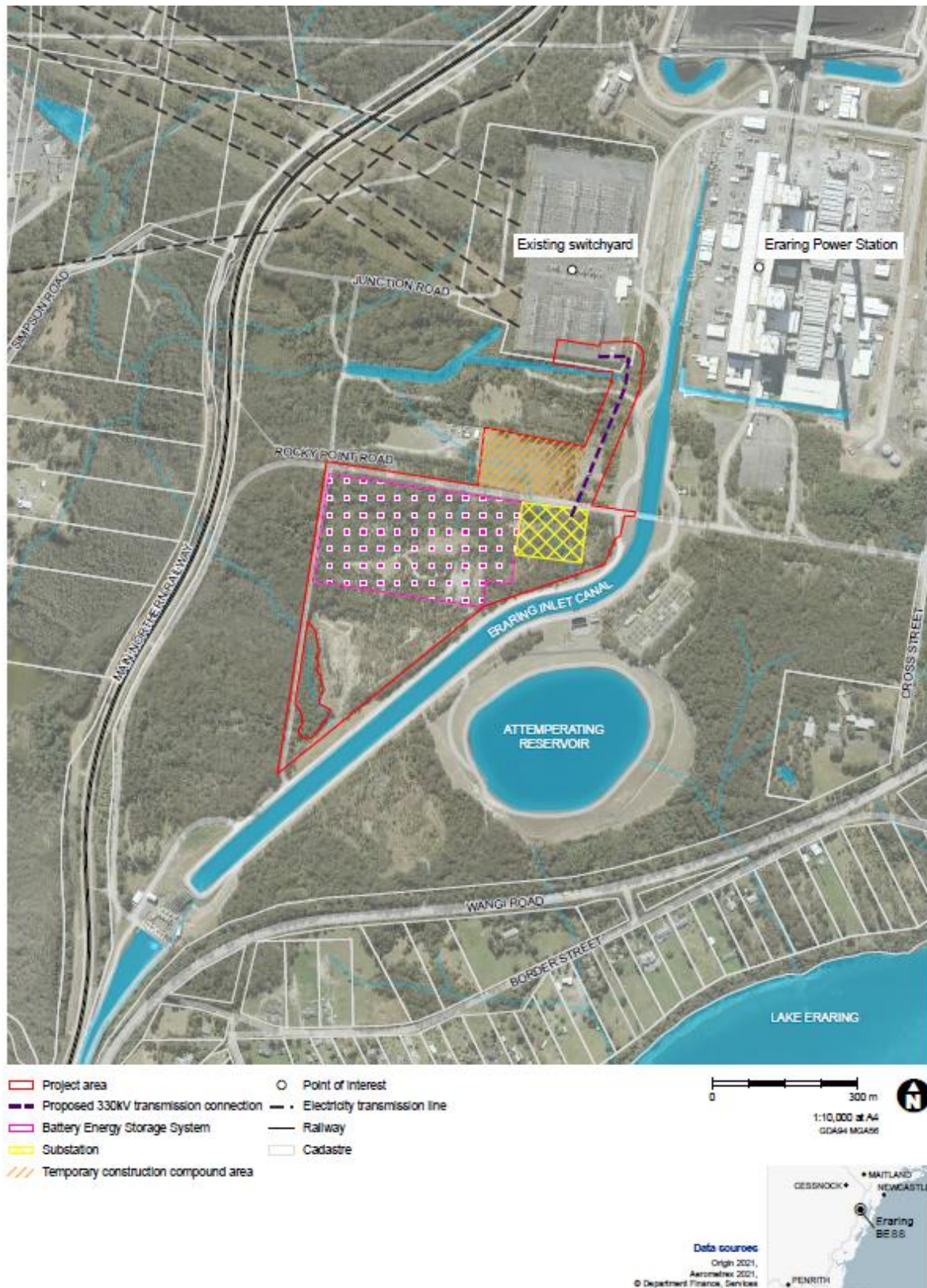


Figure 4 | Project Layout

3 Strategic context

3.1 Site and Surrounds

Eraring Power Station

The project is located on a 25 hectare (ha) site within the larger 1,200 ha landholding of the Eraring Power Station in the Hunter Region of NSW. The project site is zoned SP2 (Infrastructure) under the *Lake Macquarie Local Environmental Plan 2014* (LEP) and is located on non-operational land at the southern end of the Eraring Power Station landholding.

The project site was used as a borrow pit for the adjoining attenuating reservoir associated with the Eraring Power Station and has since been rehabilitated. Land within the project site is undulating, with a gentle south to north gradient. Native vegetation within the project site includes tracts of woodland (4.9 ha) and regenerated native vegetation areas (10.2 ha) provided as part of the rehabilitation of the site. The remaining land within the project site is comprised of exotic vegetation or disturbed areas.

The proposed development footprint is 25 ha and was designed to avoid constraints within the broader Eraring Power Station landholding, including Serious and Irreversible Impacts (SII) on mapped swift parrot habitat areas and wetland areas.

Surrounding land

Surrounding land includes vegetated buffer areas within and adjacent to the Eraring Power Station landholding, industrial uses and rural and residential properties and is described in **Table 2**.

Table 2 | Surrounding land use

Land use	Description	Approx. distance
Infrastructure	Eraring Inlet Canal and attenuating reservoir associated with the Eraring Power Station	southeast boundary
Infrastructure	Transgrid switchyard and Eraring Power Station	400 m to the north
Infrastructure	Coal storage area and ash dam associated with the operation of the Eraring Power Station	1 km and 2 km to the northeast respectively
Infrastructure	Great Northern Railway line	200 m to the west
Infrastructure	Transgrid Eraring substation	400 m north
Mine	Centennial Cooranbong Coal Mine	800 m northwest
Residential	Eraring and Dora Creek that include land zoned C4 (Environmental Living), RU2 (Rural Landscape) and RU4 (Primary Production Small Lot)	1 km to the south and west respectively
Residential	New subdivision within Dora Creek zoned R2 (Low Density Residential)	1 km to the southwest

3.2 Other Energy Projects

The Hunter region of NSW has attracted interest from solar, wind and energy storage developers given the presence of major transmission lines and existing electricity substations. There is one approved solar farm, one proposed solar farm and two proposed battery energy storage systems within approximately 50 km of the project site, with the nearest solar farm located approximately 12 km south of the site and the nearest proposed BESS located approximately 8 km northeast of the site (see **Table 3** and **Figure 5**).

However, the Hunter region has also historically been used for coal mining and power generation operations, and there are five operational mining projects and three operational power stations within approximately 30 km of the site, with the nearest mine, being the Cooranbong Mine, located approximately 1 km to the west of the site, and the nearest power station, being the existing Eraring Power Station, located 400 m to the north of the site within the same landholding (see **Table 4** and **Figure 5**).

The Eraring Power Station is the largest coal fired power station in Australia. In February 2022, Origin announced that they would be closing the Eraring Power Station in late 2025, seven years ahead of their original timeframe.

Table 3 | Nearby Renewable Energy Projects

Project	Capacity (MW)	Status	Approx. distance from the project (km)
Awaba BESS	50	Proposed	8
Vales Point Solar Farm	55	Approved	12
Beresfield BESS	100	Proposed	32
Whittingham Solar Farm	100	Proposed	50

Table 4 | Nearby SSD Power Stations and Mining Activities

Project	Capacity (MW)	Status	Approx. distance from the project (km)
Eraring Power Station	2,880	Operational	0.4 (within same landholding)
Vales Point Power Station	1,320	Operational	20
Colongra Power Station	667	Operational	25
Cooranbong Site Entrance (Mandalong Mine)		Operational	1
Myuna Colliery		Operational	6
Mandalong Coal Mine		Operational	10
Newstan Colliery		Operational	15
West Wallsend Colliery		Operational	20

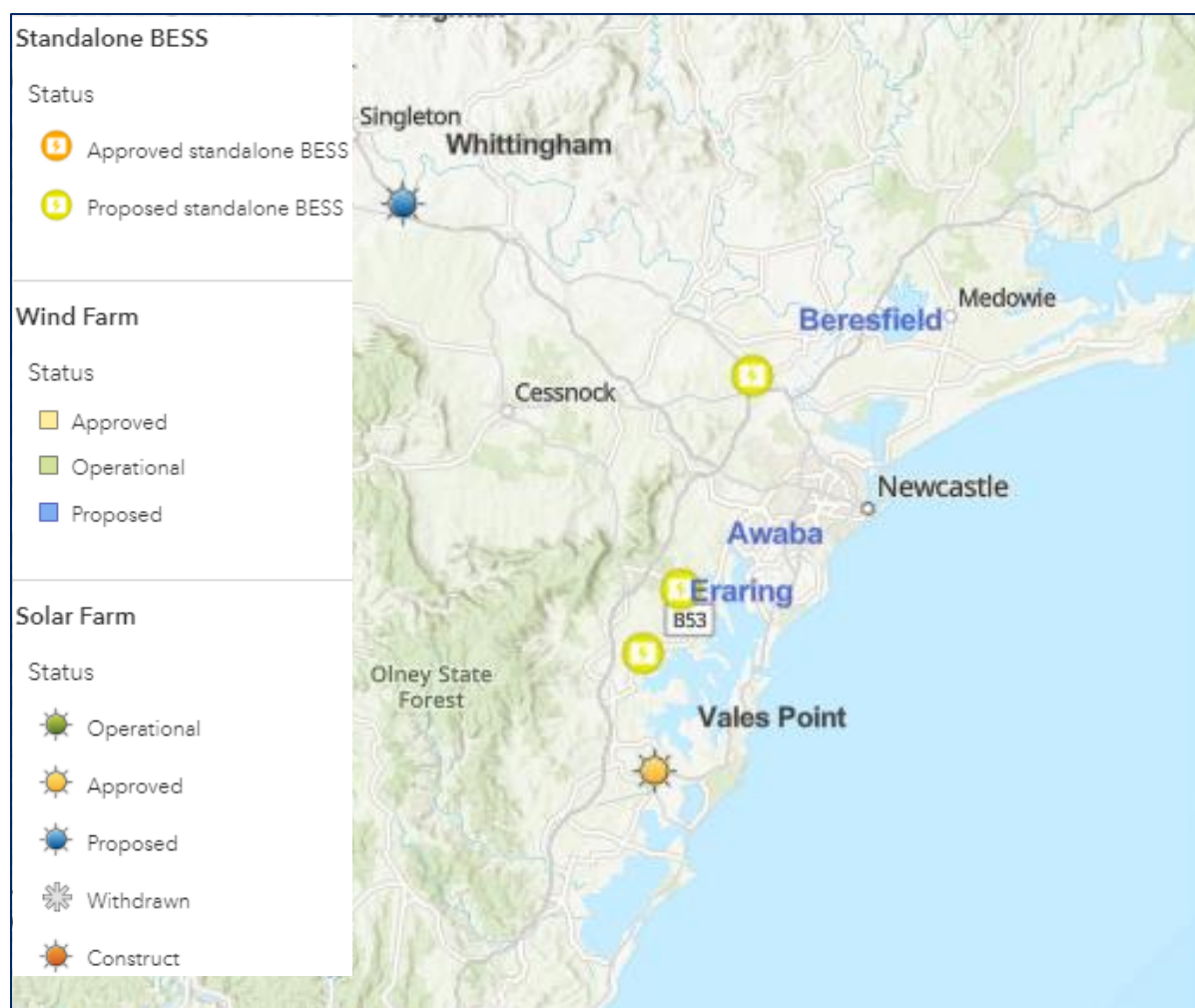


Figure 5 | Nearby renewable energy generation and storage projects

3.3 Energy Context

The existing Commonwealth and State policies and strategies are summarised in **Table 5**.

Table 5 | Summary of Energy Policy

Policy / Year	Summary
Commonwealth	
<i>United Nations Framework Convention on Climate Change (2015)</i>	Paris Agreement aims to limit global warming to well below 2°C, preferably to 1.5°C, compared with pre-industrial levels. Australia's contribution towards this target is a commitment to reduce greenhouse gas emissions by 26% to 28% below 2005 levels by 2030
<i>United Nations Climate Change Conference of the Parties (COP26) (2021)</i>	<i>Australia's Long Term Emissions Reduction Plan</i> sets a pathway to net zero emissions by 2050, and an updated Nationally Determined Contribution affirmed Australia's net zero emissions by 2050 ambition, and its commitment to meeting its existing 2030 target.

Policy / Year	Summary
NSW	
<i>NSW Climate Change Policy Framework (2016)</i>	Sets an aspirational objective for NSW to achieve net zero emissions by 2050. The <i>NSW Net Zero Plan Stage 1: 2020 – 2030</i> (March 2020) builds on this framework and sets out how the NSW Government will deliver on this objective and fast-track emissions reduction over the next decade. The <i>Net Zero Plan Stage 1: 2020-2030 Implementation update</i> (September 2021) aims to reduce emissions by 50% below 2005 levels by 2030.
<i>NSW Electricity Strategy (2019)</i>	Firmed renewables are identified as the lowest cost option to replace aging coal power stations, and that without additional private investment in firming technologies, NSW faces a risk of not meeting its Energy Security Target following the planned closure of the Liddell Power Station in 2023. The strategy also notes that all other coal fired power plants in NSW, including Eraring Power Station, are scheduled for closure within the next twenty years.
<i>AEMO's 2020 Integrated System Plan (ISP)</i>	AEMO forecasts that the National Energy Market (NEM) will need up to 19 gigawatts (GW) of new, dispatchable resources to firm renewables over the next 20 years. The ISP also states that battery storage (such as the proposed Eraring BESS) is required to provide firming capacity and to support intra-day energy shifting.
<i>NSW Electricity Infrastructure Roadmap (2020)</i>	The roadmap proposes the delivery of Renewable Energy Zones (REZ), including the proposed Hunter-Central Coast REZ. NSW Government support for this REZ to unlock regional investment and new energy infrastructure and for the development of new transmission infrastructure to connect low-cost generation to the electricity system. Whilst the Hunter-Central Coast REZ is yet to be identified or declared, the project would likely be located within this REZ.
<i>Hunter Regional Plan 2036</i>	The Regional Plan identifies renewable energy as a priority growth sector and promotes the diversification of energy supplies for the region through renewable energy. Council also promotes business and industry investment in clean and renewable energy initiatives to support a strong and diverse economy with a minimised environmental footprint in the <i>Lake Macquarie Local Strategic Planning Statement 2020</i> .

In 2021, NSW derived approximately 27% of its energy from renewable sources. The rest was derived from fossil fuels, including 69.7% from coal and 2.8% from gas. With no current plans for the development of new coal power stations in NSW combined with the rapid growth in the development of renewable energy sources, NSW requires additional firm supply, such as batteries and pumped hydro, for dispatchable energy.

The project's alignment with existing Commonwealth and State policies and strategies are considered further in **Section 5.1**.

4 Statutory Context

4.1 State significant development

The project is classified as State significant development under Section 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is because it triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP), as it is development for the purpose of electricity generating works with a capital investment value of more than \$30 million.

Consequently, the Minister for Planning is the consent authority for the development. However, under the Minister's delegation of 17 January 2022, the Director, Energy Assessments, may determine the development application as Council did not object, there were less than 15 objections from the general public and a political donations disclosure statement has not been made.

4.2 Permissibility

The project site is located wholly within land zoned SP2 - Infrastructure under the *Lake Macquarie Local Environmental Plan 2014* (Lake Macquarie LEP), the provisions of which are discussed in **section 5.2**. The SP2 zone includes various land uses that are permitted with and without consent. Electricity generating works, which includes battery storage, is a type of infrastructure and is therefore permitted with consent within the SP2 zone, being a development for a purpose specified on the land zoning map.

Electricity generating works are further regulated by *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). Under clause 34 of the Infrastructure SEPP, electricity generating works are permissible with consent on any land in a prescribed rural, industrial or special use zone. Land zoned SP2 - Infrastructure is a prescribed special use zone under the Infrastructure SEPP. Consequently, the project is permissible with development consent.

4.3 Integrated and other approvals

Under Section 4.41 of the EP&A Act, a number of other approvals are integrated into the State significant development approval process, and therefore are not required to be separately obtained for the proposal.

Under Section 4.42 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal.

The Department has consulted with the relevant government agencies responsible for the integrated and other approvals, considered their advice in its assessment of the project, and included suitable conditions in the recommended conditions of consent to address these matters (see **Appendix E**).

4.4 Biodiversity Conservation Act

The *Biodiversity Conservation Act 2016* (BC Act) applies to the project, with Section 7.9 of the BC Act requiring an EIS for the project to include a Biodiversity Development Assessment Report (BDAR).

Under Section 7.14, the Minister must consider the likely impact of the project on biodiversity values as assessed under the BDAR. Under Section 7.16, this includes forming an opinion whether the residual impacts of the project are serious and irreversible impacts (SAIL).

To assist a decision-maker with this task, the BC Act provides a framework consisting of principles defined in clause 6.7 of the *Biodiversity Conservation Regulation 2017*. The *Guidance to assist a decision-maker to determine a serious and irreversible impact* (DPIE, 2019) contains principles for determining SAIL, including criteria to interpret such principles.

If the project is likely to have an SAIL, under Section 7.16 of the BC Act consideration would need to be given to these matters and whether there are additional and appropriate measures that will minimise such impacts, should development consent be granted.

This is discussed and assessed in **section 6.3**.

4.5 Mandatory Matters for Consideration

Section 4.15 of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. These matters are summarised as:

- the provisions of environmental planning instruments (including draft instruments), development control plans, planning agreements, and the EP&A Regulations;
- the environmental, social and economic impacts of the development;
- the suitability of the site;
- any submissions; and
- the public interest, including the objects in the EP&A Act and the encouragement of ecologically sustainable development (ESD).

The Department has considered all of these matters in its assessment of the project, as well as Origin's consideration of environmental planning instruments in its EIS, as summarised in **section 6** of this report. The Department has also considered relevant provisions of the environmental planning instruments in **Appendix F**.

5 Engagement

5.1 Department's engagement

The Department publicly exhibited the EIS from 18 November 2021 until 15 December 2021 and advertised the exhibition in the *Newcastle Herald*, and notified adjoining landowners adjacent to the property boundary.

The Department also consulted with Council and the relevant government agencies throughout the assessment, and inspected the site on 21 March 2022.

The Department notified and sought comment from Transgrid, Essential Energy and Transport for NSW (TfNSW) in accordance with the Infrastructure SEPP, as discussed further in **section 5.4**.

5.2 Origin's engagement

Origin undertook engagement with the surrounding community as detailed in the EIS, including newspaper advertisements, informing near neighbours via phone and letterbox drop, updating the Eraring Power Station website to include information about the project, and email correspondence and presentations to the Eraring Power Station Community forum and the Eraring Power Station Ash Dam Community Consultation Committee. Origin also undertook consultation with the Department and relevant government agencies during the assessment process.

5.3 Submissions and Submissions Report

During the exhibition of the EIS, the Department did not receive any public submissions. Advice was received from 17 government agencies, including Lake Macquarie City Council.

Full copies of the agency advice are attached in **Appendix C**.

Origin provided a response to all matters raised in agency advice on the project (see **Appendix D**) and has also provided additional information during the Department's assessment (see **Appendix A**).

5.4 Key issues – Government Agencies and Utility Providers

None of the government agencies objected to the project. However, they provided comments on the key aspects of the project and recommended conditions of consent. A summary of the key matters raised in the government agency submissions and subsequent advice is provided in **Table 6**.

The Department's consideration of the matters raised is provided in **Section 6** of this report.

Table 6 | Summary of Agency Advice

Agency	Key Issues	Position	Section in Assessment Report
Lake Macquarie City Council	- Noted support regarding the continuity of operations within the Eraring Power Station landholding - Biodiversity - Traffic and transport	Support	Section 6.3
Biodiversity, Conservation and Science Directorate (BCS)	Requested further information regarding serious and irreversible impacts (SAII) and historic revegetation of site.	Comment	Section 6.3
Water Group	- Impacts on watercourses within site - Impacts on downstream environment	Comment	Section 6.3
Transport for NSW	Requested further clarification regarding background traffic data and estimated traffic volumes	Comment	Section 6.3
Regional NSW – Mining, Exploration & Geoscience (MEG)	- Noted that adequate consultation had been undertaken with title holder of Consolidated Coal Lease over site. - Requested further consultation regarding any proposed biodiversity offset areas.	Comment	Section 6.3
Heritage NSW	Supported the findings and recommendations of the Aboriginal Cultural Heritage Assessment Report (ACHAR), including the implementation of an unexpected finds protocol.	Comment	Section 6.5
Fire & Rescue NSW	Requested an Emergency Response Plan and Fire Safety Study	Comment	Section 6.5
Rural Fire Service	Provided recommendations regarding bushfire safety measures in accordance with relevant bushfire safety requirements stipulated under <i>Planning for Bushfire Protection 2019</i>, including the provision of a static water supply and asset protection zones	Comment	Section 6.5
Subsidence Advisory	Noted mining under site is unlikely and site is not affected by historical workings	Comment	Section 6.5
Environmental Protection Authority	- Provided comments regarding impacts on stormwater quality and land contamination - Provided comments regarding noise impacts and noise levels associated with the development	Comment	Section 6.5

The **Department's Primary Industries Fisheries Group** (DPI Fisheries), the **Department's Primary Industries Agriculture Group** (DPI Ag), **Crown Lands Group** (DPI Crown Lands), **Sydney Trains**, **Hunter Water** and **Water NSW** raised no concerns or provided no comments. **Transgrid** did not raise any concerns but provided information on the network connection process.

6 Assessment

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues, namely energy transition and land use compatibility.

The Department has also considered the full range of potential impacts associated with the project and has included a summary of the conclusions in **section 6.3**. A list of the key documents that informed the Department's assessment is provided in **Appendix A**.

6.1 Energy Transition

The project aligns with a range of national and state policies (see **Table 5**), which identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability.

The project will support the State's continued transition away from traditional power generation derived from fossil fuels, which is largely dispatchable (able to quickly ramp up or down depending on electricity demands), to renewable energy generation such as wind and solar, which is inherently variable. The project would provide 'firming capacity' by contributing to dispatchable energy availability during peak energy demands or when renewable production is low.

With the planned closures of a number of coal-fired power stations within the Hunter region (Liddell in 2023, Eraring in 2025, and Bayswater in 2033), the project provides for the staged delivery of 700 MW / 2800 MWh (providing 700 MW for up to four hours) of dispatchable energy, providing firming capacity to power up to 261,000 homes.

Importantly, the project would also contribute to energy security and reliability by providing frequency control ancillary services and system restart ancillary services, meaning the project would contribute to energy supply meeting energy demands, within defined technical parameters, and without disruption.

6.2 Compatibility of Proposed Land Use

The development is located wholly within the SP2 Infrastructure zone under the LEP. As discussed in **section 3.3**, electricity generating works, which includes battery storage, is a permissible land use under the LEP.

The project site is located on disturbed and rehabilitated land associated with the operation of the Eraring Power Station within the Eraring Power Station site and the surrounding area contains infrastructure for the Eraring Power Station, a railway and coal mine.

An extensive vegetated area zoned C4 – Environmental Conservation adjoins the western boundary of the project site, and further vegetated zones are located to the east and southeast of the project site.

The established residential areas of Eraring and Dora Creek are located to the south and west of the project site, respectively, with the nearest residences located approximately 600 m from the development footprint. The land use zoning of the site and surrounds is shown in **Figure 6**.

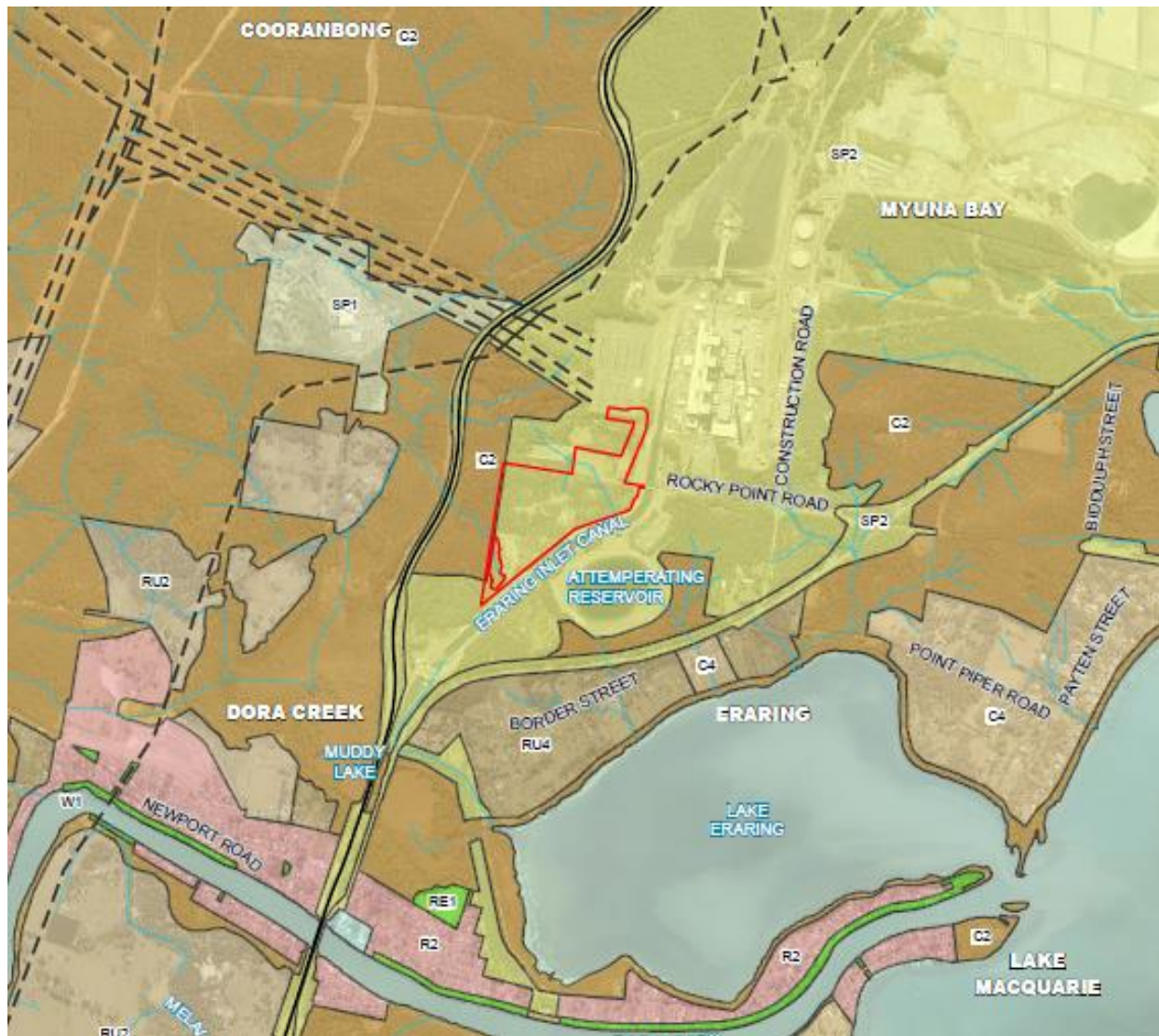


Figure 6 | Land use zoning

The Department considers that the operation of the development is suitable within the land use context of the locality, aligns with the use of the broader Eraring Power Station site for electricity generating purposes and would not detract from the character of the area. The Department considers that the project has been designed to minimise impacts on environmentally sensitive land and is sited appropriately in close proximity to the existing Eraring switchyard, with ease of access to existing transport networks.

Given the surrounding land uses, and having evaluated the impacts of the development, the Department considers that the development would not result in any land use conflicts, and any amenity impacts of the development could readily be managed through the application of Origin's mitigation measures and the recommended conditions. The Department's assessment of off-site amenity impacts considered the impact of construction and operational traffic generation, noise, overland (hydrological) flows, and visual impacts, and concludes that the impacts would be minor subject to the recommended conditions (see **Section 6.3**).

6.3 Other issues

The Department's consideration of other issues is summarised in **Table 7**.

Table 7 | Summary of other issues raised

Findings	Recommendations
Biodiversity	
- The project site has been largely modified following construction of the water attenuating dam associated with the Eraring Power Station, and most vegetation is a result of re-seeding and regeneration. The site selected has a generally low ecological value and development footprint avoids large areas of Threatened Ecological Communities and threatened species that occur in the wider area. - The project would disturb 4.6 ha of moderate condition Scribbly Gum - Red Bloodwood - <i>Angophora inopina</i> heathy woodland (PCT 1636), 0.3 ha of low condition Prickly-leaved Paperbark Forest (PCT 1716), and 10.2 ha of moderate condition planted native vegetation. - The Prickly-leaved Paperbark Forest (PCT 1716) is consistent with Swamp Sclerophyll Forest Endangered Ecological Community (EEC) listed under the Biodiversity Conservation Act (BC Act). - Connectivity of Koala habitat across the development site is poor, and areas where connective pathways are present has generally been avoided. 3.1 ha of the site is mapped important habitat of the Swift Parrot and requires consideration of the Serious and Irreversible Impact (SAIL) provisions under the BC Act. - However, Swift Parrot was not detected during survey and important habitat vegetation mapped within the development footprint (PCT 1636) is unlikely to be regularly relied upon by any populations of Swift Parrot, as it comprises species that are not typically winter-flowering and is therefore unlikely to constitute winter foraging habitat. - Origin's assessment considers the project would not be likely to have serious and irreversible impacts, and BCS supports these findings, noting the project avoids significant areas of swift parrot habitat existing elsewhere on the Eraring Power Station landholding. - The Commonwealth has determined the project is not a 'controlled action' under the EPBC Act if undertaken in a particular manner, and Origin has committed to a suite of stormwater and drainage management measures to address these requirements. - A total of 119 ecosystem credits (PCT 1636 and PCT 1716), and 275 species credits (Small-flower Grevillea, Swift Parrot, Squirrel Glider, Black-eyed Susan) are required to offset impacts as a result of the project. The final credit requirement would be retired in accordance with the NSW Biodiversity Offset Scheme. - With these measures, both BCS and the Department consider that the project is unlikely to result in a significant impact on the biodiversity values of the locality.	- Retire the applicable biodiversity offset credits in accordance with the NSW Biodiversity Offsets Scheme. - Prepare and implement a Biodiversity Management Plan in consultation with BCS, including measures to protect and manage vegetation and fauna habitat outside the approved disturbance area.
Noise & Vibration	
Noise generated by construction activities are predicted to be well below the 'highly noise affected' criterion of 75 dB(A), and generally below the 'noise affected' criterion under EPA's <i>Interim Construction Noise Guideline</i> (ICNG) at all residential receivers, except for minor	Minimise the noise generated by any construction, upgrading or decommissioning activities on site in accordance with best

exceedances during stage 1 works exceeding between 1-3 db(A) to the west and south of the site.

- Origin has committed to implementing noise mitigation measures in accordance with the ICNG, including use of low noise plant and equipment, temporary noise barriers and limiting construction to standard hours only.
 - The operational noise levels are not predicted to exceed project noise trigger levels (PNTL) under the *NSW Noise Policy for Industry* (EPA, 2017), meaning project operations are not expected to impact any residential receivers, and do not trigger the need for further investigation and noise mitigation measures.
 - Potential cumulative operational noise impacts are limited, with noise levels of the project being generally lower than the Eraring Power Station. However, under noise enhancing conditions a potential exceedance by up to 3 dB(A) may occur at some receivers. This exceedance is considered minor and unlikely to be discernible to the average listener, and would not warrant receiver based treatments or controls.
 - EPA acknowledged the appropriateness of PNTLs to regulate operational noise at this location, particularly noting the established use of the site as a power station and existing background noise levels of the locality.
 - No vibration impacts are predicted at any vibration sensitive receivers, including residences, based on separation distances exceeding 100 m.
 - The Department has recommended conditions requiring Origin to minimise noise during construction, upgrading or decommissioning, and limiting operational noise.
- practice requirements outlined in the ICNG.
 - Comply with the project noise trigger levels as derived from the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence and take all reasonable and feasible steps to minimise operational noise
 - Restrict construction hours to Monday to Friday 7 am - 6 pm, and Saturday 8 am - 1 pm unless inaudible at non-associated receivers.

Visual

- The project site is located close to the existing Transgrid switchyard within the Eraring Power Station landholding, which is surrounded by a substantially vegetated and undulating landscape, interspersed with rural residential developments and other infrastructure uses.
 - The established residential areas of Lake Eraring and Dora Creek are located within 1 km to the southeast and west of the project site respectively, with the nearest residences located approximately 600 m from the development footprint.
 - Origin assessed visual impacts of the project within 2 km of the site, including two representative viewpoints from Dora Creek, being residential high points most likely to be visually impacted by the project. Representative viewpoints were taken from an existing residence to the west of the site and from a proposed subdivision to the southwest of the site.
 - The assessment concluded that visibility of the project from publicly accessible areas would be limited, and visual impacts on residences and recreational users of Lake Macquarie would be negligible due to distance, intervening mature vegetation and other infrastructure in the locality, and that no additional landscaping or other visual mitigation measures would be required.
 - Given the site context, the Department is considers the project would not have any significant visual impacts on surrounding receivers and no additional visual mitigation is required for the project.
- Minimise visual impacts by selection of less obtrusive colours and reflective surfaces.
 - Minimise the off-site visual impacts of the development, including the potential for any glare or reflection.
 - Ensure that external lighting is minimised and complies with *Australian/New Zealand Standard AS/NZ 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting* or its latest version.

Land Contamination

- Contamination assessment of the site included investigation of soils, surface water and groundwater, and found the project area does not represent a risk to human health requiring any remediation.
- The potential for localised asbestos impacts, historically identified within the site, would be appropriately managed through an unexpected finds protocol.
- Sampling of stagnant surface water found localised, low level concentrations of perfluorooctane sulfonate (PFOS), low pH indicating potential for acid sulphate soils, and dissolved zinc concentrations above ecological assessment criteria.
- Historically, groundwater in the vicinity of the site reported concentrations of copper, lead, nickel and zinc above the ecological assessment criteria, and concentrations of manganese above the adopted human health criteria.
- Origin has committed to a suite of at-source surface water management and contamination controls, and an acid sulfate soils management plan, to prevent discharge of pollutants to off-site ecological receptors.
- The project does not include groundwater extraction, and the construction of a hardstand surfaces would limit infiltration and migration of any groundwater contaminants.
- Should unexpected contamination be found requiring remediation, a Remedial Action Plan (RAP) would be prepared and implemented in accordance with EPA guidelines.
- With these measures, the Department and the EPA are satisfied that the site is suitable to accommodate the proposed development.
- Prepare and implement Acid Sulfate Soil Management Plan, Unexpected Finds Procedure for Contamination (including Asbestos), including provisions for a Remedial Action Plan if contamination is found and remediation is required.
- Management measures for materials during construction works by implementation of the decision tree for reuse of soil in the PFAS National Environmental Management Plan (DAWE, 2020) and consultation with EPA if required.

Hazards

- Origin's preliminary risk analysis (PHA) considered risk associated with transport and storage of hazardous materials and with operation of the battery storage itself, in accordance with SEPP 33 and the relevant Hazardous Industry Planning Advisory Papers.
- Thermal runaway was identified as the highest risk to the project and Origin have committed to a suite of specific controls through detailed design to mitigate this risk, such as automated monitoring and shutdown functions, fire suppression and fire-resistant enclosures to limit propagation, cooling systems to dissipate heat and appropriate separation distances between battery enclosures.
- The project would comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for electric, magnetic and electromagnetic fields.
- The Department considers with the conclusions of the PHA noting project hazards can be managed to acceptable levels through detailed design.
- Prepare and implement a Fire Safety Study;
- Prepare and implement a detailed Emergency Plan, that identifies procedures for managing risks on site.

Bushfire

- In addition to the PHA, Origin conducted a bush fire risk assessment in consideration of the requirements of *Planning for Bush Fire Protection 2019*.
 - The project site and surrounding land to the north and west of the site are mapped as Category 1 vegetation, considered to be the highest risk for bushfire.
 - The Eraring Power Station landholding is subject to an existing bushfire management plan, which includes management of Category 1 vegetated areas surrounding the project site as Strategic Fire Advantage Zones (SFAZ) and Asset Protection Zones (APZ) to target fuel loads and manage bushfire risk within the landholding. This existing bushfire management plan would remain in place at all
 - Ensure that the development complies with the relevant asset protection requirements in the RFS's *Planning for Bushfire Protection 2019* and Standards for Asset Protection Zones.
 - Ensure the defensible space is managed as an APZ and the development is suitably equipped to respond to fires including water supply tank and appropriate connectors.
-

stages of the development and would reduce the risk of bushfire within the project site.

- In addition to the existing APZ established under the Eraring Power Station Bushfire Management Plan, Origin would maintain a 10 m internal APZ within the entire project site boundary, which would include the clearing of all native vegetation within the APZ.
- Origin would also implement a bushfire emergency management plan specific to the project site.
- The Department considers that the bushfire risks can be suitably controlled through the implementation of standard fire management procedures and recommendations made by the RFS and FRNSW.
- Prepare a Fire Safety Study and an Emergency Plan for the development.

Water

- One mapped first order watercourse occurs within the southern portion of the site, but falls outside of the development footprint and would not be impacted by the project. Origin has committed to a suite of mitigation measures and water quality performance outcomes to protect this watercourse.
- Parts of the project site are identified as flood prone and would be affected by a 1 in 20, 1 in 100 and 1 in 500 year rainfall events, however the footprint of the project would be on land at or above the Probably Maximum Flood (PMF) level. Minor filling is proposed (up to 0.4m) to achieve freeboard above the PMF.
- Due to existing site levels and proposed mitigation measures including on-site stormwater detention, the project would not result in loss of floodplain storage or flood flow obstruction and would not impact any public roads or rural residential properties in the locality.
- Water demand for construction is estimated at 10 ML, principally for dust suppression purposes, and would be sourced from existing fill points within the Eraring Power Station, and within existing water licence entitlements. Operations water usage would be minimal.
- As indicated above, no groundwater extraction is proposed for the project and Origin has committed to a suite of at-source surface water management and contamination controls, and an acid sulfate soils management plan, to prevent discharge of pollutants to off-site ecological receptors.
- Ensure the BESS is designed, constructed and maintained to reduce impacts on surface water, acid sulfate soils and groundwater.

Heritage

Aboriginal Cultural Heritage

- Site surveys undertaken in consultation with Registered Aboriginal Parties (RAPs) identified a landscape previously disturbed by power station activities and did not identify any Aboriginal heritage sites or potential archaeological deposits (PAD) within the project site.
- If Aboriginal artefacts or skeletal remains are identified during construction of the project, all work would cease, and an unexpected finds procedure would be implemented.
- Prepare and implement a Heritage Management Plan in consultation with Heritage NSW and Aboriginal Stakeholders, including procedures for unexpected finds, in consultation with RAPs.

Historic Heritage

- No Commonwealth or State heritage items are located within or surrounding the site.
- No locally listed heritage items are located within the project site.
- Two locally listed heritage items identified under the Lake Macquarie LEP ((The Eraring Power Station (LEP 93) and Great Northern Railway (LEP 189)) are located within 500 m of the project site.
- These items would not be altered, disturbed or indirectly impacted as a result of the proposed development.
- The Department and Heritage NSW consider that the project would not significantly impact the heritage values of the locality.

Traffic and Transport

- The transport route for heavy vehicle during construction is from Port Botany via M1 Pacific Motorway, Mandalong Road, Main Road, Wangi Road and Rocky Point Road.
- The transport route for oversized and overmass vehicles (OSOM) is from Port of Newcastle via the M1 Pacific Motorway, then via one of two OSOM approved routes either through Morisset to the south or through Toronto to the North.
- Site access would be via the existing access point on Rocky Point Road.
- An increase in traffic volumes would occur during the 3 stage (total 54 months) construction period, with up to 60 heavy vehicles and 128 light vehicle movements a day expected during the peak period for each stage. 20 OSOM movements are required per stage to deliver larger materials and components to the site, such as the substation transformers and switchroom structures.
- Traffic during operations would be negligible, with a workforce consisting of 10 full time positions.
- While unlikely, the construction period may overlap with and share usage of the State road network with other proposed or approved State significant projects in the region. This includes the approved Vales Point Solar Farm, Whittingham Solar Farm (if approved), Awaba BESS (if approved) and Beresfield BESS (if approved).
- There is sufficient capacity in the State road network to accommodate the construction traffic. The increase in traffic would have minimal impact and would not impede the ability of surrounding landowners to access their property.
- With the implementation of a Traffic Management Plan to manage movements during the construction period, the Department, TfNSW and Council are consider that the project would not result in significant impacts to the road network capacity, efficiency or safety.
- Restrict the number and size of vehicles during construction, upgrading and decommissioning to the peak volumes identified.
- Prepare and implement a Traffic Management Plan, including provisions for dilapidation surveys and details of measures that would be implemented to address road safety

Socio-economic impacts

- The project would generate direct and indirect benefits to the local community, including:
 - up to 128 workers required during the peak construction for each stage of the project;
 - expenditure on accommodation and business in the local economy by workers involved in the project; and
 - the procurement of goods and services by Origin and associated contractors, noting Origin's preference to source workers locally wherever possible.
 - Origin expects that temporary accommodation for workers outside local and regional communities would be sourced from towns within commuting distance of the project, including Morisset, Toronto and Newcastle. Origin has demonstrated that there is likely to be sufficient capacity within existing accommodation establishments to respond to the needs of the project.
 - The project area is located within the existing Origin landholding, which includes buffers to housing and community and social infrastructure, and is surrounded by bushland and vegetation screening. Accordingly, the project would have limited amenity impacts on surrounding communities, including noise, which would be managed through both construction and operational phases of the development.
 - The project is unlikely to result in increased demand on community services and infrastructure. Origin would be required to repair any damage to local roads resulting from the construction, and the facility would require limited maintenance visits during operations.
- No specific recommendation.

- Overall, the Department considers that the project would have a positive socio-economic impact on the local community.

Cumulative impacts

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| <ul style="list-style-type: none"> • Due to intervening topography and vegetation within the site, as well as the distance of the Eraring BESS from most approved and proposed projects in the region, there would not be material cumulative visual impacts. • While there would be some limited cumulative noise impacts associated with the operation of the Eraring Power Station, these impacts would be minor and temporary and would not be above the noise amenity levels for receivers discernible to the average listener. • The nearest renewable energy projects are the proposed Awaba BESS and approved Vales Point Solar Farm, located approximately 8 km to the northeast and 12 km to the southeast respectively. The Awaba BESS, Beresfield BESS and Whittingham Solar Farm are all at a preliminary stage in the planning process, with development applications not yet submitted, and construction has not yet commenced for the Vales Point Solar Farm. • While there is potential for construction of the project to overlap with the construction of any of these renewable energy projects in the region, cumulative impacts are unlikely due to the distance between projects. • Workforce accommodation for these projects would likely be sourced from the local and wider region, including neighbouring towns and local government areas. • While the surrounding regional road network may experience an increase in traffic numbers, there would be no significant cumulative impact on the local roads along the proposed transport route from these projects. • The Department considers that there would not be significant cumulative impacts from nearby projects. | <p>No specific recommendation.</p> |
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Decommissioning and Rehabilitation

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| <ul style="list-style-type: none"> • The Department has developed standard conditions for battery energy storage systems to cover this stage of the project life cycle, including clear decommissioning triggers and rehabilitation objectives. • With the implementation of these measures, the Department considers that the battery system would be suitably decommissioned at the end of the project life, or within 18 months if operations cease unexpectedly, and that the site be would appropriately rehabilitated. | <ul style="list-style-type: none"> • Include rehabilitation objectives requiring the site to be rehabilitated within 18 months of cessation of operations. |
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7 Evaluation

The Department has assessed the development application, EIS and Submissions Report provided by Origin and advice received from relevant government agencies. The Department has also considered the objectives and relevant considerations under Section 4.15 of the EP&A Act.

The site is wholly located on land zoned SP2, where electricity generating works, including battery storage, are permissible with consent.

The project site is located within the broader Eraring Power Station landholding, which comprises the Eraring Power Station, ancillary structures and facilities associated with the Eraring Power Station activities. The landholding also comprises extensive vegetated areas, including densely planted mature vegetation areas to the northwest, west and southeast of the project site. The Eraring substation is also located adjacent to the project site within the Eraring Power Station landholding.

The established residential areas of Eraring and Dora Creek are located to the southeast and west of the project site respectively, with the nearest non-associated residences located approximately 600 m from the development footprint in these areas.

The project layout largely avoids key constraints, including amenity impacts on nearby non-associated residences, remnant vegetation, and bushfire risk. Any residual impacts would be relatively minor and can be managed through the recommended conditions of consent.

The Department considers that there would be no significant visual impacts on surrounding residences, with distance, intervening topography and vegetation providing screening from non-associated residences and the public road network.

Furthermore, Origin has committed to a suite of design measures and controls to minimise the hazards associated with operation of a large-scale battery, including maintaining setbacks and cleared areas to minimise bushfire risk and committing to installing and maintaining technology controls, bunding and fire-fighting equipment on site. To support the Origin commitments, the Department has recommended a series of hazard management plans and studies be implemented during the life of the development consistent with industry guidelines.

Given the distance of the project from other approved and proposed major projects in the region, there would be minimal localised cumulative impacts, including no visual impacts and no cumulative impact on local roads along the project's transport routes.

On balance, the Department considers the site to be appropriate for a BESS, as it has ready access to major electricity transmission network infrastructure, and the development is consistent with the character of the broader Eraring Power Station landholding, which is currently used for energy generation purposes. Further, the BESS would provide an additional and substantial investment towards improving the reliability of the network at Eraring, provide storage and firming capacity to the NEM, and would provide additional services to assist grid stability, including frequency control ancillary services.

8 Recommendation

It is recommended that the Director, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant consent to the application
- **agrees** with the key reasons for approval listed in the notice of decision
- **grants** consent to the application in respect of Eraring Battery Energy Storage System (SSD 15950052); and
- **signs** the attached development consent and recommended conditions of consent (see **Appendix I**).

Prepared by:

Lander Robinson, Senior Environmental Assessment Officer
Karl Okorn, Team Leader

Recommended by:

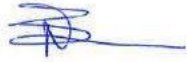


6/5/2022

Karl Okorn
Team Leader
Energy Assessments

9 Determination

The recommendation is **Adopted** / ~~Not adopted~~ by:



10/5/2022

Nicole Brewer
Director
Energy Assessments

Appendices

Appendix A – List of referenced documents

Eraring Battery Energy Storage System – Environmental Impact Statement, Jacobs, 22 October 2021

Eraring Battery Energy Storage System – Submissions Report, 4 March 2022

Appendix B – Environmental Impact Statement

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/eraring-battery-energy-storage-system>

Appendix C – Submissions

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/eraring-battery-energy-storage-system>

Appendix D – Submissions Report

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/eraring-battery-energy-storage-system>

Appendix E – Recommended Conditions of Consent

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/eraring-battery-energy-storage-system>

Appendix F – Statutory Considerations

In line with the requirements of Section 4.15 of the EP&A Act, the Department's assessment of the project has given detailed consideration to a number of statutory requirements. These include:

- the objects found in Section 1.3 of the EP&A Act; and
- the matters listed under Section 4.15(1) of the EP&A Act, including applicable environmental planning instruments and regulations.

The Department has considered all these matters in its assessment of the project and has provided a summary of this assessment below.

Aspect	Summary
Objects of the EP&A Act	The objects of most relevance to the Minister's decision on whether to approve the project are found in Section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department considers that the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project: • is a dispatchable, renewable energy storage system with the potential to increase grid stability and energy security; • is a permissible land use on the subject land; • is located in a logical location in close proximity to the Transgrid Eraring switchyard within the landholding of the Eraring Power Station, which has been used for energy generating purposes for 40 years; • is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard; • would generate up to 128 construction jobs; • would contribute to a more diverse local industry, thereby supporting the local economy and community; • would not fragment or alienate resource lands in the LGA; • would support the Eraring Power Station landholding in its transition away from coal-fired power to renewables; and • is consistent with the goals of the Renewable Energy Action Plan and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. The Department has considered the encouragement of ESD (Object 1.3(b)) in its assessment of the project. This assessment integrates all significant socioeconomic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. In addition, the Department considers that appropriately designed SSD BESS facility development, in itself, is consistent with many of the principles of ESD. Origin has also considered the project against the principles of ESD. Following its consideration, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD. Consideration of environmental protection (Object 1.3(e)) is provided in section 6 of this report. Following its consideration, the Department considers that the project is able to be undertaken in a manner that would at least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department also considers that any residual biodiversity impacts can be managed and/or mitigated by imposing appropriate conditions and retiring the required biodiversity offset credits. Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is provided in section 6.3 of this report. Following its consideration, the Department considers the project would not significantly impact the built or cultural heritage of the locality.
State significant development	Under Section 4.36 of the EP&A Act the project is considered a State significant development. The Minister for Planning is the consent authority for the development. Under the Minister's delegation of 17 January 2022, the Director, Energy Assessments, may determine the project.
Environmental Planning Instruments	The <i>Lake Macquarie Local Environmental Plan 2014</i> (Lake Macquarie LEP) applies and is discussed in section 3.1 and 4.2 of this report, particularly regarding permissibility and land use zoning. The Project is permissible under the Infrastructure SEPP and the LEP.

Aspect	Summary
	In accordance with the Infrastructure SEPP, the Department has given written notice of the project to Transgrid as the electricity supply authorities and TfNSW. Origin completed a preliminary risk screening and preliminary hazard analysis in accordance with SEPP No. 33 – Hazardous and Offensive Development. The Department's consideration of this analysis is discussed in section 6.3. The Department has considered the provisions of SEPP No. 55 – Remediation of Land. A preliminary assessment of the land found no contaminated land within the project site, and the Department is considers the site is suitable for the development. Lake Macquarie City Council is listed under SEPP No. 44 – Koala Habitat Protection (SEPP 44). Origin's assessment concluded that connectivity of Koala habitat across the development site is poor, and areas where connective pathways are present has generally been avoided, and the Department has considered this in section 6.3 of this report.