

Department of Planning, Housing and Infrastructure

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Thunderbolt Wind Farm

State Significant Development Assessment Report (SSD 10807896)

February 2024





Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure (the Department) assessment and evaluation of the State significant development (SSD) application for the Thunderbolt Wind Farm located near located near Kentucky, Uralla and Bendemeer, lodged by Neoen Australia Pty Ltd. The report includes:

- an explanation of why the project is considered SSD and who the consent authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- an opinion on whether the project is approvable or not, along with the reasons, to assist the Independent Planning Commission in making an informed decision about whether development consent for the project can be granted and any conditions that should be imposed.

Executive Summary

This report details the Department's assessment of the State significant development application SSD-10807896 for the Thunderbolt Wind Farm and will be provided to the Independent Planning Commission (the Commission) for their consideration when deciding whether to grant consent to the SSD.

Neoen Australia Pty Ltd (Neoen) proposes to develop a 192 megawatt wind farm, located approximately 47 kilometres north-east of Tamworth near Kentucky, Uralla and Bendemeer in the New England Renewable Energy Zone (REZ). The project is within the Tamworth Regional and Uralla Shire local government areas. The proposed project involves a development of up to 32 wind turbines with a maximum tip height of 260 metres and associated ancillary infrastructure, including a new substation and switching station required to connect to Transgrid's existing 330 kV transmission line traversing the project site. The project has a capital investment value of approximately \$373 million and is expected to generate 285 construction jobs and 9 operational jobs. If approved, construction of the project would take about 18 to 24 months.

Over the next decade, three of the four remaining coal fired generators in NSW are scheduled to retire, removing around 8.3 gigawatts of dispatchable electricity generation from the system. The NSW Government's *Electricity Infrastructure Roadmap* (the Roadmap) provides a plan to coordinate investment in new generation and supports the delivery of 12 gigawatts of new renewable electricity generation and 2 gigawatts of long-duration storage in NSW by 2030.

The project is classified as State significant development (SSD) under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Independent Planning Commission is the consent authority for the project as the project has received more than 50 unique public submissions by way of objection, and Uralla Shire Council objects to the project. The application is permissible with consent.

The Department exhibited the Environmental Impact Statement (EIS) from 27 April 2022 until 24 May 2022 and received 100 unique public submissions (82 objections, 14 supporting and 4 commenting on the project). Key reasons for objections from community include impacts to amenity, biodiversity, transport and site selection.

The Department received advice from 15 government agencies and two host councils, Tamworth Regional Council and Uralla Shire Council. Uralla Shire Council objected to the project and concerns were also received from Muswellbrook Shire Council outside of the exhibition period.

The Department engaged with local councils and relevant government agencies on key issues and they each recommended the implementation of appropriate mitigation and management measures. The Department visited the site on two occasions.

The key assessment considerations are energy security, biodiversity and visual impacts. The Department has also undertaken a comprehensive assessment of the full range of other potential impacts and recommended a range of detailed conditions, developed in conjunction with agencies and councils, to ensure all potential impacts are effectively minimised, managed or offset.

The project would have the capacity to generate 192 MW of renewable energy, sufficient to power around 99,000 homes per year. The project would save up to about 550,000 tonnes of greenhouse gas emissions per year and would make a material contribution towards the State meeting its net zero targets and the renewable energy objectives of the Roadmap.

The project is within the New England Renewable Energy Zone (REZ), which has good wind resource potential, and the existing electricity network that traverses the site and has available network capacity. The project is also located on land where wind development is permissible with consent.

The disturbance footprint includes 162 ha of native vegetation, of which approximately 82.18 ha is woodland and approximately 80.28 ha is derived native grassland. The project has been designed and refined to avoid and minimise biodiversity impacts to these areas. The Department considers that the vegetation clearing impacts of the project would not be significant, subject to a range of mitigation and adaptive management measures and by offsetting the residual biodiversity impacts.

The project has the potential to result in impacts to avifauna, including birds and bats. The Department has recommended conditions requiring adaptive management in a Bird and Bat Adaptive Management Plan (BBAMP) including detailed monitoring and a trigger action response plan to minimise potential impacts of the project; and the implementation of measures to reduce the mortality of those species or populations.

Neoen reduced the number of proposed turbines and limited the project in this application to the north of the New England Highway, significantly reducing the visual impacts to the landscape and for residents south of the New England Highway. There are 27 non-associated receivers located within 5.1 km of the nearest proposed turbine (within the blue line of visual assessment). Most dwellings benefit from distance, intervening topography and screening from existing mature vegetation between viewpoints and the project. The visual performance objectives set out in the Wind Energy Guideline and associated Visual Assessment Bulletin are achieved at all receivers. The Department is satisfied that the project would not fundamentally change the broader landscape characteristics of the area or result in any significant visual impacts on the surrounding non-associated residences.

The Department considers the project would not result in any significant impacts on the local community or the environment, is located on a suitable site for a wind farm development, 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 and is approvable.

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1 Introduction

1.1 The Proposal

1. Neoen Australia Pty Ltd (Neoen) is proposing to develop the Thunderbolt Wind Farm (the project). The site is located approximately 47 km north-east of Tamworth near Kentucky, Uralla and Bendemeer within the Tamworth Regional Council and Uralla Shire Council local government areas (LGAs) (see **Figure 1**).

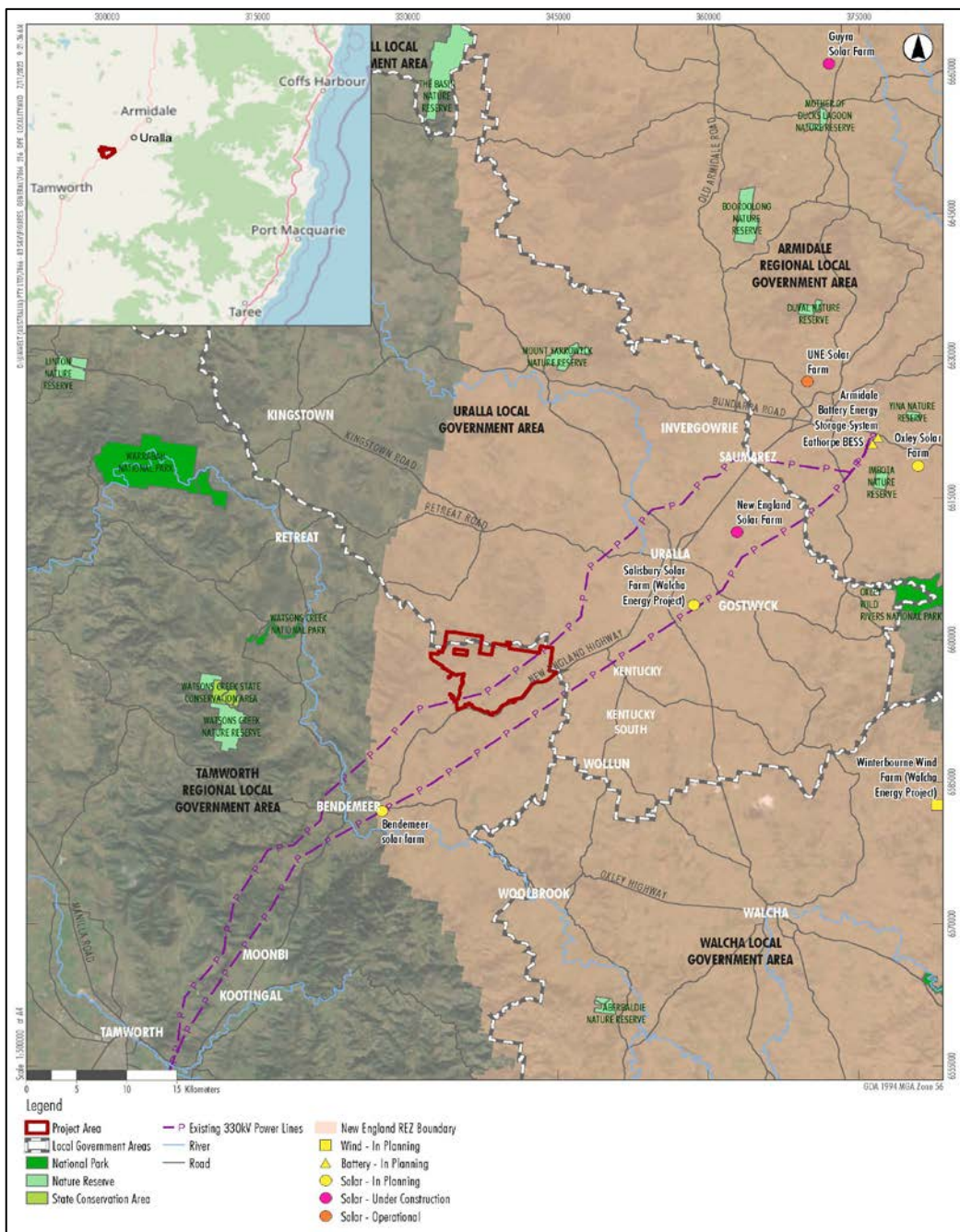


Figure 1 | Regional context map

2 Project

2.1 Project overview

2. Neoen is proposing to develop a wind farm with up to 32 wind turbines with a maximum tip height of 260 metres (m). The project would have a nameplate capacity of approximately 192 megawatts (MW), generating up to 570,000 megawatt hours (MWh) of electricity annually.
3. The project also includes a substation and switching station, and the wind farm would connect to the existing 330 kilovolt (kV) transmission network that traverses the site.
4. The key components of the project as amended are summarised in **Table 1**, shown in **Figure 2**, and described in the Environmental Impact Statement (EIS) (see **Appendix A**), Submissions Report (see **Appendix C**), Amendment Report (see **Appendix D**), and additional information provided during the Department's assessment of the project (see **Appendix E**).
5. The Department notes that during early consultation for the project, including the request for the Secretary's Environmental Assessment Requirements (SEARs), Neoen had proposed the project would have 70 turbines in total, including a second cluster of 33 turbines south of the New England Highway. Neoen subsequently committed to progressing only the turbine cluster north of the highway in this application and reduced the number of turbines in the northern cluster from 37 to 32.

Table 1 | Key aspects of the project

Aspect	Description
Project summary	<ul style="list-style-type: none"> Up to 32 wind turbines and associated infrastructure
Project area	<ul style="list-style-type: none"> Project Site: 5,918 ha Development corridor: 568 ha Disturbance footprint: 215 ha
Wind turbine dimensions	<ul style="list-style-type: none"> Maximum tip height of 260 m Turbine hub height of 170 m Maximum blade length of 90 m (split blade)
Ancillary infrastructure	<ul style="list-style-type: none"> Connection to existing 330 kV transmission line within the site A substation and switching station Operation and maintenance facility, utility services and signage Temporary facilities, including construction compound, mobile concrete batching plants, materials storage and laydown areas Up to 50 km of new internal access tracks Up to six permanent (up to 170 m in height) and two temporary meteorological masts (80 and 110 m)
Off-site road works	<ul style="list-style-type: none"> Upgrades to intersections and surrounding road network Waterway crossings within the project area
Construction	<ul style="list-style-type: none"> 18 to 24 month construction period Construction hours to be limited to Monday to Friday 7 am to 6pm, and Saturday 8 am to 1 pm
Operation	<ul style="list-style-type: none"> About 25 to 30 years. However, the project may involve infrastructure upgrades that could extend its operation
Access routes	<ul style="list-style-type: none"> Access from Port of Newcastle via the New England Highway and local roads via one of two proposed routes via a new site access from the New England Highway
Decommissioning and rehabilitation	<ul style="list-style-type: none"> The project includes decommissioning at the end of the project life, which would involve removing all above ground infrastructure
Employment	<ul style="list-style-type: none"> Up to 285 construction jobs and 9 operation jobs
CIV	<ul style="list-style-type: none"> \$373 million
Voluntary planning agreement (VPA)	<ul style="list-style-type: none"> Tamworth Regional Council – a total of \$3.4M (or 0.9% of CIV) (indexed to CPI) Uralla Shire Council – a total of \$2.2M (or 0.6% of CIV) (indexed to CPI)

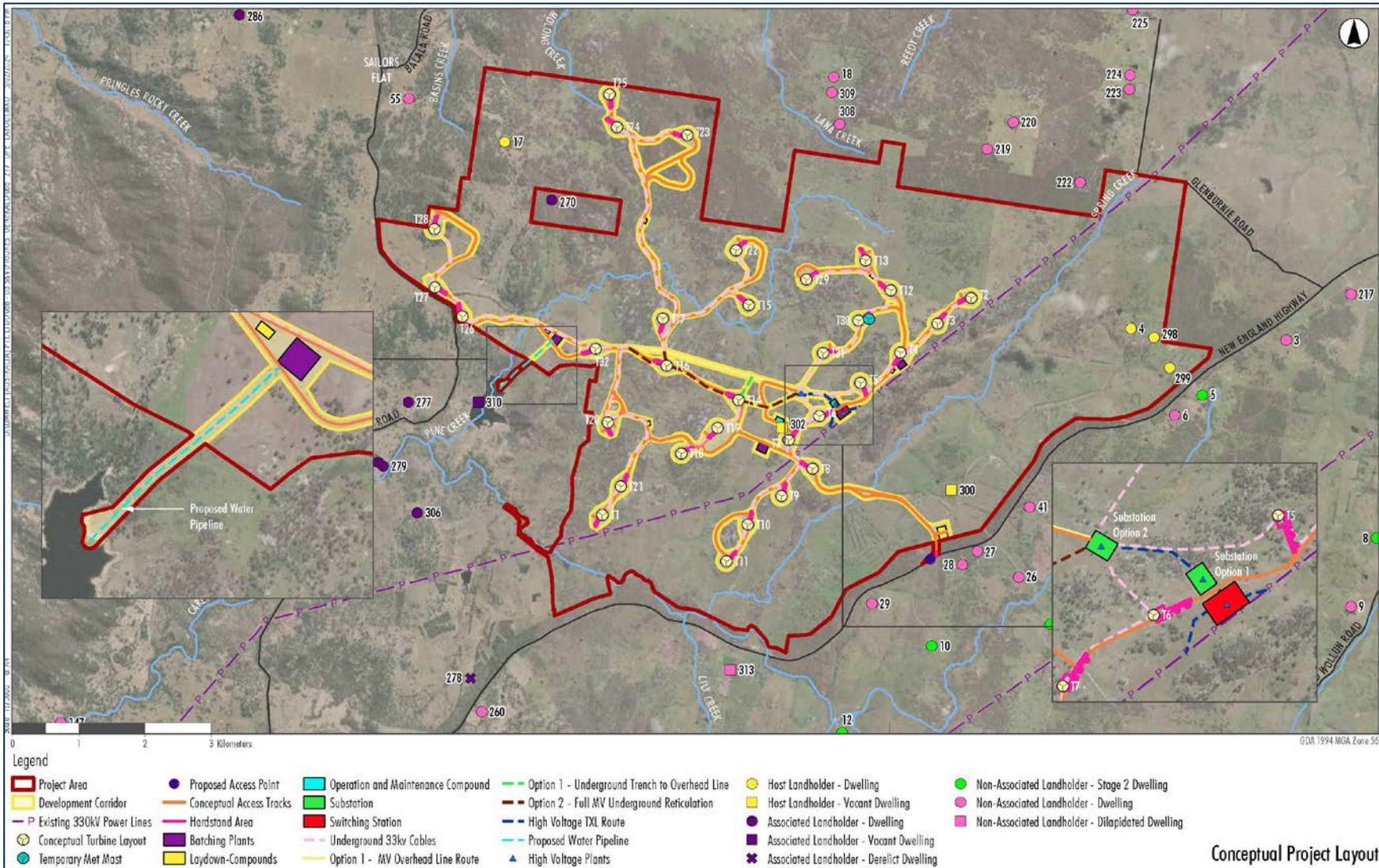


Figure 2 | Project layout

3 Strategic context

3.1 Site and surrounds

6. The project is located in the New England Renewable Energy Zone, an area identified as strategically advantageous with strong renewable energy resource potential, proximity to the existing electricity network, and consideration of potential interactions with existing land uses, including agricultural lands and biodiversity conservation.
7. Key industries in the region are agriculture, forestry and tourism. The land surrounding the site is predominantly a rural landscape, interspersed with broad acre rural residential development, farm buildings, and infrastructure supplying major towns (transmission lines and roads, etc.).
8. The area surrounding the project site is sparsely populated by neighbours with large land holdings. There are 16 non-associated residences located within 3.45 km (the black line) of a proposed turbine location. Potential amenity impacts on these residences are discussed in **section 6**.
9. The three closest localities are Kentucky, Wollun, and Bendemeer, which are located within 20 km of the site and have populations of 179, 44, and 486 people, respectively¹.
10. The topography is undulating, with hills, ridgelines and intervening valleys, including some areas of steep slopes. Elevations range between 870 m and 1,143 m AHD.
11. Land within the site is mainly cleared agricultural land used for sheep and cattle grazing, with native vegetation generally located on the outskirts of the site. There is no mapped Biophysical Strategic Agricultural Land (BSAL) land within the site. Watsons Creek National Park is located approximately 14 km west of the site.
12. The site is located within the Namoi and Gwydir catchment areas. Fourth and fifth order streams and other minor tributaries traverse the project area. The majority of the project area is located within the Carlisles Gully Catchment, which flows west from the project area to the Macdonald River and drains to the Namoi River approximately 30 km north west of the project area. The remaining areas drain to Roumalla Creek, which drains to the Gwydir River approximately 34 km north of the project area. The project area is not prone to flooding.
13. There are seven State significant renewable energy projects within 50 km of the site, the nearest located 20 km from the site. These projects are listed in **Table 2** and shown in **Figure 3**.

¹ Australian Bureau of Statistics, 2021

Table 2 | Nearby energy generation or storage projects

Project	Capacity (MW)	Status	Distance from the project
Bendemeer Solar	210 MW	Proposed	20 km south-west
New England Solar	720 MW	Approved	22 km north-east
Winterbourne Wind	700 MW	Proposed	38 km south-east
Eathorpe BESS	100 MW / 200 MWh	Proposed	45 km north-east
Armidale BESS	150 MW / 300 MWh	Proposed	45 km north-east
Oxley Solar	215 MW	Approved	50 km north-east

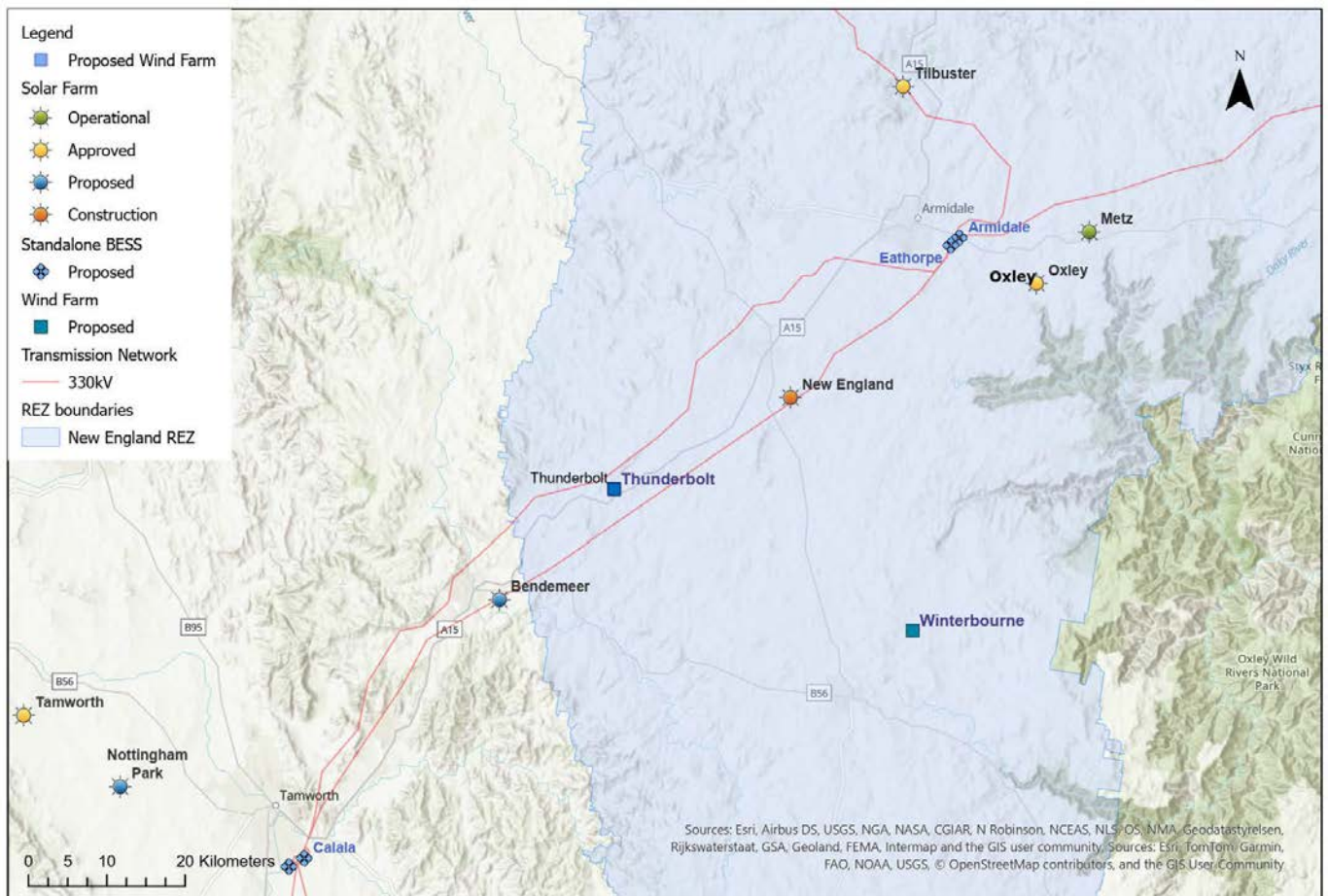


Figure 3 | Nearby energy generation or storage projects

3.2 Renewable Energy Context

14. In 2022, NSW derived approximately 32% of its energy from renewable sources. The rest was derived from fossil fuels, including approximately 63% from coal and 5% from gas. NSW is one of the nation's leaders in large-scale wind, with 15 major operational projects and four under construction.
15. The project is located in the declared New England REZ and would have access to the electrical grid at a location with available network capacity.
16. The Commonwealth and State energy context is described in **Table 3**.

Table 3 | Energy Context

Policy/Year	Summary
<i>Australia's Long Term Emissions Reduction Plan (2021) and Nationally Determined Contribution (2022)</i>	Sets a pathway to net zero emissions by 2050 and affirms Australia's commitment to meeting its revised 2030 target (43% below 2005 levels).
<i>Australian Energy Market Operator's 2022 Integrated System Plan (ISP)</i>	Notes that: <ul style="list-style-type: none"> • without coal, investment is needed to meet significantly increased electricity demand requiring a nine-fold increase in large-scale variable renewable energy generation (wind and solar); and • a mix of solar and wind is needed, and they offer complementary daily and seasonal profiles.
<i>NSW: Climate Change Policy Framework (2016), Transmission Infrastructure Strategy (2018), Electricity Strategy (2019), Electricity Infrastructure Roadmap (2020), Net Zero Plan Stage 1: 2020 – 2030 (2020) and Implementation update (2022), New England North West Regional Plan</i>	Relevant aspects of these policy documents include: <ul style="list-style-type: none"> • aims to achieve net zero emissions in NSW by 2050 and reduce emissions by 70% below 2005 levels by 2030 • notes that all coal fired power plants in NSW are scheduled for closure within the next twenty years • identifies Renewable Energy Zones (REZ) across NSW, aimed at encouraging investment in new electricity infrastructure unlocking additional generation capacity in order to ensure secure and reliable energy in NSW • notes the need to expand transmission infrastructure into REZs to open new parts of the grid for renewable energy projects • unlock regional investment and new energy generation infrastructure.

17. The project's alignment with existing Commonwealth and State policies and strategies are considered in **section 6.2**.

3.3 NSW Wind Energy Framework

18. In December 2016, the Department released the NSW Wind Energy Framework (the Framework). The Framework seeks to provide greater clarity, consistency and transparency for industry and the community regarding assessment and decision-making on wind energy projects.
19. The Framework provides a merit-based approach to the assessment of wind energy projects, which is focused on the issues unique to wind energy, particularly visual and noise impacts. The key documents comprising the Framework include the Wind Energy Guideline, the Visual Assessment Bulletin and the Noise Assessment Bulletin.
20. The Department's assessment of the project against the requirements of the Framework are detailed in **section 6**.
21. The Department is implementing a new Energy Policy Framework to help achieve the transition to renewable energy, reduce emissions and secure an affordable supply of electricity for the people of NSW. The Framework includes a new Wind Energy Guideline, which includes updates to the existing wind energy guideline. The Framework is currently in draft form and is on public exhibition and will not be finalised until sometime in 2024. The draft Framework, including the Wind Energy Guideline, does not apply to the assessment of this project.

4 Statutory context

4.1 State significant development

22. The project is classified as State significant development under section 4.36 of the EP&A Act. This is because it triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), as it is development for the purpose of electricity generating works with a capital investment value of more than \$30 million.
23. Under section 4.5(a) of the EP&A Act and section 2.7 of the Planning Systems SEPP, the Independent Planning Commission (the Commission) is the consent authority for the development as the project has received more than 50 unique public submissions by way of objection, and Uralla Shire Council objects to the project.

4.2 Amended Application

24. In accordance with section 37 of the EP&A Regulation, a development application for State significant development can be amended at any time before the application is determined. Neoen has sought to amend its application to include an above-ground pipeline associated with water supply during the construction phase.

25. An application can be amended with the agreement of the consent authority (i.e. the Commission for this development), however, under the delegation dated 11 May 2022 and 14 June 2022, the Director, Energy Assessments can agree to amendments to an application.
26. The Department accepted Neoen's amended application for the following reasons:
 - the amended application directly responds to the key issues raised in submissions received by the Department during the exhibition of the original application;
 - Neoen assessed the impacts of the amended project (see **Appendix D**); and
 - the Department made the additional information available online and sent it to the relevant agencies for comment.

4.3 Permissibility

27. The site is located within land zoned RU1: Primary Production under the *Tamworth Regional LEP 2010* (Tamworth Regional LEP) and includes small parcels zoned RU2: Rural Landscape under the *Uralla LEP 2012* (Uralla LEP).
28. The RU1 zone includes various land uses that are both permitted with and without consent. As electricity generating works are not expressly listed as permitted with or without consent, it is permissible with consent under the Tamworth Regional LEP.
29. The RU2 zone also includes various land uses that are both permitted with and without consent. Electricity generating works are permitted with consent under the Uralla LEP.
30. Electricity generating works are also permissible on any land in a prescribed non-residential zone, under section 2.36 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP). Land zoned RU1 and RU2 are 'prescribed non-residential zones' pursuant to the Transport and Infrastructure SEPP. Consequently, the project is permissible with development consent.

4.4 Integrated and other approvals

31. Under section 4.41 of the EP&A Act, several other approvals are integrated into the SSD approval process, and consequently are not required to be separately obtained for the proposal.
32. 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 (e.g. approvals for any works under the *Roads Act 1993*).
33. As the project traverses Crown land, including reserve for travelling stock, authority to use Crown land is required separately under the *Crown Land Management Act 2016* prior to its use.

34. The Department has consulted with the relevant government authorities responsible for these integrated approvals (see **section 5**), considered their advice in its assessment of the merits of the project and included suitable conditions in the conditions of consent to address these matters (see **Appendix F**).

4.5 Mandatory matters for consideration

35. 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;
 - public submissions and advice from government agencies; and
 - the public interest, including the objects in the EP&A Act and the encouragement of ecologically sustainable development (ESD).
36. The Department has considered these matters in its assessment of the project, as well as Neoen's consideration of environmental planning instruments in its EIS. Detailed consideration of the relevant provisions of the environmental planning instruments is provided in **Appendix A** and the Department concluded the project is consistent with the relevant provisions.

4.6 Application of the Biodiversity Conservation Act 2016

37. The *Biodiversity Conservation Act 2016* (BC Act) applies to the project. In particular:
- under section 7.9 of the BC Act, the EIS for the project must be accompanied by 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; and
 - under section 7.16, the consent authority must consider if the project is likely to have serious and irreversible impacts (SRI) on biodiversity values and if so, whether there are any additional and appropriate measures that will minimise those impacts.
38. The EIS for the project included a BDAR, which was prepared in accordance with the Biodiversity Assessment Methodology (see Appendix 12 of the EIS, which is included in **Appendix A** of this report). The BDAR was updated to address comments raised in submissions on the project and to account for project amendments (see Appendix 3 of the Response to Submissions), which is included in **Appendix C** of this report.

39. The Department has considered the findings of the updated BDAR and the advice from BCD in its assessment (see **Appendix B**).

4.7 Commonwealth Matters

40. On 28 October 2021, a delegate of the Commonwealth Minister for the then Department of Agriculture, Water and the Environment (DAWE) (now the Australian Government Department of Climate Change, Energy, the Environment and Water (AG DCCEEW)) determined the development (EPBC 2021/9048) to be a 'controlled action' in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to likely significant impacts to listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).
41. The Department's assessment of the potential impacts of the project on controlling provisions under the EPBC Act relating to biodiversity is provided in **section 6.3.6**. Further information on the matter that the Commonwealth Minister must consider under the EPBC Act is provided in **Appendix A**.
42. The Department consulted with the AG DCCEEW in accordance with the bilateral agreement and provided draft copies of this assessment report and the recommended conditions of approval to the AG DCCEEW for comment.

5 Engagement

43. The Department publicly exhibited the EIS from 27 April 2022 until 24 May 2022 (28 days) on the Department's website.
44. The exhibition was advertised in the *Tamworth Northern Daily Leader* and *Armidale Express*, *The Australian*, *Sydney Morning Herald*, *Daily Telegraph*, and the Department wrote directly to landowners up to 8 km from the project site, notifying them of the proposal and exhibition dates. The Department visited the site and surrounds on 23 to 24 March 2023 and 26 June 2023 and met with non-associated landowners.
45. The Department also consulted with relevant councils and government agencies during its detailed assessment of the project. The Department notified and sought comment from Transgrid in accordance with the Transport and Infrastructure SEPP, as discussed further in **section 5**.

5.1 Summary of submissions

46. During the exhibition of the application, the Department received 107 public submissions of which 100 were unique (82 objecting to the project, 14 in support and four comments). The unique submissions received are summarised in **Table 4**, and the issues raised in the submissions are summarised in **section 5.2**. All submissions are publicly available on the Department's major projects website (see **Appendix B**).
47. The Department received five additional comments from the public (by email and post) following the end of the submission period that are not included in this summary. These comments did not raise any issues in addition to those discussed below and have been considered in the assessment process.
48. The majority (about 82%) of the submissions received during the public exhibition objected to the project. As shown in **Table 4**, most submissions came from people living 10 to 50 km from the project site, most of whom (about 80%) also objected to the project.

Table 4 | Summary of submitter distances

Submitter distance	Objection	Support	Comment	Total
< 5 km	13	2	0	15
5 to 10 km	0	1	0	1
10 to 50 km	54	11	2	67
> 50 km	15	0	2	17
Total	82	14	4	100*

* Duplicate submissions are not included in this summary

5.2 Summary of public submissions

5.2.1 Submissions in objection

49. Many submissions objecting to the project questioned the suitability of developing a wind farm at this location, raising significant concerns about biodiversity and visual impacts, as well as the applicant's consultation with the community.
50. Other submissions raised concerns about potential noise impacts, socio-economic impacts (including potential property devaluation), decommissioning and rehabilitation, aviation impacts and issues with aerial firefighting, and waste management.

- 51. Some submitters also criticised the adequacy and accuracy of the EIS and its supporting documentation and the need for meaningful engagement from Neoen.
- 52. Some submitters also objected to a potential future Stage 2 of the project, which would be located southeast of the New England Highway and would be the subject of a separate development application and assessment if proposed.
- 53. The key issues raised in public objections are summarised in **Figure 4**.

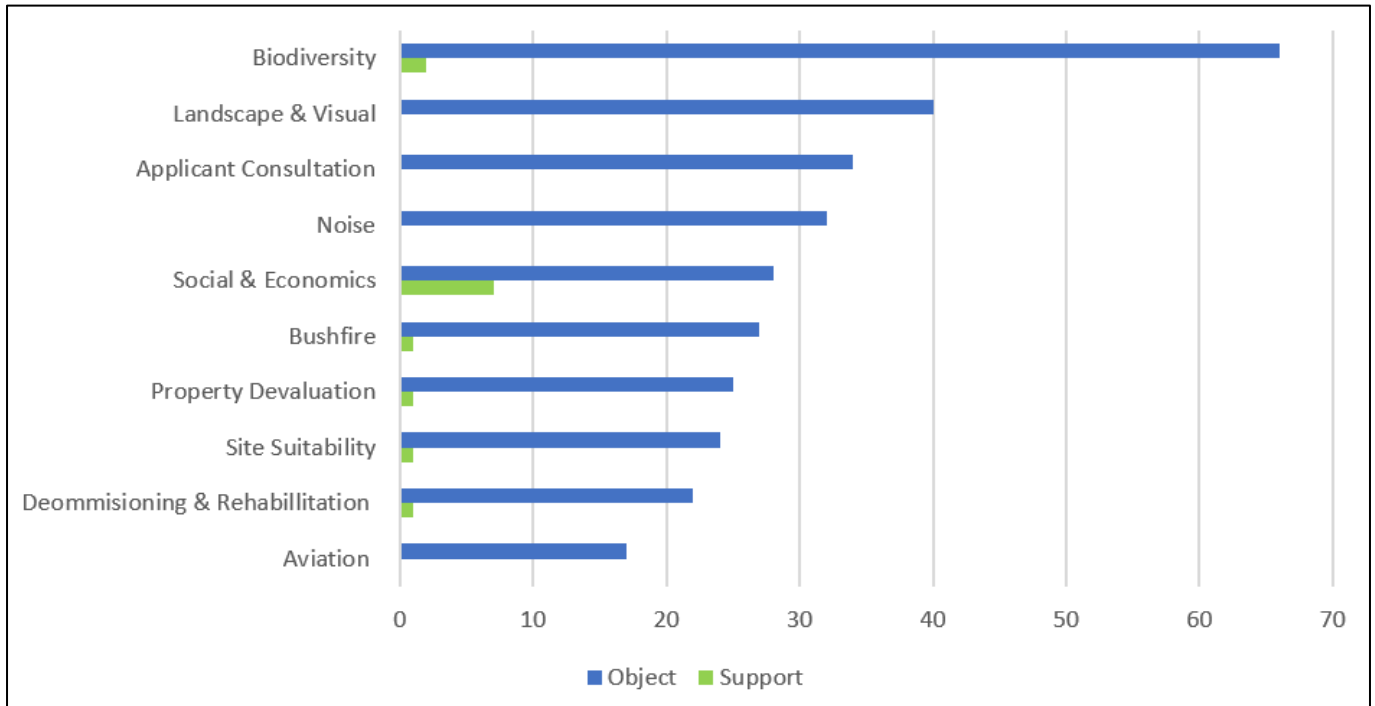


Figure 4 | Key issues raised in public submissions

5.2.2 Submissions in support and comments

- 54. Submissions in support noted the economic benefits of the project, the creation of jobs, and the benefits of renewable energy.
- 55. Submissions commenting on the project raised queries regarding consultation, biodiversity, sourcing and decommissioning of turbines, transport of turbine blades, and water and aviation lighting impacts.

5.2.3 Special Interest Groups

- 56. Four submissions on the project were from special interest groups with matters raised summarised in **Table 5**. The Department has carefully considered the submissions provided by the community, as described throughout **section 6**.

Table 5 | Summary of matters raised in special interest group submissions

Position	Groups	Key Issues
Object (2)	Friends of Kentucky Action Group, Hills of Gold Preservation Inc	Level and quality of community engagement conducted by Neoen and lack of social licence; suitability of the site and its proximity to people; connections to the New England Renewable Energy Zone; landscape and visual impacts, including shadow flicker and obstacle lighting; noise and vibration; biodiversity and ineffectiveness of offsets; Aboriginal heritage; water and soil; traffic and transport; hazards, including blade throw, bushfire, aviation impacts and aerial firefighting; telecommunications; waste; air quality; economic and social impacts.
Comment (2)	Uralla Shire Business Chamber, ZNET Uralla Shire	Supported renewable energy projects in the New England REZ and encouraged engagement between developers, businesses and the broader community. Concerns about community cohesion, amenity and biodiversity impacts.

5.3 Summary of agency advice and council submissions

57. The Department received advice from 15 government agencies and submissions from two host councils, with Uralla Shire Council objecting to the project. The Department also received a letter from Muswellbrook Shire Council after the exhibition concluded.
58. A summary and overview of the key comments made by public authorities is provided in **Table 6**. A full copy of agency advice is available on the Department’s major projects website (see **Appendix B**). Further consideration of agency advice is provided in **section 6**.

Table 6 | Summary of Council, Government Agency and Utility Provider advice

Agency/ Council	Key matters raised
BCD	Technical adequacy of the Biodiversity Development Assessment Report, impacts to bird and bat species, and compliance with the Biodiversity Assessment Method (BAM) and offset credits.
NSW DCCEEW – Water Group	Security and supply of water and works on waterfront land.
Transport for NSW	Site access, turn treatments and conflict with an existing site property access, and clarifications regarding the Transport Route Assessment.
Heritage NSW	Technical comments on the Archaeological Report and proposed Aboriginal Cultural Heritage Management Plan, including consultation, mapping and test excavation methodology.
Regional NSW – Mining, Exploration & Geoscience (MEG)	Requested to be consulted should stewardship sites be proposed for biodiversity offsets to ensure they would not reduce access to prospective land for mineral exploration, or potential sterilisation of mineral or extractive resources.
Crown Lands	Presence, management and alternative use of Crown Lands within the project area.
NSW Rural Fire Service (RFS)	Recommendations regarding bushfire-related conditions of consent and an asset protection zone (APZ) around wind farm infrastructure.
DPI Agriculture	Recommendations regarding project decommissioning.
Environment Protection Authority (EPA)	Water, erosion and sedimentation, and noise impacts.
Civil Aviation Safety Authority (CASA)	Recommendations regarding lighting of turbines to avoid aircraft collisions.
Airservices Australia (ASA)	The project would not have an impact on any Airservices designed instrument procedures, CNS facilities or ATC operations at Armidale Airport.
Department of Defence	Recommendation for the provision ‘as constructed’ details of all tall structures to ASA.

Agency/ Council	Key matters raised
NSW Office of Energy and Climate Change (OECC)	Noted the project would contribute to meeting the NSW renewable energy objectives as set out in the Roadmap and the Infrastructure Investment Objectives Report 2023 (the IIO Report), and support meeting NSW's net zero targets.
Fire and Rescue and Telco Authority	Did not raise any concerns.
Councils	
Uralla Shire Council	Uralla Shire Council objected to the project on the basis of biodiversity, waste management, decommissioning and turbine selection, erosion and sedimentation and water sourcing, infrasound and impacts from road construction.
Tamworth Regional Council	Biodiversity, waste management and decommissioning, erosion and sedimentation, aviation safety, and community benefits.
Muswellbrook Shire Council	Raised concerns about the proposed transport route for the project.

59. Transgrid did not raise any concerns but provided information on the network connection process.

5.4 Response to submissions and amendment report

60. Neoen amended its development application in August 2023 to include an above-ground pipeline associated with water supply during the construction phase (see **Appendix D**). The amendment was proposed in response to issues raised in agency advice (see **Appendix B**).

61. The Department made the Submissions Report and the Amendment Report publicly available on the Department's website and referred them to relevant government agencies and councils for comments.

6 Assessment

6.1 Overview

62. The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues: energy security, biodiversity and visual amenity (see **section 6.2** to **section 6.4**).
63. The Department acknowledges that the project has been designed to minimise potential impacts, including locating turbines and associated infrastructure within areas of low biodiversity values, and significantly reducing the visual impacts to the landscape and for residents south of the New England Highway by reducing the number of proposed turbines.
64. The Department also acknowledges that there have been delays in the assessment process due to further refinement of biodiversity management measures and negotiations with Councils regarding VPAs.
65. The Department has also considered the full range of potential impacts associated with the project and has included a summary of its assessment of these matters in **section 6.5**.

6.2 Energy Transition

66. The project aligns with a range of national and state policies, 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.
67. The Australian Energy Market Operator's *2022 Integrated System Plan* for the National Electricity Market (NEM) notes that about 8.3 gigawatts (GW) of the current 23 GW of coal fired generation capacity is expected to be withdrawn from the NEM by 2030. With the closure of Munmorah Power Station in 2012, Wallerawang Power Station in 2014 and Liddell Power Station in April 2023, and a number of planned closures of coal-fired power stations in the State in the next decade (such as the Eraring, Vales Point and Bayswater power stations), additional utility-scale generation is required to replace the loss of coal-fired generation in the State.
68. The draft *2024 Integrated System Plan* forecasts that there will be a demand for 82 GW of utility-scale wind and solar in the NEM by 2034-35, and 126 GW by 2049-50. It highlights the importance of the resource diversity that will be opened up by the State's REZ network, providing an even mix of wind and solar across the State and noting that wind and solar have complementary daily and seasonal profiles. The project would therefore contribute to replacing the loss of coal-fired generation in the State as well as providing diversification of the generation profile.

69. The project would have the capacity to generate around 192 MW of renewable energy, sufficient to power about 99,000 homes per year. The project would save up to about 550,000 tonnes of greenhouse gas emissions per year. This would assist NSW in achieving the targets established by the *Climate Change (Net Zero Future) Act 2023*, is consistent with the *NSW Climate Change Policy Framework* objective of achieving net zero emissions by 2050 and the *Net Zero Plan Stage 1: 2020 – 2030*.
70. The project is located in a suitable location and Neoen reports that there is a wind resource of around 7.6 metres per second, measured from on-site monitoring, which is considered to be high. The project is within the New England REZ where infrastructure in the region would be supported by NSW Government.
71. The project would connect to an existing 330kV transmission line within the site, which connects to the NSW east coast, Upper Hunter and Queensland has available network capacity which reduces the need for additional transmission infrastructure outside the site and may allow the wind farm to generate renewable energy earlier than other projects that rely on new transmission lines to be built.
72. In terms of energy security, the project is in the public interest as it would play an important role in increasing renewable energy generation and capacity and would contribute to the transition to a cleaner energy system as coal fired generators retire.

6.3 Biodiversity

73. Neoen proposes to clear 162 hectares of native vegetation during construction, which would cause direct and indirect impacts to listed threatened flora and fauna species and communities and the potential for impacts to flight paths of birds and bats (avifauna) from changes in air pressure (barotrauma) or collision with turbines (bird and bat strike).
74. Approximately 75% of the area to be disturbed comprises native vegetation. The surrounding landscape is characterised by large patches of remnant native vegetation in an otherwise predominantly agricultural land use setting.
75. Most submissions objecting to the project raised concerns about impacts on biodiversity from the direct clearing of vegetation, habitat fragmentation and edge effects, clearing of Threatened Ecological Communities (TECs) and bird and bat strikes. Submitters specifically noted impacts to threatened species, including koalas.
76. BCD, Tamworth Regional Council and Uralla Shire Council flagged concerns regarding the assessment of biodiversity and impacts on avifauna species.
77. Neoen commissioned Umwelt (Australia) Pty Ltd (Umwelt) to prepare a Biodiversity Development Assessment Report (BDAR) as part of the EIS. Neoen revised its BDAR to address

advice from government agencies and comments raised in public submissions and to address the changes to the project identified in the amendment report.

6.3.1 Avoidance and mitigation

78. Neoen has broadly aimed to avoid and/or mitigate impacts by:
- locating turbines and associated infrastructure within exotic grassland or disturbed areas (53 ha or 25% of development footprint), or areas of low biodiversity values, including derived native grassland (DNG) (37% of development footprint);
 - avoiding areas of critically endangered ecological community (CEEC) White Box Yellow Box Blakey's Red Gum Grassy Woodland and DNG where possible with only a minor area of 5.68 ha in moderate to good condition being impacted, representing approximately 1% of the Box Gum woodland present within a 13,000 ha area centred on the project;
 - locating the temporary water supply pipeline to avoid any permanent impacts on the CEEC (approximately 0.26 ha would be temporarily impacted) and associated habitat values;
 - prioritising use of existing tracks to locate project infrastructure to reduce overall impact on remnant vegetation;
 - committing to undertake pre-clearance surveys and micro-siting of turbines and ancillary infrastructure during the detailed design stage to further avoid impacts to ecologically sensitive areas, as far as practicable; and
 - committing to develop a Bird and Bat Adaptive Management Plan (BBAMP) including a smart curtailment strategy for minimising bird and bat collision during times of higher activity.
79. The Department has considered these avoidance and mitigation measures in addition to the findings of the revised BDAR, as well as advice from BCD and comments from Tamworth Regional Council and Uralla Shire Council in its assessment.

6.3.2 Native vegetation

80. The project, including road upgrades would disturb around 162 ha of native vegetation, including 82.18 ha of woodland. The disturbance area includes clearing of up to 12.24 ha of White Box – Yellow Box – Blakely's Red Gum Woodland (Box-Gum Woodland) and Derived Native Grassland (DNG) and planted vegetation listed as Critically Endangered Ecological Community (CEEC) under the BC Act and EPBC Act.
81. **Table 7** summarises the estimated impacts of the project on each plant community type. The Department and BCD consider that all communities, including those listed under the EPBC Act, have been correctly identified and assessed.

Table 7 | Native vegetation community impacts

Plant community type	Condition	Conservation Significance		Impact (ha)	Credit liability
		BC Act	EPBC Act		
501 Bendemeer White Gum - Silvertop Stringybark - Roughbarked Apple +/- Moonbi Apple Box grassy open forest of the southern New England Tableland Bioregion	Moderate good	-	-	48.76	2,070
	DNG			76.14	872
	Exotic			47.58	0
510 Blakelys Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	Moderate good	CEEC - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England	CEEC - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	5.68	285
	DNG - low	Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South	-	2.56	40
	DNG - moderate	Western Slopes, South East Corner and Riverina Bioregions	CEEC - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	1.58	37
	Open woodland - low		-	1.86	31
	Exotic with logs			2.22	36
	Planted vegetation		-	0.56	17
542 Stringybark - Roughbarked Apple - cypress pine shrubby open forest of the eastern Nandewar Bioregion and western New England Tableland Bioregion	Moderate good	-	-	4.12	145

Plant community type	Condition	Conservation Significance		Impact (ha)	Credit liability
		BC Act	EPBC Act		
559 Youmans Stringybark Mountain Gum open forest of the western New England Tableland Bioregion	Moderate good	-	-	18.15	727
582 Sedgeland fens wetland of impeded drainage of the Nandewar Bioregion and New England Tableland Bioregion	Moderate	EEC - Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregion	-	3.05	113
Total				212.26	4,373
Total native vegetation				162.46	4,337

82. Neoen has committed to minimise clearing of Box-Gum Woodland and all other TECs where feasible through micro-siting at the detailed design stage, and to offset the residual biodiversity impacts of the project in accordance with the requirements of NSW Biodiversity Offset Scheme.
83. Biodiversity impacts must be offset prior to Neoen carrying out any development that could directly or indirectly impact biodiversity values requiring offset in accordance with the requirements of NSW Biodiversity Offset Scheme.

6.3.3 Threatened flora impacts

84. Nine candidate threatened flora species were identified as potentially occurring on the site and were the subject of targeted surveys. Of the nine candidate species, one threatened species listed as vulnerable under the BC Act (Austral Toadflax) was identified during field surveys. An assessment of significance determined that the project is not anticipated to significantly impact an important population of this species. Neoen has committed to offsetting impacts to this species as detailed in **Table 8**.

6.3.4 Threatened fauna impacts

85. Of the 20 candidate threatened fauna species considered to have potential habitat within the site, one species (the Koala) was identified during targeted site surveys where two Koalas were sighted in the development footprint and there were four camera recordings. BCD considered that *“the project is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal”* and further that *“Impacts to Koala habitats within the development footprint are largely fragmented patches located within a matrix of agricultural land. There are no large, intact areas of Koala habitat proposed to be impacted and the project will not cause any permanent barriers to Koala movement within or through the development footprint.”* Neoen has committed to offsetting impacts to this species as detailed in **Table 8**.
86. One species (the Large bent-winged bat) was recorded during site surveys and is a potential SAI entity. The consideration for SAI for this species relates to the impacts on breeding habitat only. The Department and BCD accept that the development corridor is unlikely to support breeding habitat for these species and therefore the project is not expected to have a serious and irreversible impact on the species.

Table 8 | Threatened species impacts

Species	Conservation Significance		SAI Entity	Impact on habitat (ha)	Credit liability
	BC Act	EPBC Act			
Austral toadflax (<i>Thesium australe</i>)	V	-	No	0.8	25
Koala (<i>Phascolarctos cinereus</i>)	E	E	No	80.5	3,228
Total				81.3	3,253

6.3.5 Bird and bat strike

87. The project has the potential to result in impacts to avifauna, including birds and bats.
88. The assessment of bird and bat strike is dealt with in a different way to other biodiversity impacts. It is considered a ‘prescribed impact’, as opposed to a ‘direct impact’ (like clearing and habitat loss) or an ‘indirect impact’ (such as impacts of predation, and weed invasion, edge effects in adjacent habitat). Direct impacts are discussed above and the BDAR noted that no indirect impact zones were identified.
89. Prescribed impacts are impacts on biodiversity values which are not related to, or are in addition to, native vegetation clearing and habitat loss. There is no policy on how to calculate or quantitatively assess prescribed impacts relating to bird and bat strike, and there is no requirement to provide biodiversity offset credits.

90. In that context, the approach that has been adopted for bird and bat strike for all wind farms in NSW is a combination of a risk assessment followed by post-determination adaptive management. This adaptive management approach involves stringent requirements for baseline monitoring, ongoing monitoring of any strike during operation, and triggers for adaptive management measures to avoid or minimise impacts.
91. Following exhibition of the EIS (and BDAR), BCD requested further information relating to bird and bat strike. The Applicant revised the BDAR, which included a revised assessment of potential impacts of bird and bat strike, and more information on proposed mitigation measures and monitoring. The assessment considered conservation status, flight character, distribution across the site and whether the species is migratory. BCD advised that the parameters used in the BDAR to undertake the risk assessment were acceptable.
92. The Applicant's risk assessment applied a number of highly conservative assumptions based on an approach developed for wind farm developments in Victoria (Arthur Rylah Institute). The risk assessment found that without any mitigation or adaptive management measures six bird and bat species were at a high risk and 12 species at a moderate risk of turbine strike. Additional assessment focussing on turbines concluded that no turbines had a very high risk, 3 turbines were high risk, 19 moderate risk and 10 low risk.
93. BCD raised some residual concerns about bird and bat strike, particularly in relation to the 3 high risk turbines. The Applicant proposed a range of additional monitoring and management measures, and funding for conservation actions for offsetting impacts. The Applicant also proposed \$100,000 funding for a research program.
94. In consultation with BCD, the Department has recommended conditions requiring a comprehensive regime of adaptive management to address the risk of bird and bat strike, including:
- the collection of relevant baseline data on threatened and 'at risk' bird and bat species and populations in the locality that could be affected by the project;
 - a detailed description of the measures that would be implemented on site for minimising bird and bat strike during operation of the project, including:
 - a wind turbine curtailment strategy if required;
 - minimising the availability of raptor perches on wind turbines;
 - prompt carcass removal;
 - controlling pests; and
 - using best practice methods for bat deterrence, including managing potential lighting impacts;

- specific thresholds for unacceptable adverse impacts to ‘at risk’ bird and bat species for turbines T23, T24 and T25;
 - an adaptive management program that would be implemented if the development is having an adverse impact on a particular threatened or ‘at risk’ bird and/or bat species or populations, including:
 - trigger action response plan to minimise potential impacts of the project;
 - the implementation of measures to reduce the mortality of those species or populations; or enhance and propagate those species or populations in the locality, where feasible;
 - a detailed program to monitor and report on:
 - the effectiveness of these measures; and
 - any bird and bat strikes on site; and
 - submitting monitoring data to BCD and the Planning Secretary.
95. Further the Department has recommended the applicant prepare and implement a Research Program and allocate \$100,000 to this program, prepared in consultation with BCD, and be submitted to the Planning Secretary for approval prior to commencement of operation, which must provide further scientific understanding of indirect impacts of wind farms.
96. The Department and BCD are satisfied that the recommended conditions, including the requirement to develop and implement an adaptive management plan in consultation with BCD and the AG DCCEEW, would be effective in managing the risk of bird and bat strike.

6.3.6 Significance of impacts on Commonwealth listed species and communities

97. Neoen identified and addressed all threatened species and communities included in the Commonwealth Referral Decisions (EPBC 2021/9048) (the Referral Decision).
98. Assessments of significance were undertaken for threatened species and communities that were recorded during field surveys or identified as having a moderate or higher potential to occur on the site, including one threatened ecological community, two threatened flora species, and three threatened fauna species (one of which was also a migratory species).
99. Assessments of significance concluded that the project would result in a small impact to the White Box Yellow Box Blakely’s Red Gum Grassy Woodland and Derived Native Grassland CEEC, and would be unlikely to significantly reduce the areas of occupancy of the koala (*Phascolarctos cinereus*) and the Spotted-tailed Quoll (*Dasyurus maculatus*), both listed as endangered under the EPBC Act.

100. The White-Throated Needletail (*Hirundapus caudacutus*), listed as vulnerable under the EPBC Act, also has the potential to be impacted by blade strike associated with the project as stated in **section 6.3.5**.
101. Neoen has committed to pre-clearance surveys carried out by a qualified ecologist followed by a tree-felling supervision to minimise direct impacts to tree-dwelling species, including koalas and Spotted-tailed Quolls. A koala sighting register would also be prepared and implemented to allow employees and contractors to report koala sightings. If the koala sighting register identifies high use areas and/or specific movement corridors for koalas, koala bridges may be installed in consultation with BCD.
102. The Department considers that with the recommended conditions, including the requirement to further avoid and minimise impacts with micro-siting during detailed design and to prepare and implement the BBAMP, the potential impacts on these species would be appropriately minimised and managed.
103. The Department considered Commonwealth matters in consultation with BCD and the AG DCCEEW, including consideration of Neoen's assessments of significance and the relevant approved conservation advice, recovery plans and threat abatement plans (TAPs). A summary of this assessment is provided in **Appendix A**.

6.3.7 Biodiversity Offset

104. The project would generate a credit liability of 4,373 ecosystem credits and 3,253 species credits requiring offset under the NSW Biodiversity Offset Scheme for the project.
105. Both the Department and BCD are satisfied that the offset credit requirements have been correctly calculated. Neoen would offset the residual biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme, which includes the following options:
 - acquiring or retiring 'biodiversity credits' within the meaning of the BC Act;
 - making payments into an offset fund that has been developed by the NSW Government; or
 - funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the offset scheme.
106. Additionally, Neoen proposed several mechanisms for offsetting prescribed and indirect impacts to avifauna that are novel and outside the Biodiversity Offsets Scheme, including offsetting blade strike by funding conservation actions and committing to designing and implementing or funding a research program to assess the extent of indirect impacts are occurring on the project. BCD recommended further discussions with the applicant about the details of these offset mechanisms as part of the development of the BBAMP. In accordance

with the bilateral agreement, variation rules will not be applied to MNES entities and all credits will be retired on a like-for-like basis.

107. The Department has recommended conditions requiring Neoen to retire the required biodiversity offset credits in accordance with the NSW Biodiversity Offsets Policy for Major Projects prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset.
108. Subject to the recommended conditions and further work with Neoen post-approval regarding the BBAMP the Department and BCD are satisfied that the project could be undertaken in a manner that maintains the biodiversity values of the locality over the medium to long term.

6.3.8 Recommended conditions

109. The Department has recommended conditions requiring Neoen to:
 - minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees, within the development footprint and protect native vegetation and key fauna habitat outside the approved disturbance area in accordance with limits in the recommended conditions;
 - prepare and implement the Biodiversity Management Plan which includes a description of the measures to:
 - minimise the potential indirect impacts on threatened flora and fauna species, migratory species and ‘at risk’ species;
 - rehabilitate and revegetate temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
 - control weeds and feral pests;
 - provide a detailed program to monitor and report on the effectiveness of these measures.
 - prepare and implement a Bird and Bat Adaptive Management Plan in consultation with BCD and the AG DCCEEW; and
 - retire the applicable biodiversity offset credits in accordance with the NSW Offsets Policy prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset.

6.3.9 Conclusion

110. The project has been designed and refined to avoid and minimise biodiversity impacts to native vegetation, and the Department considers that the vegetation clearing impacts of the project

would not be significant, subject to a range of mitigation and adaptive management measures and by offsetting the residual biodiversity impacts.

111. The project is not anticipated to significantly impact threatened species, including the Koala and the Austral Toadflax. Neoen has committed to offsetting impacts to threatened species.
112. The potential impacts to avifauna would be addressed through strict conditions requiring a detailed Bird and Bat Adaptive Management Plan (BBAMP) developed in consultation with BCD and AG DECCEW identifying monitoring and triggers that would be implemented on site for minimising bird and bat strike during operation of the development including a curtailment strategy if required.
113. Overall, the Department considers that the biodiversity impacts of the project would not be significant, subject to the implementation of the recommended conditions and by offsetting the residual biodiversity impacts of the project.

6.4 Visual

114. Public submissions objecting to the project on visual grounds were particularly concerned with the size and scale of the wind farm in the landscape and views from residences and public areas. While many submitters also raised concerns about the potential development of more turbines south of the New England Highway, this is outside the scope of this development application, as it has yet to commence its planning process at the time of writing this report.
115. Neoen commissioned a Landscape and Visual Impact Assessment (LVIA) in accordance with the Visual Assessment Bulletin as part of its EIS and provided a further assessment of several receivers, including additional photomontages and wireframes at the Department's request.
116. The Department visited the site and several non-associated residences surrounding the project to assess visual impacts and to further understand residents' concerns.

6.4.1 Avoidance and mitigation

117. The Visual Assessment Bulletin lists different visual impact mitigation options for consideration, including physical turbine alterations (re-siting, re-sizing and re-colouring), landscaping alterations such as vegetation screening, and landowner agreements for significantly affected landowners.
118. The Department considers re-siting or removing turbines the most effective mitigation option, given that re-sizing specific turbines is generally not viable for commercial and maintenance reasons.

119. Since the SEARs were issued, Neoen secured neighbour agreements with three landowners associated with ten dwellings located west of the project site. Additionally, Neoen reduced the number of proposed turbines from 70 (as proposed in the SEARs request) to 32 by:
- completely removing the section of the project located south of the New England Highway, planned for 33 turbines; and
 - reducing the number of turbines north of the New England Highway from 37 to 32 turbines.
120. The Department acknowledges that deleting 38 turbines has significantly reduced the visual impacts on the landscape, particularly for residents located south of the New England Highway.
121. Neoen proposes to address the residual visual impacts by:
- providing vegetation screening at non-associated neighbouring residences where there is an opportunity to reduce the visual impacts of the project further;
 - using building materials and treatments for associated infrastructure that visually complement the existing landscape character and reduce glint;
 - avoiding unnecessary lighting, signage on fences and logos;
 - installing aviation night lighting on 20 turbines only, and committing to partial shielding where it does not compromise the operational effectiveness of night lighting.

6.4.2 Impact Assessment approach

122. The Department assessed the visual impacts of the project against the Visual Assessment Bulletin's visual performance objectives. These depend on the visual influence zone (VIZ) of a receiver which is a combination of viewer sensitivity, visibility distance and scenic quality class, and comprises three zones: high (VIZ1), moderate (VIZ2) and low (VIZ3).
- **Visual Magnitude** – black (3.45 km) and blue (5.1 km) distance thresholds based on turbines 260 m tall indicate where turbines may significantly impact a receiver. In summary, the Visual Assessment Bulletin recommends for dwellings in:
 - VIZ1 within the blue line: avoid turbines or provide detailed justification for turbines;
 - VIZ2 between the blue and black line: consider screening;
 - VIZ2 within the black line: manage impacts as far as practicable and justify residual impacts, describing mitigation measures for turbines; and
 - VIZ3 within the black line: consider screening.
 - **Multiple Wind Turbine Effects** – considers the cumulative landscape and visual impacts. The performance objectives for each receiver are dependent on viewer sensitivity level (rather than VIZ). For level 1 (high sensitivity) receivers, turbines within 8 km should avoid

being visible in more than one 60 degree sector, and for level 2 (moderate sensitivity) receivers, avoid more than two 60 degree sectors.

- **Landscape Scenic Integrity** – considers how the project would alter the current landscape character and scenic quality of the visual catchment. For VIZ1 receivers, turbines should be very small or faint, or of a colour contrast that would not compete with major elements of the existing visual catchment. For VIZ2 receivers, wind turbines may be visually apparent and could become a major element, but not dominate the landscape. No landscape scenic integrity objectives apply for VIZ3 receivers.
- **Key Feature Disruption** – describes how likely turbines are to disrupt the central line of sight and/or the central focal viewing fields surrounding identified key features of a landscape. For VIZ1, turbines should not remove, visually alter or disrupt an identified key landscape feature. For VIZ2, these impacts should be minimised. No key feature disruption objectives apply for VIZ3 receivers.
- **Shadow Flicker and Blade Glint** – shadow flicker to be limited to 30 hours per year and turbines finished with a low reflectivity surface treatment to minimise blade glint.
- **Aviation Hazard Lighting** – where required, hazard lighting must meet the requirements of Australian Standard AS 4282 – 1997 and any prescribed or notified CASA requirement. Shield all hazard lighting within 2 km of a dwelling and avoid strobe lighting.

123. For ease of assessment, the Department grouped non-associated dwellings into three clusters, focusing on dwellings within 5.1 km (the blue line) of the nearest turbine and the village of Kentucky (see **Figure 5**):

- northern cluster dwellings to the north, including northeast and northwest of the project;
- New England Highway cluster dwellings located south of the project and the New England; and
- Kentucky dwellings including the township to the southeast of the project.

124. While there are additional receivers located more than 5.1 km from a turbine, these receivers are expected to be largely screened by topography and existing vegetation given the increased distance of the project to the receivers.

125. The assessment of predicted visual impacts and the Department's recommendations are discussed below.

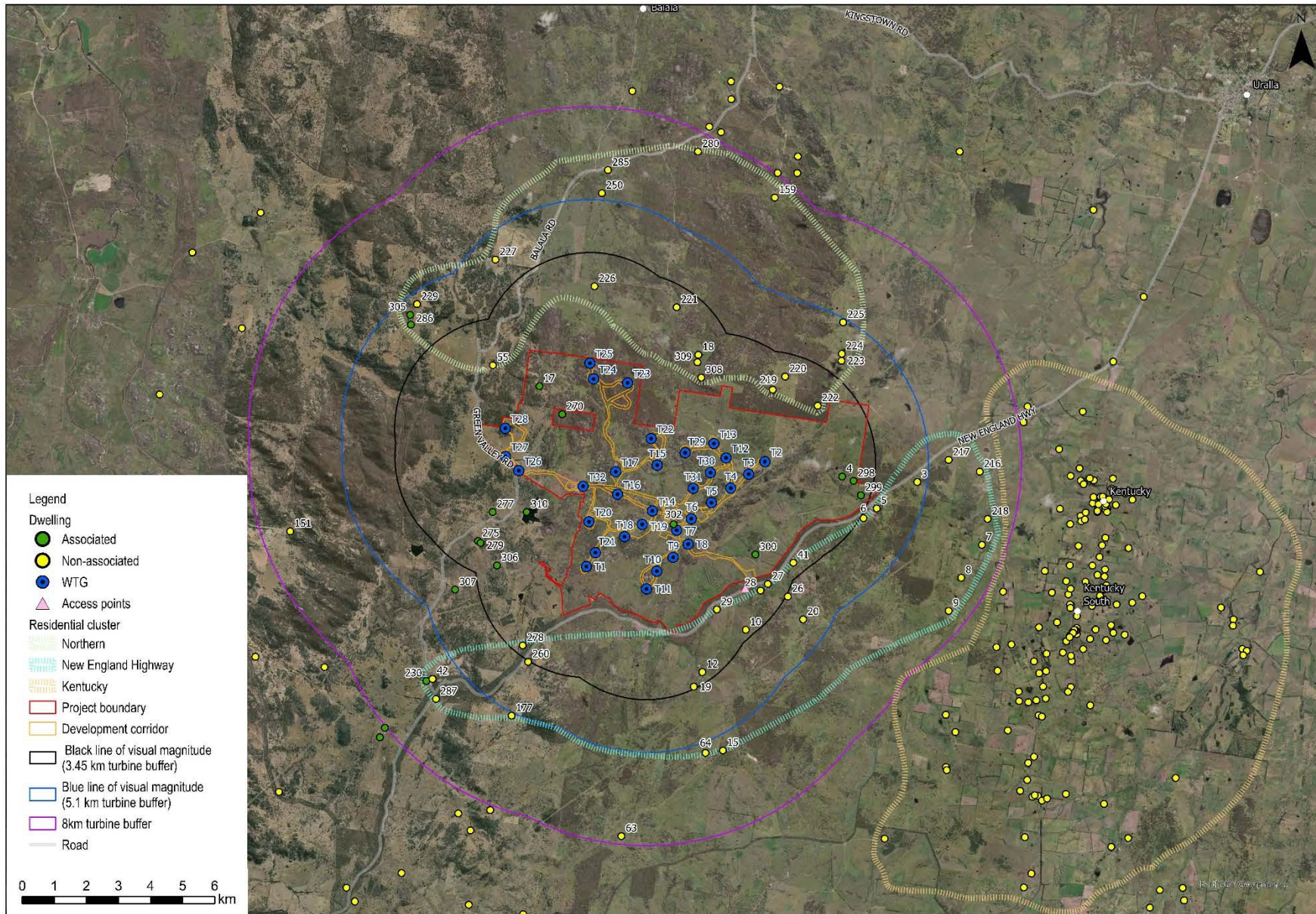


Figure 5 | Visual assessment clusters

6.4.3 Impact Assessment

Northern cluster

126. The northern cluster is located to the north of the project site and includes dwellings in Balala and in the vicinity of Kingstown Road. The landscapes within the northern cluster consist of steep to rolling vegetated slopes and hills, with rocky to dense woodlands. The Department considers that the scenic quality of this locality is moderate. All receivers located within the northern cluster are of level 2 or level 3 visual sensitivity.
127. There are 14 existing non-associated dwellings in this cluster located within 5.1 km of a proposed turbine.
128. Receivers within this cluster would primarily have views towards 7 turbines (T2, T3, T4, T12, T15, T29 and T30) which form a string of turbines located in an elevated position along a ridgeline that forms a dominant landscape feature from several receivers. Receivers to the west of the northern cluster would also have views towards T24, T25, T26, T27 and T28.
129. The Department's assessment of non-associated receivers in the cluster, including consideration of whether the proposed turbine layout aligns with the visual performance objectives is summarised in **Table 9**. In summary, most dwellings within this cluster benefit from distance, intervening topography and screening of existing mature vegetation between viewpoints and the project. Visual performance objectives are met at all receivers. Despite the close proximity of turbines to receivers, including receivers 55, 308, 18, 222 and 219, existing vegetation and topographical features mean the visual magnitude objectives are met.
130. Examples of screening from existing vegetation and topographical features are shown in **Figure 6** to **Figure 8**.
131. Given the limited visual impacts on the non-associated dwellings in this cluster, the Department does not consider that mitigation measures beyond visual screening are warranted. In this regard, the Department has recommended conditions requiring Neoen to offer visual impact mitigation measures, such as landscaping and/or vegetation screening, at these dwellings if requested by the landowner.

Table 9 | Visual Impact Assessment – Northern cluster

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
55	T28 (2.01), T27 (2.87), T25 (3.03), T24 (3.17), T36 (3.38)	VIZ2	Yes	Yes	Yes	Vegetation screening
308	T13 (2.09), T23 (2.31), T29 (2.40), T22 (2.46), T12 (2.62), T30 (2.98), T15 (3.06) T2 (3.29), T3 (3.35), T24 (3.36)	VIZ2	Yes	Yes	Yes	Vegetation screening
309	TT23 (2.28), 13 (2.59), T22 (2.79), T29 (2.85), T12 (3.12). T24 (3.28), T15 (3.45), T25 (3.36)	VIZ2	Yes	Yes	Yes	Vegetation screening
18	T23 (2.37), T13 (2.81), T22 (3.00), T29 (3.08), T12 (3.33), T24 (3.35), T25 (3.39)	VIZ2	Yes	Yes	Yes	Vegetation screening
222	T2 (2.40), T3 (3.03), T12 (3.29), T13 (3.45)	VIZ2	Yes	Yes	Yes	Vegetation screening
226	T24 (2.89), T25 (2.40), T23 (3.19)	VIZ2	Yes	Yes	Yes	Vegetation screening
219	T2 (2.26), T13 (2.49), T12 (2.58), T3 (2.74), T29 (3.37), T30 (3.23), T4 (3.34)	VIZ2	Yes	Yes	Yes	Vegetation screening
220	T2 (2.728), T13 (3.05), T12 (3.14), T3 (3.25)	VIZ2	Yes	Yes	Yes	Vegetation screening
221	T23 (2.81), T25 (3.22), T24 (3.42)	VIZ2	Yes	Yes	Yes	Vegetation screening
223	None – nearest is T2 (3.95 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
224	None – nearest is T2 (4.13 km)	VIZ3	Yes	Yes	Yes	Vegetation screening

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
227	None – nearest is T25 (4.37 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
229	None – nearest is T28 (4.75 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
225	None – nearest is T2 (4.98 km)	VIZ3	Yes	Yes	Yes	Vegetation screening

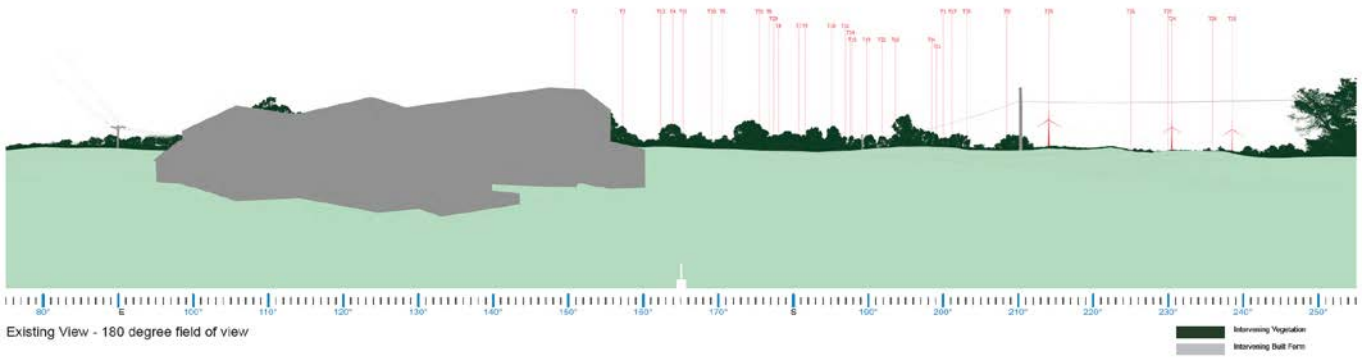


Figure 6 | Wireframe overlaid with vegetation representation from receiver 221

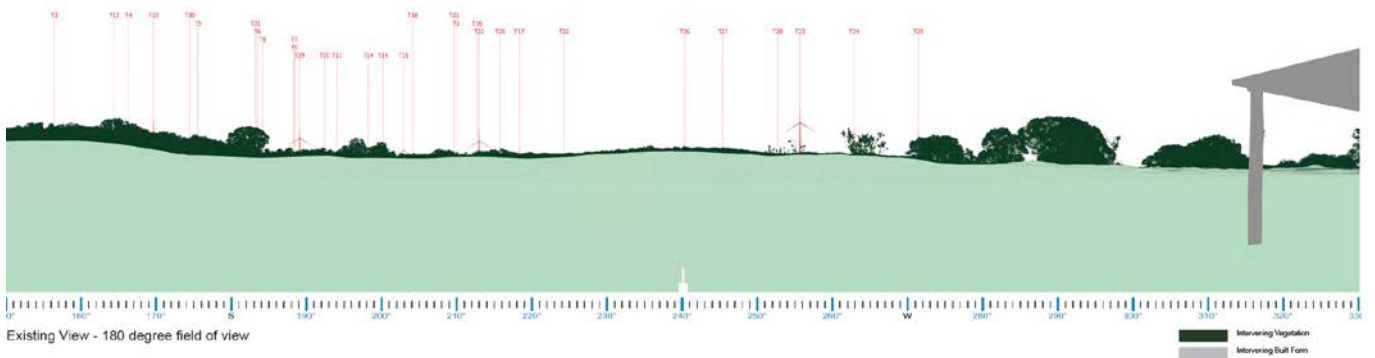


Figure 7 | Wireframe overlaid with vegetation representation from receiver 309

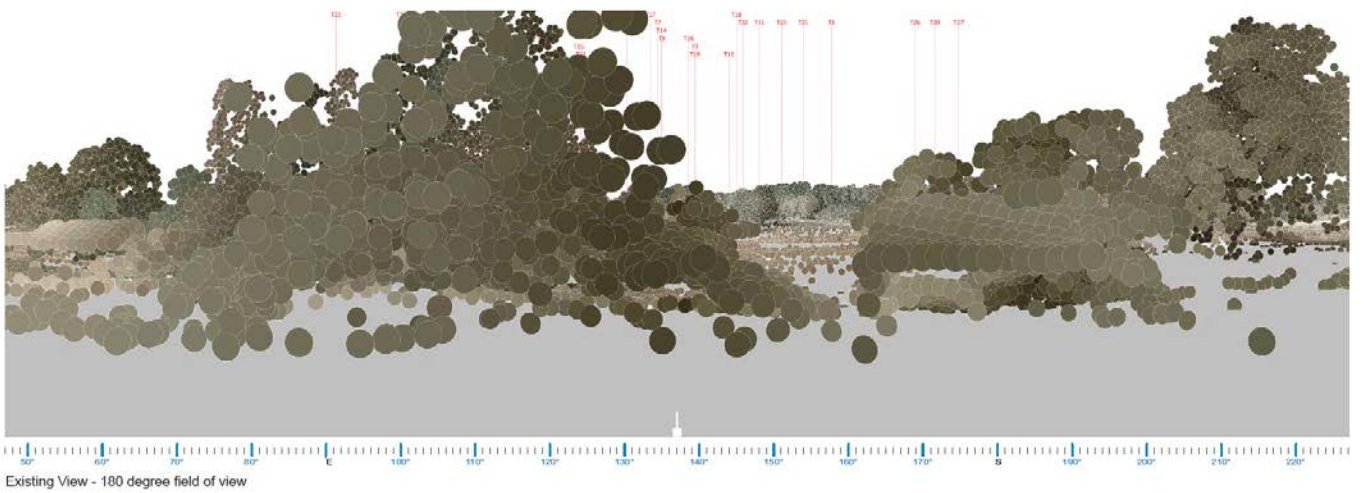


Figure 8 | Wireframe overlaid with vegetation point cloud from LIDAR data for receiver 55

New England Highway cluster

132. The New England Highway cluster is located to the south and southeast of the project site, and includes dwellings located along the New England Highway and dwellings located on local roads connecting to the New England Highway. The landscapes within the New England Highway cluster consist of sloping to undulating grazing lands with occasional dense patches of woodlands and dense bands of roadside vegetation, including dense vegetation surrounding the New England Highway. The Department considers that the scenic quality of this locality is low to moderate. All receivers within the New England Highway cluster have level 2 visual sensitivity.
133. There are 13 non-associated receivers located within 5.1 km of turbines within the New England Highway cluster. Receivers within this cluster would primarily have views towards ten turbines (T11, T10, T9, T8, T7, T6, T5, T4, T3 and T2), which form a string of turbines located to the north of a ridgeline that is visible from receivers southeast of the New England Highway. Receivers within this cluster would also have limited views towards turbines T1, T21, T18, T19, T14, T31, T30, and T12 due to existing mature vegetation on both sides of the New England Highway which would partially or wholly screen views from receivers within this cluster.
134. The Department's assessment of non-associated receivers in the cluster, including consideration of whether the proposed turbine layout aligns with the visual performance objectives is summarised in **Table 10**. Most dwellings within this cluster benefit from distance, intervening topography and screening from existing mature vegetation between viewpoints and the project, including the existing dense vegetation surrounding the New England Highway. Visual performance objectives are achieved at all receivers. Despite the close proximity of turbines to receivers 27, 28, 29 and 41, existing vegetation and topographical features mean that visual magnitude objectives are met as shown in **Figure 9** and **Figure 10**.
135. One location 313 (see **Error! Reference source not found.**), is dilapidated and not able to be inhabited. Tamworth Regional Council have also advised that the lot would require further consolidation in order to meet minimum lot requirements to allow future development of a dwelling. Tamworth Regional Council has also confirmed that no development application has been lodged for this location at the time of writing of this report. The Department considers that this warrants a lower weighting due to the uncertain nature and the ability for the future dwelling to be designed, sited and oriented to avoid or reduce impacts. As such, this location has not been further assessed.
136. Given the limited visual impacts on the non-associated dwellings in this cluster, the Department does not consider that mitigation measures beyond visual screening are warranted. In this regard, the Department has recommended conditions requiring Neoen to offer visual impact mitigation measures, such as landscaping and/or vegetation screening, at these dwellings if requested by the landowners.

Table 10 | Visual Impact Assessment – New England Highway cluster

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
29	T9 (2.12), T8 (2.22), T10 (2.22), T11 (2.29), T7 (2.77), T6 (2.94), T5 (3.36)	VIZ2	Yes	Yes	Yes	Vegetation screening
28	T8 (2.68), T9 (2.92), T6 (3.11), T5 (3.14), T7 (3.22), T10 (3.29), T4 (3.32)	VIZ2	Yes	Yes	Yes	Vegetation screening
27	T8 (2.78), T9 (3.07), T5 (3.09), T6 (3.14), T4 (3.20), T7 (3.30)	VIZ2	Yes	Yes	Yes	Vegetation screening
41	T4 (3.03), T3 (3.09), T5 (3.17), T2 (3.27), T8 (3.33)	VIZ2	Yes	Yes	Yes	Vegetation screening
12	T11 (3.12), T10 (3.45)	VIZ2	Yes	Yes	Yes	Vegetation screening
10	T9 (3.20), T8 (3.22), T10 (3.32), T11 (3.35)	VIZ2	Yes	Yes	Yes	Vegetation screening
19	T11 (3.38)	VIZ2	Yes	Yes	Yes	Vegetation screening
260	None – nearest is T1 (3.48 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
26	None – nearest is T8 (3.51 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
6	None – nearest is T2 (3.54 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
5	None – nearest is T2 (3.78 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
20	None – nearest is T8 (4.28 km)	VIZ2	Yes	Yes	Yes	Vegetation screening
3	None – nearest is T2 (4.80 km)	VIZ2	Yes	Yes	Yes	Vegetation screening

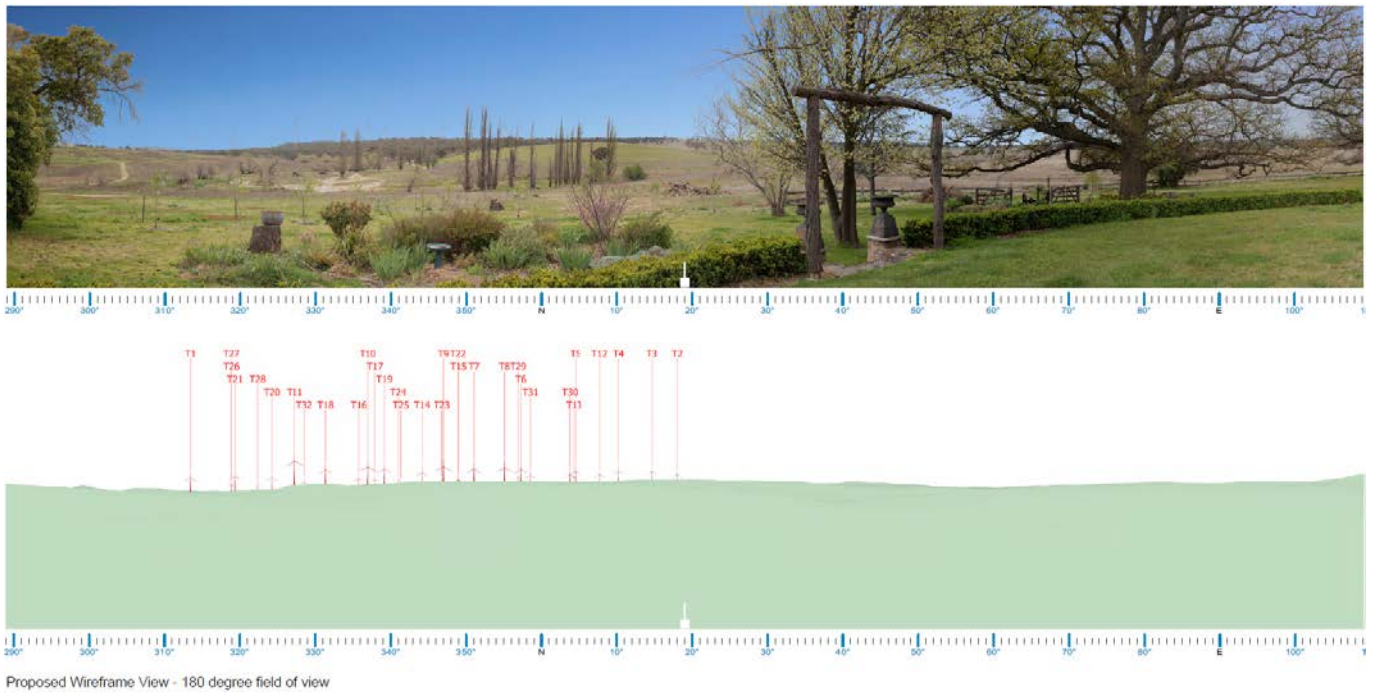


Figure 9 | Photomontage and wireframe for receiver 12

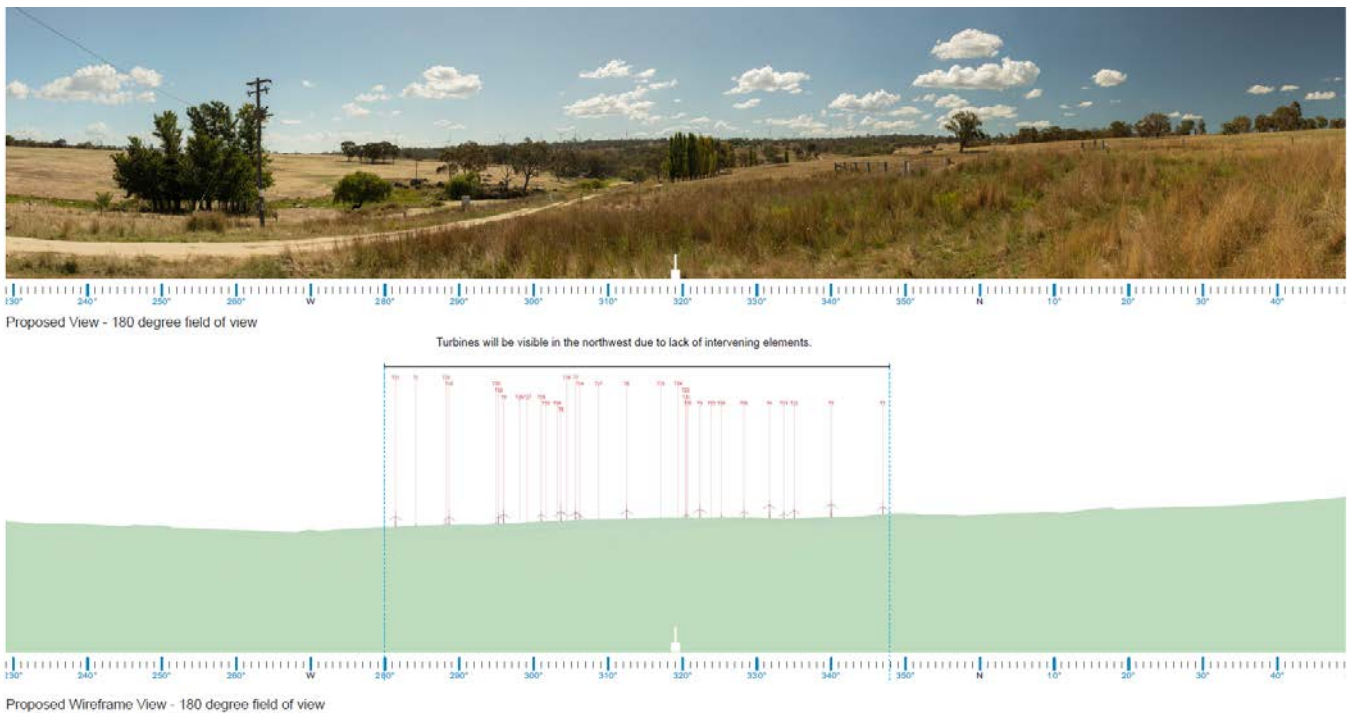


Figure 10 | Photomontage and wireframe for receiver 20

Kentucky cluster

137. The Kentucky cluster is located east of the project site, and includes receivers located within and surrounding Kentucky. The landscapes within the Kentucky cluster consist of mostly flat land with some undulations, dominated by low density dwellings within and surrounding the Kentucky village. The Department considers that the scenic quality in this locality is low. All receivers located within the Kentucky cluster are of level 2 or level 3 visual sensitivity.
138. There are no non-associated receivers located within 5.1 km of turbines within the Kentucky cluster. Nevertheless, this cluster has been considered within this assessment given the high number of potential receivers. The distance between this cluster and the project minimises visual impacts, with most receivers in this cluster located at least 8 km away from a turbine. Visual performance objectives are achieved at all receivers. **Figure 11** provides an example of typical views that are predicted from receivers within this cluster.
139. Given the limited visual impacts on the non-associated dwellings in this cluster, the Department does not consider that specific mitigation measures are warranted.

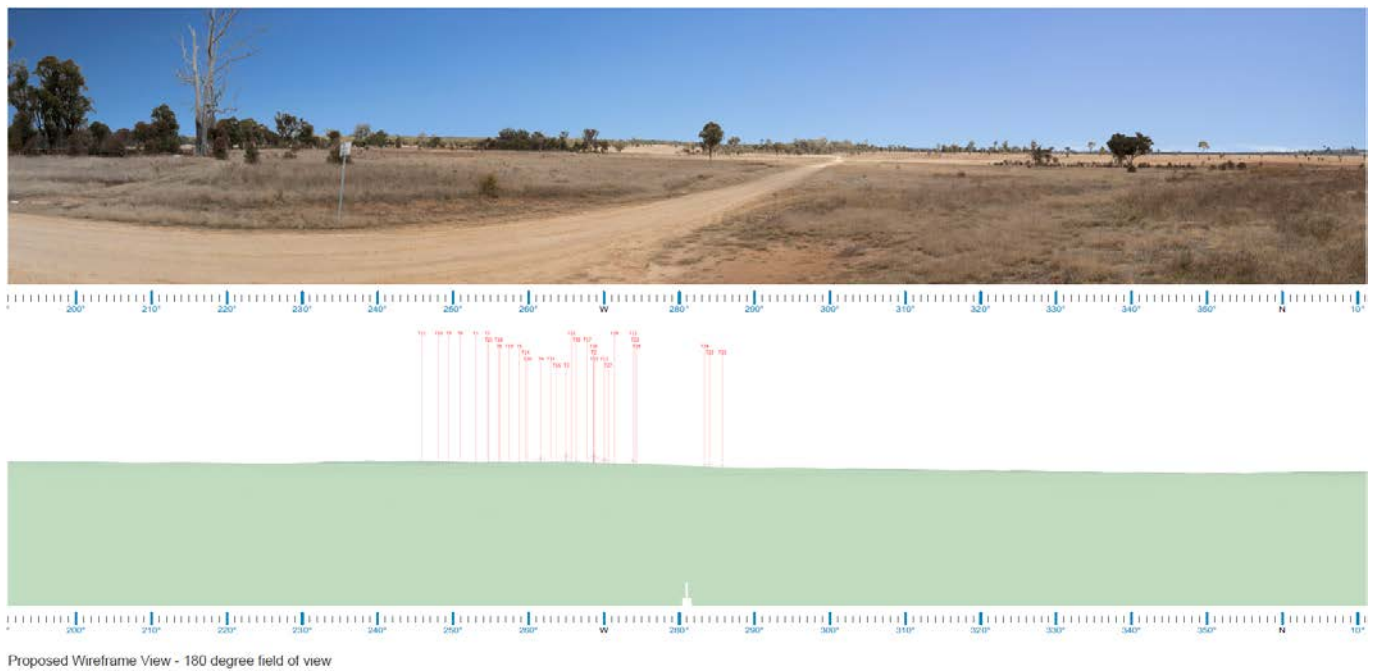


Figure 11 | Photomontage and wireframe from the intersection of Glenburnie Road and the New England Highway, Kentucky, representing typical views from the Kentucky cluster.

Key public viewpoints

140. The Applicant identified and assessed the visual impacts of the project from 23 public viewpoints (including roads and lookouts) surrounding the project in accordance with the visual performance objectives in the Visual Assessment Bulletin, including:

- No VIZ1 viewpoints;
 - VIZ2 viewpoints (four locations) – three locations on the New England Highway and one on Green Valley Road; and
 - VIZ3 viewpoints (19 locations) – including near Captain Thunderbolt’s Rock on the New England Highway (registered heritage site of State significance), and multiple local roads in Kentucky, Balala and Bendemeer.
141. Three viewpoints assessed as VIZ2 are located on the New England Highway between 1.24 km and 3.32 km from the nearest proposed turbine. The remaining viewpoint is located on Green Valley Road approximately 1.82 km from the nearest turbine. The LVIA found that the Project is likely to be partially visible in the landscape from all VIZ2 viewpoints. However, these viewpoints would benefit from the existing mature vegetation along the road sides, direction of travel (parallel to the project site as oppose to traveling directly towards the project) and short duration of impact, which would minimise views of the project.
142. Five viewpoints assessed as VIZ3 are located within the black line, with an additional three viewpoints being located between the black line and the blue line, all of which are located along local roads in Kentucky and Balala. The Department considers that at these locations there would be limited numbers of traffic and views would be short duration and would not have a significant impact. While some wind turbines would be visible from most public viewpoints assessed, these views would benefit from distance, intervening topography, and existing mature vegetation. The Department recognises that the project benefits from undulating landforms and densely vegetated areas which partially obstruct views of the turbines from the broader landscape, and considers that the project would not dominate the existing visual catchment.
143. In summary, the Department considers that the visual performance objectives would be achieved at all public viewpoint locations.

Ancillary infrastructure

144. The project would connect to the existing 330kV transmission line which traverses the project site.
145. The project’s ancillary infrastructure includes a switching station and an on-site substation connected by an overhead 330 kV power line, meteorological masts, site access roads, construction-related temporary batching plants and laydown areas. Neoen has sited this infrastructure to minimise visibility from existing dwellings and publicly accessible viewpoints. Except for internal access roads, all associated infrastructure components are located a minimum of 2 km away from a non-associated dwelling.

146. The Department also assessed the visual impacts of the project's ancillary infrastructure. The Department considers that the project's ancillary infrastructure is unlikely to have a significant visual impact given there are existing transmission lines and agricultural infrastructure in the area, the limited size of the infrastructure, the location of the ancillary infrastructure away from non-associated receivers, the intervening topography and vegetation, and Neoen's commitment to select ancillary infrastructure components with low visual contrast.
147. Notwithstanding, the Department has recommended conditions requiring Neoen to ensure the visual appearance of all ancillary infrastructure (including paint colours, specifications and screening) blends in as far as possible with the surrounding landscape.

Shadow flicker and blade glint

148. The project has the potential for shadow flicker and blade glint. The Visual Assessment Bulletin's objective for shadow flicker is no more than 30 hours per year.
149. Neoen's LVIA included a Shadow Flicker Assessment, which concluded that the proposed layout would achieve the recommended limit of 30 hours per year at all non-associated receivers.
150. Notwithstanding, the Department has recommended conditions requiring Neoen to ensure that shadow flicker from turbines does not exceed 30 hours per annum at any non-associated dwelling.
151. Blade glint is addressed through Neoen's commitment to using subtle colours and low-reflectivity surface treatment on turbines.

Aviation hazard lighting

152. Under the *National Airports Safeguarding Framework, Guideline D – Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms) / Wind Monitoring Towers, National Airports Safeguarding Advisory Group, (NASAG Guidelines)* the Civil Aviation Safety Authority (CASA) must be notified if a proposed wind turbine or wind monitoring tower is higher than 150 m or infringes on the Obstacle Limitation Surfaces (OLS) of an aerodrome. CASA may determine, and subsequently advise an applicant and relevant planning authorities, whether it considers obstacle lighting is required for the project.
153. If such lighting is required, the NASAG Guidelines recommend that to minimise visual impacts, "obstacle lights may be partially shielded, provided it does not compromise their operational effectiveness. Where obstacle lighting is provided, lights should operate at night, and at times of reduced visibility. All obstacle lights on a wind farm should be turned on simultaneously and off simultaneously."

154. Neoen's initial Aviation Impact Assessment (AIA) study concluded that no obstacle night lighting would be required for the project to maintain its acceptable level of safety to aircrafts. However, CASA advised that the project is considered to be a hazard to aviation safety and recommended that the wind farm is obstacle lit with steady medium intensity red lighting in accordance with the NASAG Guidelines.
155. Following CASA's advice, Neoen developed a night lighting plan proposing to light 20 of the 32 turbines (based on the CASA's recommended spacing interval between lit turbines not exceeding 900 m) with lower intensity steady red night-time aviation hazard lighting. Neoen has also committed to measures to reduce visual impacts of aviation lighting, such as baffling or shielding.
156. CASA has reviewed and concurs with the lighting plan. The Department has recommended conditions requiring Neoen to install aviation hazard lighting in accordance with CASA requirements and in a manner that minimises any adverse visual impacts.

6.4.4 Conclusion

157. The Department acknowledges that developing a wind farm consisting of up to 32 turbines and associated ancillary infrastructure would be visually apparent. However, the Department is satisfied that the project is suitable for the site, would meet the visual performance objectives in the Visual Assessment Bulletin and would not fundamentally change the broader landscape characteristics of the area or result in any significant visual impacts on the surrounding non-associated dwellings.
158. To minimise and manage the residual visual and lighting impacts as far as practicable, the Department has recommended conditions requiring Neoen to:
 - offer landscaping and/or vegetation screening to all non-associated dwellings within 5 km of any approved turbine;
 - implement all reasonable and feasible measures to minimise the visual impacts of the development;
 - paint turbines off-white/grey and finishing blades with a treatment that minimises potential for any glare or reflection;
 - implement all reasonable and feasible measures to minimise the off-site lighting impacts of the development; and
 - ensure that shadow flicker from turbines does not exceed 30 hours per annum at any non-associated dwelling.

6.5 Other issues

159. The Department’s consideration of other issues is summarised in **Table 11**.

Table 11 | Assessment of other issues

Findings	Recommended conditions
<p>Traffic and transport</p> <ul style="list-style-type: none"> • Submitters raised the potential traffic and transport issues of the project. The project can potentially impact State and local roads, primarily during construction. • Neoen proposes to transport large plant, equipment and materials to the site with heavy vehicles requiring escort along a route that would be developed by EnergyCo from the Port of Newcastle to the New England REZ in accordance with its commitments to coordinate and facilitate necessary upgrades for REZs. Further local road upgrades and the construction of a new intersection at the site entrance for the project site on the New England Highway would be required. • Neoen prepared a Traffic Impact Assessment (TIA) as part of its EIS and provided additional information to the Department throughout the assessment process, including details on proposed road upgrades, the proposed access road intersection, and the impact of the project on the capacity of State and local roads. • The maximum blade length for the project is 90 m and the TIA is based on a split blade transported to site in two parts in order to reduce the length of the components and minimise disturbance along the traffic route. <p>Construction traffic impacts</p> <ul style="list-style-type: none"> • Between the Port of Newcastle and the site, Neoen is proposing different transport routes depending on the dimension of the vehicle: Route 1 – turbine blades and loads under 5.2 m in height and Route 2 – towers and loads over 5.2 m in height (with Route 2 bypassing Muswellbrook town). • The Department notes that EnergyCo has committed to facilitating road upgrades to the State road network 	<ul style="list-style-type: none"> • Prepare a Traffic Management Plan in consultation with the road asset manager and relevant roads authority; • Ensure that all necessary road upgrades are completed to the satisfaction of the relevant roads authority and/or prior to the use of roads for deliveries from heavy and heavy vehicles requiring escort vehicles; and • Install signage as relevant to warn motorists of the potential for heavy vehicles to turn in and out of the proposed access road intersection.

Findings

Recommended conditions

between the Port of Newcastle and Bengalla Road in Muswellbrook Shire LGA. Some works relate to these road upgrades would be required to facilitate transport to the New England REZ.

- Neoen is proposing to use the existing site access point with the New England Highway. The access point would be upgraded to provide basic left (BAL) and short channelised right (CHR) turn treatments on the New England Highway approaches, as per Austroads standards, to allow for the largest vehicles accessing to and from the site. Traffic modelling for this intersection found that the intersection would operate satisfactorily during peak construction, of the project, with the intersection operating at Level of Service A or B during all modelled construction scenarios.
- During peak construction times, the project would generate 64 heavy and 188 light vehicle movements per day. In addition, the transport of turbines would generate 18 vehicle movements per day, 6 of which would be heavy vehicles requiring escort. An assessment of capacity found that the construction of the project would have minimal impacts on the capacity of the New England Highway between Tamworth and Armidale, with all increases in daily traffic volumes forecast to be less than 5%, within the operating capacity of the highway (generally 12,000-15,000 vehicles per day).
- Neoen has committed to preparing a Traffic Management Plan for the project. This plan would include measures to reduce the impact of project traffic on the surrounding road network and manage road safety.

Operational traffic impacts

- Operation of the project is estimated to require a workforce of approximately 9 staff who would reside locally and commute to the project site daily. Heavy vehicle movements during the operation of the project are anticipated to be low, with an average of approximately 1 heavy vehicle per week. Due to the low volume of operational traffic, operation of the project is not anticipated to result in significant traffic and transport impacts.

Decommissioning traffic impacts

- Decommissioning of the project is anticipated to be completed over a 12 month period. It is anticipated that

Findings

Recommended conditions

peak traffic movements to and from the project area would be approximately 70% of the peak construction movements described above. As a result, decommissioning of the project is not anticipated to result in significant traffic and transport impacts.

Cumulative traffic impacts

- Neoen assessed the cumulative impacts of the project and other proposed projects being constructed at the same time by modelling a 20% increase in the background traffic volumes.

Noise and vibration

- Submitters raised the potential noise issues of the project, including concerns about both the construction and operational noise, low frequency noise and infrasound from wind turbines, traffic noise and noise and vibration from blasting. The Friends of Kentucky special interest group commissioned L Huson & Associates to peer review Neoen's Noise Impact Assessment (NIA). The project has the potential for noise impacts at nearby receivers during construction and operation.
- Neoen assessed noise impacts in a NIA accompanying the EIS and provided a peer review of that assessment prepared by SLR Consulting Australia Pty Ltd.

Construction noise and vibration

- The construction period for the project would be up to 24 months, with the noisiest works occurring during road construction, excavation and foundation construction and electrical installation.
- Six non-associated dwellings would exceed the 45 dB(A) noise-affected management level during road upgrades and track construction. The predicted construction noise levels at these dwellings would be between 49 dB(A) and 58 dB(A), significantly less than the 75 dB(A) highly noise affected level outlined in the Construction Noise Guideline.
- The Department accepts that the proposed construction activities are unlikely to result in significant adverse impacts during daytime hours and consequently has developed conditions restricting to standard construction hours (i.e. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday) with no work on Sundays

- Restrict construction to standard construction hours (ie 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday);
- Undertake noise monitoring within 6 months of the commencement of operations to determine whether the project is complying with the relevant noise criteria;
- Adjust noise monitoring results for tonality and low frequency noise in accordance with the Noise Bulletin;
- Manage blasting operations to comply with the criteria in the *Australian and New Zealand Environment Council Technical Basis for Guidelines to Minimise Annoyance Due to Blasting*

Findings

or NSW public holidays. However, the Department acknowledges that there may be some instances where construction activities may be required to be undertaken outside of these hours (such as emergency works or other works that are inaudible at any non-associated dwelling) and has recommended conditions allowing these activities to be undertaken with these pre-conditions.

- The Department also considered the impacts of noise and vibration from blasting associated with the project. Neoen undertook a vibration impact assessment, and determined that no vibration impacts are predicted at any vibration sensitive receivers based on separation distances exceeding 150 m.
- Neoen has located turbines at least 2 km from non-associated residences and committed to developing a blasting monitoring program if blasting is required to excavate where significant rock is located for turbine foundations.
- The Department considers that controlled blasting has the potential to reduce construction duration and overall noise impacts where conducted in a limited manner. As such, the Department has recommended conditions establishing blasting criteria in line with other major projects, that would limit the extent of blasting and ensure local amenity is preserved.

Construction traffic noise

- The project has the potential to cause noise impacts associated with the general increase in daily traffic along the proposed access routes. Disturbance levels would be directly related to the proximity of a residence to an access route.
- Neoen assessed traffic noise impacts from increased project-related traffic separately against the *NSW Road Noise Policy 2011*. Modelling predicts that construction traffic noise levels would be below the 68dB(A) criterion, as dwelling setback distances from the New England Highway are greater than 40m.
- Notwithstanding, the Department has recommended conditions requiring Neoen to restrict construction activities to the daytime and implement best management practice to minimise road traffic noise as part of a Traffic Management Plan for the project.

Recommended conditions

Overpressure and Ground Vibration at any residence on privately owned land; and

- Only carry out blasting on site between 9 am and 5 pm Monday to Friday and between 9 am and 1pm on Saturday, in accordance with the blasting guidelines.

Operational noise

- Operational noise levels were assessed by Sonus in accordance with the requirements of the Department's *Wind Energy: Noise Assessment Bulletin (2016)* (the Noise Bulletin).
- Background noise monitoring undertaken for this project determined that the noise levels are characteristic of a rural environment.
- Operational noise levels were assessed in accordance with the requirements of the Department's *Wind Energy: Noise Assessment Bulletin (2016)* (the Noise Bulletin). Consistent with the Noise Bulletin, the Sonus report provided environmental noise criteria for operation of the turbines, based on different wind speeds (wind speeds at each integer from 3 ms⁻¹ to 12 ms⁻¹) modelled at turbine hub height. In summary, the criterion for each integer wind speed is the greater of 35 dB(A), or the background noise level (LA90, 10 minute) plus 5 dB(A).
- Noise modelling concluded that there would be no operational noise exceedances of the 35 dB(A) criteria at all non-associated dwellings. The operation of all other associated infrastructure, including the substation, would comply with the 35 dB(A) criteria established by the Noise Bulletin.
- Following the recommendation by the NSW EPA, Neoen has committed to preparing a pre-construction noise assessment following design finalisation and turbine selection.
- The Department notes that the project would also require an Environment Protection Licence (EPL) regulated by the EPA.
- The Department also considered the impacts of low frequency noise resulting from the project, which was raised as a concern by submitters. Sonus assessed low frequency noise and found that the highest predicted low frequency noise level of 50 dB(C) (at residence 29) is significantly under the 60 dB(C) level, above which the Noise Bulletin requires further assessment. As such, the Department is satisfied that any low frequency noise impacts would be minor and acceptable.
- The Department acknowledges the concerns raised in the L Huson & Associates review. The Department

Findings

Recommended conditions

considers that assessment approach is acceptable approach and in accordance with the Noise Bulletin. The Department considers the information provided by Neoen regarding the candidate wind turbine model and noise modelling to be appropriate. The Department considers the separation distances between turbines and receivers and the proposed mitigation measures is sufficient that infrasound generated by wind turbines would not impact nearby receivers.

- Both the EPA and the Department are satisfied that the noise criteria and the predicted noise levels have been correctly calculated for the project, and the EPA has indicated that it would be able to issue an EPL for the project subject to the noise limits as identified in Appendix S of the EIS.

Heritage

Aboriginal Heritage

- Neoen prepared an Aboriginal Cultural Heritage Assessment (ACHA) to assess the impacts of the project on Aboriginal heritage. The ACHA identified 7 Aboriginal heritage items (3 artefact scatters and 4 isolated artefacts) located within proximity of the project, 5 of which would be impacted by the project. In addition, 4 potential archaeological deposits (PADs) were identified along water courses.
- Neoen have committed to salvaging and relocating all impacted Aboriginal heritage items to suitable alternative locations, in consultation with Aboriginal stakeholders.
- Test excavations of the PADs confirmed the presence of subsurface artefacts across all 4 locations. Two locations, Spring Creek 1 and Pine Creek 3, which would both be impacted by the project, were identified as containing archaeological deposits and buried artefacts. Where these sites would be disturbed, Neoen has committed to undertaking a program of salvage. An untested area of Spring Creek 1 located outside of the development corridor would be fenced and not disturbed. Pine Creek 1 and Pine Creek 2 were found to have low densities of artefact distribution, requiring no further assessment or mitigation.
- Aboriginal party representatives identified an additional 9 potential Aboriginal heritage sites (4 scarred trees and 5 stone arrangements), which the ACHAR assessed to be unlikely of Aboriginal cultural origin or

- Ensure the development does not cause any direct or indirect impacts on any items located outside the approved development footprint;
- Salvage and relocate Aboriginal items to suitable alternative locations;
- Implement all reasonable and feasible measures to avoid and minimise harm to Aboriginal heritage items located within the development corridor;
- Undertake consultation with Aboriginal stakeholders prior to construction; and
- Prepare and implement a Heritage Management Plan, in consultation

Findings

Recommended conditions

considered that there was insufficient evidence to demonstrate that they constitute archaeological sites. Neoen have committed to minimising impacts to the sites located within the development corridor (consisting of 3 stone arrangements), and to salvaging and relocating any potentially impacted items to suitable alternative locations in consultation with Aboriginal stakeholders, as required.

- Neoen have committed to immediately ceasing works should any potential Aboriginal heritage finds or human remains be identified during construction. Work would not recommence until advised by a suitably qualified archaeologist.
- The Department and Heritage NSW consider that the project would not significantly impact the heritage values of the locality.

Non-Aboriginal Heritage

- No non-Aboriginal heritage items listed on Commonwealth, National or State Registers are located within or surrounding the project area.
- Neoen have committed to immediately ceasing works should any potential non-Aboriginal heritage historic finds be identified during construction. Work would not recommence until advised by a suitably qualified archaeologist.
- The Department is satisfied that the project would not have any adverse impacts on non-Aboriginal heritage items in the local area. Any unexpected finds of potential heritage significant on site would be appropriately managed by an unexpected finds protocol.

with Aboriginal stakeholders and Heritage NSW including procedures for unexpected finds.

Agricultural impacts and land use

- Submitters raised concerns about the project being on agricultural land and impacts to the agricultural productivity of the surrounding region.
- The project site and surrounds are dominated by agricultural land uses, particularly sheep grazing, as the project site is generally unsuitable for broadacre cropping due to undulating topography and rugged

- Require the rehabilitation of the project site to a standard that makes it available for agricultural production following decommissioning.

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Recommended conditions

landscape. There is no mapped biophysical strategic agricultural land within the project site. The project site contains class 4, 5, 6 and 7 soil capability. The project is situated on land where electricity generating works, including wind farms, are permissible with consent under applicable planning instruments.

- Wind harvesting is a passive land use that can co-exist with grazing activities, which can continue concurrently throughout the project lifespan. Upon project decommissioning, the land would be rehabilitated. As such, the project would not compromise or significantly diminish the availability of land for primary production purposes within the project site or surrounding LGAs.
- While the project would temporarily reduce the available land for agricultural uses during construction, the long-term use of the land for agricultural purposes will not be compromised during the operation of the Project. As such, the Department is satisfied that agricultural and wind farm activities are compatible land uses and can co-exist in the locality. This has been demonstrated at several operating wind farms in NSW.
- Additionally, the Department notes that the project would provide an additional source of income for the landowners of the associated properties, whose land would be impacted.

Planning Agreements / Community Benefit

- Neoen has committed to either a community benefit fund or to enter into a Voluntary Planning Agreement (VPA) with Tamworth Regional Council and Uralla Shire Council, to support the provision of social infrastructure via a community benefit fund.
- Neoen had a number of detailed discussions following the exhibition of the EIS, made an offer and reached agreements with both Councils regarding a community benefit scheme / voluntary planning agreement in early 2023. However, in late 2023, TRC expressed concern about the agreed quantum and timing of payments.
- Neoen revised its offer to 1.5% of CIV split between TRC and USC and with a split of 60% and 40% respectively with payments commencing on operation and 50% of funds to each Council to be spent in and to be benefit of the immediate community, to be administered through either a VPA or community benefit fund.

- Enter into a VPA with each relevant Council prior to commencing construction.

Findings

Recommended conditions

- TRC advised (**Appendix G**) that:
 - it would need further advice on the split between the Councils;
 - it sought a 50% upfront payment and would need to consider a variation from this;
 - it required further consideration of the ‘immediate community’.
- USC advised (**Appendix G**) that it supported the offer made.
- In response to TRC comments, Neoen further revised its offer to both Councils and has committed to \$5,605,500, indexed to CPI, split between TRC and USC with a split of 60% and 40% respectively.
- The offer includes that 0.5% of the 1.5% CIV (33% of the contribution to each Council) would be spent in the region and to benefit the immediate community and payments would commence at the start of operation either annually or with an upfront payment and annual payments.
- Both TRC and USC have prepared a contributions plan which requires that for developments with a cost of development exceeding \$200,000 that a levy of 1.0% of the cost of development would apply. Using the capital investment value (CIV) of the Project as a proxy for the cost of development, this would equate to total combined contributions of \$3,737,000.
- Under section 7.13 of the Act, a consent authority other than Council, can impose a condition under section 7.12 even though it is not authorised (or of a kind allowed) by, or is not determined in accordance with, a contributions plan, but the consent authority must have regard to any contributions plan that applies to the whole or any part of the area in which the development is being carried out.
- The Department recommends that, if the community benefit fund / VPA offered by the Applicant is not accepted by TRC and Uralla Councils and is therefore unable to be executed, it is reasonable to include a condition that the Applicant make a monetary contribution to TRC and USC of \$2,242,000 (60%) and \$1,494,800 (40%) respectively calculated based on the agreed split for infrastructure, services and community projects in towns, villages and rural areas within the Tamworth LGA and Uralla LGAs prior to the commencement of construction.

Findings

Recommended conditions

- The Department has also considered the demand on public services and infrastructure in the Armidale, Tamworth, Uralla and Walcha LGAs and is satisfied that its recommended conditions address the material impacts of the project on these matters (i.e. roads).
- In consideration of both TRC's contributions plan, *section 94A (Indirect) Development Contributions Plan 2013*, and USC's contributions plan *Section 7.12 Development Contribution Plan 2021*, the Department notes the following:
 - the development is a type that is contemplated by the plan and is not of a type exempted under the plan;
 - the capital investment value of \$373 million for the project is a reasonable approximation of the cost of development;
 - the contributions plan contemplates that in the case where a planning agreement cannot be reached, that a condition requiring a levy under the contributions plan would apply;
 - a 1% levy for the development equates to around \$3.7 million, across total to both Councils;
 - the Applicant has offered a total contribution of \$5.6 million across both local government areas;
 - the Applicant has divided the total \$5.6 million between TRC and USC in a 60/40 split; and
 - the contribution should be indexed annually pending the timeframe for providing the funds.
- The Department notes that the recommended condition includes a requirement that the funds directed to infrastructure, services and community projects in towns, villages and rural areas within the Tamworth LGA including Nundle and Hanging Rock (i.e. not Tamworth City)

Social and economic impacts

- While some submitters raised concerns about socio-economic impacts, other submitters were supportive of the socio-economic benefits to the local community.
 - The project would generate direct and indirect benefits to the local community, including:
 - up to 285 construction jobs, of which Neoen has committed to sourcing 135 from surrounding LGAs
- Prepare an Accommodation and Employment Strategy for the project in consultation with relevant councils, with consideration to prioritising the employment of local workers; and

Findings

including Armidale, Tamworth, Uralla and Walcha regional councils, during the 18–24-month construction period and up to 9 FTE ongoing jobs during operation of the project, of which Neoen has committed to sourcing 5 from the aforementioned LGAs;

- expenditure in the local economy by workers who would reside in the area; and
- the procurement of goods and services by Neoen and associated constructors.
- While Neoen has committed to a local participation and procurement approach, the Department has recommended a condition requiring Neoen to prepare an Accommodation and Employment Strategy to prioritise local employment and procurement, and to mitigate the potential impacts of worker housing unavailability.
- Noting the above, the Department considers that the project would provide economic benefits for the local community.

Property Values

- Submitters raised concerns about potential adverse impacts on property values in the area.
- The Department notes that:
 - the project is permissible with development consent under relevant environmental planning instruments;
 - a detailed assessment of the merits of the project has found that the project is unlikely to generate any significant economic, environmental or social impacts;
 - the project would comply with applicable amenity criteria established by the NSW Government for wind farm developments and Neoen has entered into agreements to compensate more highly impacted nearby landowners;
 - the impacts of the project can be further minimised by imposing suitable conditions on the project, and requiring a range of standard mitigation measures to be implemented; and
 - the Land and Environment Court has ruled on several occasions that the assessment of the impacts of

Recommended conditions

- Enter into a VPA with each relevant Council prior to commencing construction.

Findings

Recommended conditions

projects on individual property values is not generally a relevant consideration under the EP&A Act, unless the project would have significant and widespread economic impacts on the locality, which is not the case in this instance.

- In particular, the Department notes that *King & Anor v Minister for Planning; Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning; Gullen Range Wind Farm Pty Limited v Minister for Planning* ([2010] NSWLEC 1102) considers property values for sites adjacent to a wind farm. The judgement determined that there was no loss of property value to which the Court could lawfully have regard, as the wind farm was permissible with consent.
- Accordingly, the Department considers the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm.

Electric and Magnetic Fields (EMF)

- EMF would be generated by the electrical components of the project, including wind turbines, energy storage facility, power conversion units (including transformers), transmission lines and substation. This is consistent with all other electricity generating infrastructure. It is noted that EMF also results from natural sources such as the Earth's magnetic field and lightning.
- The main sources from the project would be the substation, electrical equipment within the turbine structures, interconnecting underground and/or overhead cables and transmission lines. Maximum EMF values would be observed immediately below overhead power lines and at ground level immediately above underground cables.
- The closest dwelling to overhead and underground cables, a host dwelling, is located approximately 180m away from the underground cabling network and approximately 600m away from the overhead line. At this distance, the EMF from the project would be significantly below relevant exposure limits and would be indistinguishable from background levels. All other dwellings would be located more than 1km from the underground cabling and more than 1.8km from the overhead lines, at which distance the EMF from the

- No specific conditions required

Findings

Recommended conditions

project would be negligible.

- The Department is satisfied the project is not likely to have any significant EMF related impacts.
- The project would also comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for electric, magnetic and electromagnetic fields.

Radiocommunications

- Submitters raised concerns about impacts to telecommunications, primarily regarding disruptions to mobile phone coverage and TV reception.
- Electromagnetic signals transmitted for telecommunication systems (such as radio, televisions, mobile phones and mobile/fixed radio transmitters) function most efficiently where a clear line of sight exists between the transmitting and receiving locations. Wind farms and other infrastructure have the potential to cause interference with this line of sight.
- Neoen undertook an assessment of electromagnetic interference as part of its EIS. The assessment concluded that there may be interference with point-to-area signals such as mobile phones and television broadcasting, mostly in areas with already poor or marginal signal coverage. Impacts to satellite television and internet are considered unlikely, and radio broadcasting and CB radio impacts are also considered to be minor.
- Neoen has committed to management and mitigation measures in the event any potential impacts occur.
- The Telco authority reviewed the project and did not raise any concerns. As such, the Department is satisfied that the project is not likely to have significant impacts on radiocommunications.

- If the project disrupts any radiocommunications services, Neoen must make good any disruption to these services as soon as possible, but no later than one month following the disruption of the service, unless the relevant service provider or user or Planning Secretary agrees otherwise.

Aviation safety

- Submitters raised concerns regarding the safe operation of aircraft in the vicinity of wind turbines.
- The project is located 34.5 km north-east of Armidale Regional Airport and 52 km south-west of Tamworth Regional Airport. The project is also located in the vicinity of three aircraft landing areas. The project site is

- Notify the relevant aviation authorities of the final location and specifications of the wind turbines and any wind

Findings

Recommended conditions

- located outside of controlled airspace and is not located in any prohibited, restricted and danger areas.
- Neoen undertook an assessment of aviation impacts as part of its EIS. The assessment concluded that the project would not have any adverse or significant impacts to air safety, subject to the implementation of mitigation measures and administrative controls.
 - Initially, Neoen's Aviation Impact Assessment (AIA) concluded that obstacle night lighting to wind turbines is not required to maintain an acceptable level of safety to aircrafts. However, CASA advised that the project is considered to be a hazard to aviation safety and did not agree with recommendations of the AIA. CASA recommended that the wind farm is obstacle lit with steady medium intensity red lighting in accordance with the NASAG Guidelines.
 - Neoen developed a night lighting plan proposing to light 20 out of 32 turbines. CASA has reviewed and concurs with the lighting plan.
 - The Department of Defence did not raise any concerns about the project but requested that the marking of tall structures is maintained on aeronautical charts. The Department of Defence also requested that Neoen provides ASA with as constructed details and recommends that the top third of the monitoring masts be painted in alternating contrasting bands of colour in accordance with the Manual for Standards for Part 139 of the Civil Aviation Safety Regulations 1998.
 - Airservices Australia confirmed that there would be no adverse impact on aviation communication, navigation and surveillance equipment from the project and would not have an impact on the safety, efficiency or regularity of operations at Armidale or Tamworth Airport.
 - The NSW Rural Fire Service did not raise any concerns about the project. As a result, aerial firefighting is not anticipated to be impacted by the project.
 - The Department considers that any hazards from the turbines would be appropriately managed as long as the development is carried out in accordance with the *National Airports Safeguarding Framework Guideline D: Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/Wind Monitoring Towers*, or its latest version.

- monitoring masts;
- Install aviation hazard lighting in accordance with CASA's requirements; and
 - Minimise the off-site lighting impacts of the project.

Findings

Recommended conditions

- With these conditions, the Department is satisfied that the project is unlikely to result in any significant aviation hazards or impacts to aerial agricultural activities.

Water use

- The amount of water that would be required for the duration of project construction is estimated to total approximately 80 to 100 ML. This includes water for the construction of concrete foundations for the wind turbines, control buildings and substations as well as for road upgrades, dust suppression during construction and in case of fire.
 - Neoen proposes to source the water required for construction and operation from multiple sources, including transfer of existing water entitlement from a neighbouring landholder located southwest of the project, harvested runoff from sediment basins, and purchasing and transporting water to site by tanker.
 - Water demands for the operational phase of the project will be limited to amenities usage and are expected to be minimal. Water required for operations will be supplied via water tanker and stored in on-site water tanks.
 - Where licenses are needed to access water from these sources or license amendments are required, these will be sourced by Neoen prior to the water being used in accordance with the requirements of the *Water Management Act 2000*.
 - NSW DCCEEW – Water Group considers that Water Access Licence 36029 has sufficient entitlement for the identified construction water demands.
 - The Department, including NSW DCCEEW – Water Group, are satisfied that the project’s water use is unlikely to have any significant impact on water supply and demand in the region. However, NSW DCCEEW – Water Group noted that all works on waterfront land are required to be in accordance with the Natural Resources Access Regulator’s Guidelines for Controlled Activities on Waterfront Land and that any water sourced for the project is required to be appropriately licensed.
- Ensure the development has adequate water supplies for the project and that it obtains any necessary licences under the *Water Act 1912* and/or the *Water Management Act 2000*.

Findings

Recommended conditions

Riparian areas and erosion risk

- The majority (94%) of the project area is located within the Carlisles Gully Catchment, which flows west from the project area to the Macdonald River and drains to the Namoi River approximately 30 km northwest of the project area. The remaining areas drain to Roumalla Creek, which drains to the Gwydir River approximately 34 km north of the project area. The project area is not prone to flooding.
- There is potential for erosion of soils and pollution of surface water resources in disturbance areas.
- Neoen has committed to designing, installing and maintaining erosion and sediment controls in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Volume 2* (DECC, 2008) during construction and operation of the project.
- In addition, disturbance areas on steep slopes will be managed as Soil Loss Class 6 Lands. Neoen has committed to timing restrictions for construction work for sites with high rainfall distribution within this soil class, unless enhanced erosion control measures have been implemented.
- The Department and the EPA are satisfied that, given the implementation of these mitigation measures, the erosion risks of the project can be adequately measured. The Department also notes that it is a strict liability offence to pollute any waters off the site under the *Protection of the Environment Operations Act 1997*.

- Comply with section 120 of the *Protection of the Environment Operations Act 1997*; and
- Design, install and maintain erosion and sediment controls in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Volume 2* (DECC, 2008) during construction and operation of the project.

Bushfire safety

- Submitters raised concerns about the impacts of the project on bush fire management.
- The development site is mapped as bushfire prone land by the RFS. Neoen would be required to establish a 10m APZ around each WTG and wind monitoring masts, and the compound for the operation and maintenance facilities, including substations.
- Neoen has committed to compliance with the RFS's *Planning for Bushfire Protection (2019)* and the preparation of an Emergency Response Plan to manage fire risks. Neoen has also committed to a number of mitigation measures and strategies, including the preparation of an Emergency Management Plan, on-site water supply,

- Ensure that the development complies with relevant asset protection requirements in the RFS's *Planning for Bushfire Protection 2019* (or equivalent) for Asset Protection Zones;
- Ensure the development is suitably

Findings	Recommended conditions
<p>and appropriate bush fire emergency and evacuation plans.</p> <ul style="list-style-type: none"> The Department, RFS and FRNSW are satisfied that the bushfire risks can be suitably controlled through the implementation of standard fire management plans and procedures. 	<p>equipped to response to fires on site, including the provision of a 20,000 litre water supply for firefighting purposes; and</p> <ul style="list-style-type: none"> Prepare and implement an Emergency Response Plan.
Blade Throw	
<ul style="list-style-type: none"> Submitters raised concerns regarding the risk of blade throw (where a turbine blade falls off a tower) to public safety. Neoen’s risk assessment concluded that the risk of blade throw at a distance of 95 m from a turbine was 10⁻⁵ per year (1 in 100,000). As local roads surrounding the project area are located within 95 m of a turbine, the risk of blade throw to passing cars is 1 in 100,000 per year, which is lower than the annual risk of death on Australian roads. Neoen’s risk assessment also concluded that the risk of blade throw at a distance 260 m from a turbine was 10⁻⁶ per year (1 in 1 million). All associated and non-associated dwellings are located more than 260 m from the closest turbine with the exception of associated dwelling 302. Neoen has committed to preventing occupation of dwelling 302 for the life of the project. Given the distance of the turbines from occupied dwellings and roads, the Department is satisfied that the project is unlikely to pose significant blade throw risk to the community. 	<ul style="list-style-type: none"> No specific conditions required
Waste	
<ul style="list-style-type: none"> The project is not expected to generate large volumes of waste during the development. Neoen has committed to the preparation of a Waste Management Plan that will detail measures to reduce waste generated by the project. 	<ul style="list-style-type: none"> Minimise the waste generated by the project and classify waste in accordance with the EPA’s Waste

Findings	Recommended conditions
<ul style="list-style-type: none"> • The Department has imposed a condition requiring Neoen to reduce waste, recycle where possible, and to dispose of unrecyclable waste at a licenced facility. • Noting the above, the Department considers that the waste generated by the project could be appropriately managed. 	<p>Classification Guidelines.</p> <ul style="list-style-type: none"> • Remove all waste from the site as soon as practicable, and ensure it is reused, recycled or sent to an appropriately licensed waste facility for disposal.
Air quality	
<ul style="list-style-type: none"> • Submitters raised concerns regarding impacts to air quality during the construction of the project, including dust and vehicle emissions from construction traffic. • Neoen has committed to a number of mitigation measures to manage any potential air quality impacts, including dust suppression and controls and limiting construction activities during windy weather conditions. • Noting the above, and that any potential air quality impacts would be limited in duration, the Department considers that the project would not significantly impact the air quality in the locality. 	<ul style="list-style-type: none"> • Ensure off-site dust, fume and blast emissions are minimised. • Ensure surface disturbance of the site is minimised.
Subdivision	
<ul style="list-style-type: none"> • Neoen requires a subdivision for the proposal with Lot 7 DP 627548 being modified by the proposed subdivision. • The proposed subdivision would create lots below the minimum lot size of 800 ha for a RU1 zoned parcel of land. Under section 4.38(3) of the EP&A Act, development consent for the project can be granted despite the lot not meeting the minimum subdivision requirements. • The Department considers that the subdivision should be approved as it: <ul style="list-style-type: none"> – is necessary for allowing the transfer of ownership of the switching station to Transgrid, – would not result in any additional dwelling entitlements on the subdivided lots; – consistent with the key objectives of the RU1 zone as it would encourage diversity in primary industry 	<ul style="list-style-type: none"> • Subdivide the proposed land in accordance with requirements of the EP&A Act, EP&A Regulation and the <i>Conveyancing Act 1919</i> (NSW).

Findings	Recommended conditions
<p>enterprises and minimise conflict between land uses;</p> <ul style="list-style-type: none"> – for the purposes of long-term leases, are necessary for the operation of the wind farm as they are required to register the leases with the Office of the Registrar-General; and – will not affect the ability to continue the agricultural use of the broader lot. 	
Cumulative Impacts	
<ul style="list-style-type: none"> • Other potential cumulative impacts at a regional level relate to a loss in agricultural land and workforce accommodation. The broader potential cumulative impact on agricultural land and workforce accommodation in the region are discussed above. • Some submitters in the communities surrounding the project raised concerns regarding a potential future Stage 2 of the project, which would be located southeast of the New England Highway. This does not form part of the current project being assessed. Any further development would be the subject of a separate development application and assessment if proposed. • The New England Solar Farm is currently under construction; therefore, it is unlikely these projects construction would overlap with Thunderbolt Wind Farm. However, construction of the project may overlap with the construction of the proposed Salisbury Solar Farm and Armidale BESS. Workforce accommodation for these solar projects would likely be sourced from the local and wider region, including neighbouring towns (Uralla, Tamworth, Armidale and Glen Innes) and LGAs. • In addition, 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. 	<ul style="list-style-type: none"> • No specific conditions required
Decommissioning and Rehabilitation	
<ul style="list-style-type: none"> • The Department has developed standard conditions for wind farms to cover this stage of the project life cycle, including clear decommissioning triggers and rehabilitation objectives. 	<ul style="list-style-type: none"> • Decommission wind turbines (and associated infrastructure) within 18

Findings

- Additionally, the Department has provided guidance on how host landowner agreements should consider refurbishment, decommissioning and rehabilitation in the *NSW Wind Energy Framework's Negotiated Agreement Advice Sheet*.
- With the implementation of these measures, the Department considers that project infrastructure would be suitably decommissioned, either at the end of the project life or if the project is not operating for more than a year, and the site appropriately rehabilitated to a standard that would allow the ongoing productive use of the land.

Recommended conditions

- months of the cessation of operations.
- Progressively rehabilitate the site, and minimise the total disturbance area exposed at any time.
- Comply with a number of rehabilitation objectives, including removing redundant above-ground infrastructure, restoring rural land capability and vegetation, ensuring public safety and ensuring the site is maintained in a safe, stable and non-polluting condition.

7 Evaluation

160. The Department has assessed the development application, EIS and supporting documents prepared by the Applicant, advice from government agencies and submissions from councils and the public and considered the relevant objections of section 4.15 of the EP&A Act.
161. The project is located in the New England region of NSW, approximately 47 km north-east of Tamworth, in the New England Renewable Energy Zone.
162. The wind farm development is a permissible and suitable land use for the site as it has good wind resources and access to the existing electricity network.
163. The project has been designed or amended through the assessment process in response to concerns raised during community engagement and early discussion with the Department, including reducing the number of proposed turbines from 70 to 32 by:
 - completely removing the section of the project located south of the New England Highway (consisting of 33 turbines); and
 - reducing the number of turbines north of the New England Highway from 37 to 32 turbines.
164. The Department considers that the project would meet the visual performance objectives in the Visual Assessment Bulletin and that there would be no significant visual impacts on surrounding residences due to distance or intervening topography and existing and proposed vegetation providing screening from non-associated residences and the public road network.
165. The Department considers that the project has been designed to avoid and minimise biodiversity impacts to these areas. The Department considers that the vegetation clearing impacts of the project would not be significant, subject to a range of mitigation and adaptive management measures and by offsetting the residual biodiversity impacts.
166. The Department has recommended a comprehensive regime of adaptive management in a Bird and Bat Adaptive Management Plan (BBAMP) including detailed monitoring and a trigger action response plan to minimise potential impacts of the project; and the implementation of measures to reduce the mortality of those species or populations. Given this, the Department is satisfied that the project's impacts to avifauna can be appropriately managed.
167. The Department considered the submissions made through the exhibition of the project and the issues raised by the councils, community and agencies during consultation. These matters have been addressed through changes to the project and the recommended conditions of consent.
168. While local communities would experience disruptions, particularly during construction with increased heavy vehicle movements and construction noise, and the operational project would alter the visual landscape, the Department concludes that these residual impacts can be

minimised, managed, or offset, to an acceptable standard, subject to a comprehensive framework of recommended conditions of consent. Consequently, the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development.

169. Importantly, the project would assist in transitioning the electricity sector from fossil fuels to low emissions sources and is consistent with the goals of the NSW's *Climate Change Policy Framework, the Net Zero Plan Stage 1 :2020 - 2030*. With a generating capacity of around 192 MW, this is enough to power approximately 99,000 homes.
170. On balance, the Department considers that the site is suitable for a wind farm as the site has a high wind resource, connecting to existing transmission lines with capacity and is located within the New England REZ where infrastructure in the region would be supported by the NSW Government. The Department considers that the project achieves an appropriate balance between maximising the efficiency of the wind resource development and minimising the potential impacts on surrounding land users and the environment.
171. Furthermore, the project would provide flow on benefits to the local community, including around 285 construction and 9 operational jobs, and up to \$5,605,500 (indexed to CPI) in total contributions to Tamworth Regional Council and Uralla Shire Council through voluntary planning agreements for community enhancement projects.
172. On balance, the Department considers that the project is in the public interest and is approvable, subject to the recommended conditions of consent (see **Appendix F**).
173. This assessment is hereby presented to the Independent Planning Commission for determination.

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19/02/2024

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19/02/2024

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Glossary

Abbreviation	Definition
AHD	Australian height datum
BCD	Biodiversity Conservation Division within the NSW Department of Climate Change, Energy, the Environment and Water
Commission	Independent Planning Commission
CIV	Capital investment value
Crown Lands	Crown Lands division of the Department of Planning, Housing and Infrastructure
CSSI	Critical State significant infrastructure
AG DCCEEW	Australian Government Department of Climate Change, Energy, the Environment and Water
Department	Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries within the Department of Regional NSW
EHG	Environment and Heritage group of the NSW Department of Climate Change, Energy, the Environment and Water
EIS	Environmental impact statement
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental planning instrument
EPL	Environment protection licence
ESD	Ecologically sustainable development
FRNSW	Fire and Rescue NSW
Heritage	Heritage NSW, within the NSW Department of Climate Change, Energy, the Environment and Water
LEP	Local environmental plan
MEG	Mining, Exploration and Geoscience within the Department of Regional NSW
Minister	Minister for Planning
NPWS	National Parks & Wildlife Service within the NSW Department of Climate Change, Energy, the Environment and Water

Abbreviation	Definition
Planning Systems SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
SEARs	Planning Secretary's Environmental Assessment Requirements
Secretary	Secretary of the Department of Planning, Housing and Infrastructure
SEPP	State environmental planning policy
SSD	State significant development
SSI	State significant infrastructure
TfNSW	Transport for NSW

Appendices

Appendix A Environmental Impact Statement

Appendix B Submissions and government agency advice

Appendix C Submissions Report

Appendix D Amendment Report

Appendix E Additional Information

Appendix F Recommended Development Consent

Appendices A to F available at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/thunderbolt-wind-farm>

Appendix G Advice from councils and Applicant regarding Voluntary Planning Agreement

Appendix H Statutory considerations

Objects of the EP&A Act

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 in **Table H-1** below.

Table H-1 | Objects of the EP&A Act and how they have been considered

Summary
Objects of the EP&A Act
<p>The objects of most relevance to the Consent Authority’s decision on whether to approve the project are found in sections 1.3(a), (b), (c), (e) and (f) of the EP&A Act.</p> <p>The Department considers 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:</p> <ul style="list-style-type: none">• is a permissible land use on the subject land;• is located in a logical location for efficient wind farm development;• 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 contribute to a more diverse local industry, thereby supporting the local economy and community;• would not fragment or alienate resource lands in the LGA; and• is consistent with the goals of NSW’s Climate Change Policy Framework and Net Zero Plan Stage1: 2020-2030 and Implementation update (2022) and would assist in meeting Australia’s renewable energy targets whilst reducing greenhouse gas emissions. <p>The Department has considered the encouragement of Ecologically Sustainable Development (ESD) (Object 1.3(b)) in its assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences.</p> <p>In addition, the Department considers that appropriately designed SSD wind development, in itself, is consistent with many of the principles of ESD. Neoen has also considered the project against the principles of</p>

Summary

ESD. As such, 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. The Department considers that the project can 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 is also satisfied 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** of this report. The Department considers the project would not significantly impact the built or cultural heritage of the locality, and any residual impacts can be managed and/or mitigated by imposing appropriate conditions.

State significant development

Under section 4.36 of the EP&A Act, the project is considered State significant development.

Under section 4.5(a) of the EP&A Act and Clause 1(b) of section 2.7 of the Planning Systems SEPP, the Independent Planning Commission is the consent authority for the development as the project received more than 50 unique public submissions by way of objection, and Uralla Shire Council objects to the project.

Environmental Planning Instruments (EPIs)

The Tamworth Regional and Uralla LEPs apply and are discussed in **section 4.3** of this report, particularly regarding permissibility and land use zoning. Electricity generating works are permitted with consent within the relevant land use zoning.

Since the lodgement of the EIS, all NSW SEPPs have been consolidated into 11 policies. The consolidated SEPPs commenced on 1 March 2022, with the exception of the Housing SEPP, which commenced on 26 November 2021.

The SEPP consolidation does not change the legal effect of the repealed SEPPs, as the provisions of these SEPPs have simply been transferred into the new SEPPs. Further, any reference to an old SEPP is taken to mean the same as the new SEPP. For consistency, the Department has considered the development against the relevant provisions of the SEPPs that were in force when the EIS was lodged.

The project is declared to be SSD under section 4.36 of the EP&A Act, as it triggers the criteria in clause 20 of Schedule 1 of the SRD SEPP.

The project is not categorised as potentially hazardous or potentially offensive development under the *State Environmental Planning Policy (Resilience and Hazards) 2021*. The site is not listed as a contaminated site in the NSW EPA Contaminated Land Record or the list of NSW contaminated sites. Given the site has historically

Summary

been used for predominately agricultural uses, the Department considers the site would be suitable for the proposed development.

The Department has also reviewed the proposal against the Transport and Infrastructure SEPP, and considers the project is permissible under the SEPP. In accordance with the Transport and Infrastructure SEPP, the Department has given written notice of the project to Transgrid as the electricity supply authorities and TfNSW.

The Department has considered the provisions of *State Environmental Planning Policy (Primary Production and Rural Development) 2019*, which aims to achieve a balance between rural needs, including agriculture, and development. Of relevance to the project, this SEPP also aims to facilitate the orderly economic use and development of lands for primary production, to reduce land use conflict and sterilisation of rural land and to identify State significant agricultural land. The Department has considered all of these matters in **section 6.5** of this report and concluded that the project is generally consistent with the broader and specific land use planning objectives for the site and the region under the relevant planning instruments and strategies.

The Department has consulted with public authorities and considered the matters raised in its assessment of the project (see **section 5**), noting that Uralla Shire Council objected to the project. The Department has developed conditions of consent to address the recommendations and advice of public authorities consulted for the project including Tamworth Regional Council and Uralla Shire Council. Overall, the Department considers that the proposal is located so as to avoid land use conflicts with existing and approved uses of land (see **section 6.5**).

The Department has considered the *State Environmental Planning Policy (Koala Habitat Protection) 2021* (Koala SEPP). Whilst the Tamworth Regional and Uralla LGAs are listed in Schedule 1 of the Koala SEPP, the provisions of the SEPP do not apply as the project is State significant development. Nonetheless, the biodiversity development assessment report (BDAR) prepared for the project has assessed the potential for impacts on Koala habitat and considers that potential impacts on these species could be appropriately offset via the species credit requirements detailed in **section 6.3** of this report.

Appendix I Consideration of community views

The Department exhibited the EIS for the project from 27 April 2022 until 24 May 2022 (28 days) and received 107 public submissions, of which 100 were unique (82 objecting to the project, 14 in support and four comments). The Department also consulted with government agencies and relevant councils throughout the assessment process.

The key issues raised by the community (including in public submissions) and considered in the Department’s Assessment Report include biodiversity, visual, noise and socio-economic impacts. A summary of how the Department considered these matters is presented in **Table I-1** below. Other issues are addressed in detail throughout this Assessment Report.

Table I-1 | Consideration of community views

Issue	Consideration
<p>Biodiversity</p> <ul style="list-style-type: none"> • Vegetation clearing • Impacts to threatened species 	<p>Assessment</p> <ul style="list-style-type: none"> • Most submissions objecting to the project raised concerns about impacts on biodiversity, including impacts from direct clearing of vegetation, habitat fragmentation and edge effects, clearing of Threatened Ecological Communities (TECs), blade strike impacts to avifauna species. • The development footprint includes 162 ha of native vegetation, of which approximately 82.18 ha is woodland and approximately 80.28 ha is derived native grassland. The project has been designed and refined to avoid and minimise biodiversity impacts to areas of higher conservation value. The Department considers that the vegetation clearing impacts of the project would not be significant, subject to a range of mitigation and adaptive management measures and by offsetting the residual biodiversity impacts. • BCD raised concerns about potential impacts to avifauna due to the uncertainty regarding the level of bat utilisation on the project site, along with a lack of detail of mitigation measures to reduce blade strike. While BCD advised a precautionary approach be taken for high-risk turbines, BCD offered to consult with the applicant on the detail of trigger points and potential mitigation measures as part of the development of the Bird and Bat Adaptive Management Plan (BBAMP). Given this, the Department is satisfied that the project’s impacts to avifauna can be appropriately managed. <p>Recommended conditions</p> <ul style="list-style-type: none"> • minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees, within the development footprint and

Issue	Consideration
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- protect native vegetation and key fauna habitat outside the approved disturbance area in accordance with limits in the recommended conditions;
- prepare and implement the Biodiversity Management Plan which includes a description of the measures to:
 - minimise the potential indirect impacts on threatened flora and fauna species, migratory species and ‘at risk’ species;
 - rehabilitate and revegetate temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
 - control weeds and feral pests;
 - provide a detailed program to monitor and report on the effectiveness of these measures.
 - prepare and implement a Bird and Bat Adaptive Management Plan in consultation with BCD and the AG DCCEEW; and
 - retire the applicable biodiversity offset credits in accordance with the NSW Offsets Policy prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset.

<p>Visual impacts</p> <ul style="list-style-type: none"> • impacts on the surrounding landscape and dwellings • shadow flicker and night lighting 	<p>Assessment</p> <ul style="list-style-type: none"> • Concerns about visual impacts were raised in 32 public submissions, particularly regarding the size and scale of the wind farm in the landscape and views from residences and public areas. • The Department considers that visual performance objectives in the Visual Assessment Bulletin is achievable at all receivers. While several receivers located within 5.1 km of a turbine may have some views of turbines, the Department considers that these impacts could be sufficiently mitigated through visual impact mitigation measures (such as landscaping and visual screening). • The Department is satisfied that the project would not fundamentally change the broader landscape characteristics of the area or result in any significant visual impacts on the surrounding non-associated residences. • The project would not exceed 30 hours of shadow flicker per year at any non-associated receiver. Neoen has committed to using subtle colours and a low reflectivity surface treatment on turbines to minimise blade glint. <p>Recommended conditions</p>
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Issue	Consideration
	<ul style="list-style-type: none"> • offer landscaping and/or vegetation screening to all non-associated dwellings within 5 km of any approved turbine; • implement all reasonable and feasible measures to minimise the visual impacts of the development; • paint turbines off-white/grey and finishing blades with a treatment that minimises potential for any glare or reflection; • implement all reasonable and feasible measures to minimise the off-site lighting impacts of the development; and • ensure that shadow flicker from turbines does not exceed 30 hours per annum at any non-associated dwelling.
<p>Noise impacts</p> <ul style="list-style-type: none"> • Construction and operational noise • Traffic noise • Low frequency noise and infrasound 	<p>Impact assessment</p> <ul style="list-style-type: none"> • Concerns about construction, traffic and operational noise were raised in 32 public submissions. The Friends of Kentucky special interest group commissioned L Huson & Associates to peer review Neoen’s noise impact assessment (NIA). • Six non-associated residences would exceed the 45 dB(A) noise-affected management level during road upgrades and track construction. The predicted construction noise levels at these dwellings would be between 49 dB(A) and 58 dB(A). The predicted noise levels would be significantly less than 75 dB(A) outlined in the Construction Noise Guideline as highly noise affected. The Department accepts that the proposed construction activities are unlikely to result in significant adverse impacts during daytime hours and consequently has developed conditions restricting to standard construction hours (i.e. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday) with no work on Sundays or NSW public holidays • Modelling predicts that construction traffic noise levels would be below the 68dB(A) criterion, as dwelling setback distances from the New England Highway are greater than 40m. • Noise modelling undertaken for the project concluded that there would be no operational noise in exceedance of the 35dB(A) criteria at all non-associated dwellings. • The Department also considered the impacts of low frequency noise resulting from the project. Low frequency noise was assessed by Sonus, and it was found that the highest predicted low frequency noise level of 33 dB(C) is significantly under the 60 dB(C) level, above which the Noise Bulletin requires further assessment. As such, the Department is satisfied that any low frequency noise impacts would be minor and acceptable.

Issue	Consideration
	<ul style="list-style-type: none"> Both the EPA and the Department are satisfied that the noise criteria and the predicted noise levels have been correctly calculated for the project, and the EPA has indicated that it would be able to issue an EPL for the project subject to the noise limits as identified in Appendix S of the EIS. <p>Recommended conditions</p> <ul style="list-style-type: none"> Restrict construction to standard construction hours (ie 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday); Undertake noise monitoring within 6 months of the commencement of operations to determine whether the project is complying with the relevant noise criteria; Adjust noise monitoring results for tonality and low frequency noise in accordance with the Noise Bulletin; Manage blasting operations to comply with the criteria in the <i>Australian and New Zealand Environment Council Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration</i> at any residence on privately owned land; and Only carry out blasting on site between 9 am and 5 pm Monday to Friday and between 9 am and 1pm on Saturday, in accordance with the blasting guidelines.
<p>Socio-economic</p> <ul style="list-style-type: none"> Employment levels Property values 	<p>Impact assessment</p> <ul style="list-style-type: none"> Concerns about socio-economic impacts were raised in 28 public submissions, particularly regarding non-local employment and diminishing property values. The project would generate up to 285 construction jobs, of which Neoen has committed to sourcing 135 from surrounding LGAs, and up to 9 FTE ongoing full-time jobs during operation of the project, of which Neoen has committed to sourcing 5 from surrounding LGAs. While Neoen has committed to a local participation and procurement approach, the Department has recommended a condition requiring Neoen to prepare an Accommodation and Employment Strategy to prioritise local employment and procurement, and to mitigate the potential impacts of worker housing unavailability. The Land and Environment Court has ruled on several occasions that the assessment of the impacts of projects on individual property values is not generally a relevant consideration under the EP&A Act, unless the project would have significant and widespread economic impacts on the locality, which is not the case in this instance.

Issue	Consideration
	<ul style="list-style-type: none"> • In addition, the Department notes that <i>King & Anor v Minister for Planning</i>; <i>Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning</i>; <i>Gullen Range Wind Farm Pty Limited v Minister for Planning</i> ([2010] NSWLEC 1102) considers property values for sites adjacent to a wind farm. The judgement determined that there was no loss of property value to which the Court could lawfully have regard, as the wind farm was permissible with consent. • Accordingly, the Department considers the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm. <p>Recommended conditions</p> <ul style="list-style-type: none"> • Prepare an Accommodation and Employment Strategy for the project in consultation with relevant councils, with consideration to prioritising the employment of local workers. • Enter into a VPA with each relevant Council prior to commencing construction.

Appendix J Assessment of Matters of National Environmental Significance

In accordance with the Bilateral Agreement between the Commonwealth and NSW Government, the Department provides the following additional information required by the Commonwealth Minister, in deciding whether to approve a proposed action (i.e. the project) under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the Thunderbolt Energy Hub Environmental Impact Statement (EIS), Submissions Report, Amendment Report (dated August 2023), revised Biodiversity Development Assessment Report (BDAR) (dated November 2023) and additional information provided during the assessment process, public submissions and advice provided by the Department's Biodiversity Conservation Directorate (BCD) other NSW government agencies and the AG DCCEEW.

This Appendix is supplementary to, and should be read in conjunction with, the assessment included in **section 6.3** of this report which includes consideration of impacts to listed threatened species and communities, and mitigation and offsetting measures for threatened species and communities, including Matters of National Environmental Significance (MNES).

Identifying MNES

The Commonwealth Referral Decision (EPBC 2021/9048) (Referral Decision) was based on likely significant impacts on three threatened species and communities, including one migratory species. An additional three threatened species were identified as possibly being at risk of being impacted.

The revised BDAR for the project identified and addressed all the listed threatened species and communities and migratory species included in the Referral Decision.

Assessments of significance were undertaken for the threatened species identified as having a moderate or higher potential to occur on the site, including one ecological community, two threatened flora species and three threatened fauna species.

Neoen assessed the significance of the impacts on these listed species and communities using the methodology outlined in the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (2013) as documented in Section 5 of the revised Biodiversity Development Assessment Report.

Impact on EPBC Listed Threatened Species and Communities

Impacts on threatened ecological communities

Neoen assessed the potential impacts of one listed threatened ecological community (TEC) with predicted or known habit within the project, area, the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Vulnerable.

Neoen has committed to minimise clearing of Box-Gum Woodland and all other TECs where feasible via micro-siting at the detailed design stage, and to offset the residual biodiversity impacts of the project in accordance with the requirements of NSW Biodiversity Offset Scheme.

While BCD has advised that impacts to Box Gum Woodland would be appropriately offset via the ecosystem credit requirements detailed in **section 6.3.7**.

Impacts on threatened flora species

Neoen assessed the potential impacts of two threatened flora species listed under the EPBC Act, being:

- Bluegrass (*Dichanthium setosum*) – Vulnerable
- McKie’s Stringybark (*Eucalyptus mckieana*) - Vulnerable

As detailed in section 5.4.2 of the revised BDAR, assessments of the species identified in the Referral Decision were not required as they were identified as having a low likelihood to occur at the project site.

Impacts on threatened fauna species and migratory species

The Department and BCD have considered the potential impacts on all EPBC Act listed fauna species with predicted or known habitat within the proposal study area, including the fauna species identified in the Referral Decision.

Of these, three species were the subject of significance assessments conducted by Neoen, as detailed in section 5.4.2 of the revised BDAR. The species assessed included:

- Spotted-tailed Quoll, Spot-tail Quoll, Tiger Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus*) - Endangered;
- Koala² (*Phascolarctos cinereus*) (combined populations of Queensland, New South Wales and the Australian Capital Territory) - Endangered;
- Austral Toadflax (*Thesium australe*) – Vulnerable; and
- White-throated Needletail (*Hirundapus caudacutus*) - Vulnerable; Marine; Migratory.

Section 5.4.2 of the revised BDAR includes assessments of significance for these species. The revised BDAR concluded that there was potential for significant impacts to the Spotted-tailed Quoll, the Koala and the White-throated Needletail. Advice from BCD considered that the project would be unlikely to significantly reduce the area of occupancy of Austral Toadflax, the Spotted-tailed Quoll and the Koala, given the nature and extent of the potential habitat removal.

² The koala was listed as vulnerable under the EPBC at the time of referral. The listing has since been changed to endangered as of the time of writing.

Impacts to the White-throated Needletail were addressed through the potential for blade strike to impact this species. BCD raised concerns in their advice regarding the risk of blade strike to bird and bat species, particularly at turbines T23, T24 and T25 which are located near a mapped regional habitat corridor. These turbines were identified in the BDAR as having a high-risk rating due to the presence of sensitive bird and bat species in better quality habitat. BCD acknowledge that the parameters used in the BDAR to undertake the risk assessment were acceptable. BCD would be consulted on the detail of trigger points and potential mitigation measures as part of the development of the Bird and Bat Adaptive Management Plan.

BCD and the Department consider that, with the exception of blade strike impacts to the White-throated Needletail, all threatened species likely to be impacted have been assessed adequately under the BAM and an offset obligation has been calculated as per **section 6.3.7** of this report. The Department and BCD are satisfied that the recommended conditions, including the requirement to develop and implement an adaptive management plan in consultation with BCD and the AG DCCEEW, would be effective in mitigating the collision risk to birds, including the White-throated Needletail.

Conservation Advice

The relevant conservation advice that applies to the project includes:

- *Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (AG DCCEEW, 2003);
- *Conservation Advice Dasyurus maculatus maculatus (southeastern mainland population) Spotted-tailed Quoll, south eastern mainland* (Threatened Species Scientific Committee, 2020);
- *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory* (Australian Government Department of Agriculture, Water and the Environment, 2022);
- *Approved Conservation Advice for Thesium australe (austral toadflax)* (Australian Government Department of the Environment, 2013); and
- *Conservation Advice Hirundapus caudacutus White-throated Needletail* (Threatened Species Scientific Committee, 2019)

The Department notes the key threats to species and communities include landscape fragmentation, introduction of weeds, competition for land, habitat degradation (particularly by rabbits, unmanaged goats, and feral pigs), climate change, disease transmission (particularly by feral pigs), biological effects associated with invasive species (particularly the cane toad) and predations (particularly by feral cats and foxes).

The Department's recommended conditions require Neoen to prepare and implement a Biodiversity Management Plan detailing how these risks would be minimised and managed, including measures to:

- ensure the development does not adversely affect the native vegetation and habitat outside the disturbance footprint;
- minimise the clearing of native vegetation and habitat within the disturbance footprint;
- minimise the impacts of the development on threatened flora and fauna species within the disturbance footprint and its surrounds;
- rehabilitate and revegetate temporary disturbance areas;
- protect native vegetation and key fauna habitat outside the approved disturbance footprint;
- maximise the salvage of resources within the approved disturbance footprint – including vegetative and soil resources – for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
- collect and propagate seed (where relevant);
- control weeds and feral pests;
- control erosion; and
- manage bushfire.

Neoen would be required to prepare the Biodiversity Management Plan in consultation with BCD and the AG DCCEEW, and ensure the plan is prepared by a suitably qualified and experienced biodiversity expert.

In addition, Neoen is required to ensure impacts on species and communities are avoided and minimised, where practicable during detailed design, and offset the residual biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme.

Recovery Plans

The relevant Recovery Plans that apply to the project include:

- National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (AG DCCEEW, 2010);
- *National Recovery Plan for the Spotted-tailed Quoll* *Dasyurus maculatus* (Australian Government Department of Environment, Land, Water and Planning, 2016); and
- *National Recovery Plan for the Koala* *Phascolarctos cinereus* (*combined populations of Queensland, New South Wales and the Australian Capital Territory*) (Australian Government Department of Agriculture, Water and Environment, 2022).

The Department notes the key objectives of the relevant Recovery Plans include:

- achieving no net loss in extent and condition of Box Gum Woodland and increasing landscape function of the ecological community through management and restoration of degraded sites;

- preventing a further decline in Koala populations and achieving a demonstrable sustained improvement in the quality and quantity of habitat; and
- reducing the rate of decline of the Spotted-tailed Quoll, and ensure that viable populations remain throughout its current range in eastern Australia.

Threat Abatement Plans (TAPs)

The relevant Threat Abatement Plans that apply to the project include:

- *Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads* (Australian Government Department of Sustainability, Environment, Water, Population and Communities, 2011);
- *Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa)* (Australian Government Department of the Environment and Energy, 2017);
- *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomic* (Australian Government Department of the Environment and Energy, 2018);
- *Threat abatement plan for predation by feral cats* (Australian Government Department of the Environment, 2015);
- *Threat abatement plan for predation by the European red fox* (Australian Government Department of the Environment, Water, Heritage and the Arts, 2008); and
- Threat abatement plan for competition and land degradation by rabbits (Australian Government Department of the Environment and Energy, 2016).

The Department has included measures for the control of feral animals under the recommended Biodiversity Management Plan for the project, including specific requirements for the Applicant to consider the actions identified in relevant TAPs. With these measures in place, the Department considers that the action can be carried out in a manner which is compatible with the relevant TAPs.

Subject to the recommended conditions, the Department considers that the project can be carried out in a manner that is consistent with the relevant conservation advice, recovery plans and threat abatement plans.

Additional EPBC Act Considerations

Table J-1 contains the additional mandatory considerations, factors to be taken into account and factors to have regard to under the EPBC Act that are additional to those already discussed.

Table J-1 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act Section	Considerations	Conclusion
Mandatory considerations		
136(1)b	<p>Economic and social matters are discussed in sections 2.1 and 6.5 of this report.</p>	<p>The project would provide benefits for the local and regional economy and is of public benefit. Up to 285 workers would be required during the construction period, of which Neoen has committed to sourcing 135 from surrounding LGAs. Up to 9 FTE ongoing jobs would be required for operation of the project, of which Neoen has committed to sourcing 5 from surrounding LGAs.</p> <p>Impacts on the local community would mostly occur during the construction period, which has been considered in the assessment report. The recommended conditions require Neoen to minimise potential traffic and amenity impacts.</p> <p>Furthermore, Neoen has committed to enter into a VPA with the relevant councils amounting to \$5,605,500, equating to 1.5% of CIV per annum, a portion of which would be used to fund community enhancement projects.</p>
3A, 391(2)	<p>Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, in particular:</p> <ul style="list-style-type: none"> • the long term and short term economic, environmental, social and equitable considerations that are relevant to this decision; • conditions that restrict environmental impacts and impose monitoring and adaptive management, reduce any lack of certainty related to the potential impacts of the project; • conditions requiring the project to be delivered and operated in a 	<p>The Department considers that the project, if undertaken in accordance with the recommended conditions of consent, would be consistent with the principles of ESD.</p>

EPBC Act Section	Considerations	Conclusion
	<p>sustainable way to protect the environment for future generations and conserving the relevant matters of national environmental significance;</p> <ul style="list-style-type: none"> • advice provided within this report reflects the importance of conserving biological diversity, ecological and cultural integrity in relation to all of the controlling provisions for this project; and • mitigation measures to be implemented which reflect improved valuation, pricing and incentive mechanisms are promoted by placing a financial cost on the Applicant to mitigate the environmental impacts of the project. 	
136(2)(e)	Other information on the relevant impacts of the action.	The Department considers that all information relevant to the impacts of the project has been taken into account in its assessment.
139(1)	Requirements for decisions about threatened species and endangered communities	<p>Recovery plans and threat abatement plans are addressed above.</p> <p>Australia's obligations under the Convention on Biological Diversity (Biodiversity Convention) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies, and by appropriate funding.</p> <p>The recommendations of this assessment report are consistent with the Biodiversity</p>

EPBC Act Section	Considerations	Conclusion
		<p>Convention, which promotes environmental impact assessment (such as this process) to avoid and minimise adverse impacts on biological diversity. Accordingly, the recommended development consent requires avoidance, mitigation and management measures for listed threatened species, and all information related to the project is required to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity</p> <p>There are no additional requirements for decisions about threatened species and endangered communities that apply to the project. The Apia convention and CITES are not relevant to the project.</p>

Factors to have regard to

176(5)	Bioregional plans	There is no approved bioregional plan related to the activity.
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Consideration on deciding conditions

134(4)	<p>Must consider:</p> <ul style="list-style-type: none"> Information provided by the person proposing to take the action or by the designated Applicant of the action; and The desirability of ensuring as far as practicable that the condition is a cost effective means for the Commonwealth and the person taking the action to achieve the object of the condition. 	<p>All project related documentation is available from the Department's website www.planningportal.nsw.gov.au</p> <p>The Department considers that the recommended conditions at Appendix F are a cost effective means of achieving their purpose. The conditions are based on material provided by the Applicant that was prepared in consultation with the Department, BCD and other government agencies.</p>
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TABLE 1: BCS OFFICER PROJECT ADVICE TO DPIE ON EPBC ACT LISTED THREATENED SPECIES AND COMMUNITIES

Requirement	Information	Reference (BAM / BLA ¹)
Background & Description of Action	<p>Does the EIS/BDAR²:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> clearly show how operational and construction footprints, including clearing boundaries, structures to be built and elements of the action are situated with regard to MNES <input checked="" type="checkbox"/> depict stages and timing of the action that may impact on MNES <input checked="" type="checkbox"/> provide a map(s) of the subject land boundary showing the final proposal/disturbance footprint with respect to location of MNES, including GIS shape files <p>Include references to where this detail is provided.</p> <p>Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements:</p> <p>The bilateral assessment for this project relates to the construction of a wind farm comprising:</p> <ul style="list-style-type: none"> • up to 32 wind turbines (WTGs) • associated infrastructure including: <ul style="list-style-type: none"> ○ an electrical substation ○ operation and maintenance buildings ○ aboveground and underground 33 kV electrical reticulation and fibre optic cabling connecting the WTGs to the onsite substation ○ temporary elements such as: <ul style="list-style-type: none"> - two meteorological monitoring masts - construction compound and facilities - site offices, car parking and amenities for the construction workforce - laydown and storage areas for the temporary storage of plant, equipment, materials, and WTG components. - mobile concrete batching plants - earthworks, including cut and fill, for constructing access roads, WTG platforms and foundations. 	BAM Chapters 3, 4, 5 and 8

¹ Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

² Or revisions of the BDAR and associated documentation made as a result of previous reviews or project changes post-exhibition.

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Requirement	Information	Reference (BAM / BLA ¹)
	<ul style="list-style-type: none"> - an above ground pipeline to an existing dam • an internal private access road network (up to a combined total length of approximately 50 km) • construction of new intersection on New England Highway <p>The Biodiversity Development Assessment Report (BDAR), dated March 2022, initially formed Appendix 12 of the Environmental Impact Statement (EIS) for the project. The BDAR was subsequently updated several times, the current version is dated November 2023. All references to the 'BDAR' in this assessment refer to the current November 2023 version.</p> <p>The Thunderbolt Energy Hub is proposed to include wind and solar electricity generation and is planned to be progressed in two stages. Stage 1 is located to the north of the New England highway and will include wind energy generation capacity only. Stage 2 will form part of a separate future development assessment and approval process. This BDAR relates to the Stage 1 Project Area of the Thunderbolt Wind Farm.</p> <p>The location of Matters of National Environmental Significance (MNES) in relation to the development footprint are provided in Figures 3.3 (Austral Toadflax) and 5.3 (Box-Gum Woodland CEEC) of the BDAR. No species polygons are provided in the BDAR for Spotted -tailed Quoll and White-throated Needletail.</p> <p>The proponent provided BCS with GIS shape files for the maps in the BDAR. BCS can confirm that the spatial data and the areas of impact to MNES in the BDAR are consistent.</p>	
Landscape Context of the MNES	<p>Provide advice on the adequacy of the landscape context information and identify any additional information requirements:</p> <p>Section 3.1.1 'Landscape features' of the BDAR, specifically Table 3.1, describes the landscape context and features for the project. This section includes information which meets the requirements of the BAM. No additional information was required.</p>	BAM Section 3.1 BLA clause 7.4
EPBC Act Listed Threatened Species & Communities	<p>Verify that the EIS/BDAR includes relevant information on the identification of all EPBC Act listed threatened species and communities on the site or in the vicinity³ via:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> field based survey effort <input checked="" type="checkbox"/> published peer reviewed literature <input checked="" type="checkbox"/> local data 	BAM Chapters 4 and 5

³ On land to which impacts may extend

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Requirement	Information	Reference (BAM / BLA ¹)
	<p><input checked="" type="checkbox"/> supporting databases (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results)</p> <p><input checked="" type="checkbox"/> Verify that the EIS/BDAR includes appropriate mapping of all EPBC Act listed threatened species and communities in accordance with the relevant Commonwealth Listing Advice. The EIS/BDAR should include important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans.</p> <p>Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements:</p> <p><i>Field-based survey effort:</i></p> <p>Methods used are provided in Appendix B of the BDAR.</p> <p>Survey methodology for native vegetation (vegetation integrity plots), threatened flora survey methodologies and effort, and threatened fauna survey effort are described in various sub-sections of sections B1.2 and B1.3 of Appendix B. Bird and bat utilisation surveys are described in Section B1.5.</p> <p>Floristic and vegetation integrity data was collected in accordance with the minimum requirements under the BAM.</p> <p>The vegetation survey identified White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland (CEEC) on site.</p> <p>One EPBC Act-listed threatened flora species was found on the project site; Austral toadflax (<i>Thesium australe</i>). Bluegrass (<i>Dichanthium setosum</i>) was recorded on Stage 2 of the project south of the New England Highway.</p> <p>One EPBC Act-listed threatened fauna species was found on the project site: koala (<i>Phascolarctos cinereus</i>). Spotted-tailed quoll (<i>Dasyurus maculatus maculatus</i>) has been assumed to be present.</p> <p>No EPBC Act-listed migratory species were recorded on the project site although white-throated needletail are assumed present.</p> <p>BCS is satisfied that flora and fauna survey requirements for the BAM have been met.</p> <p><i>Published peer reviewed literature:</i></p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>The section 'References' of the BDAR includes peer-reviewed papers that were used for the assessment of MNES entities. There are a number of references to NSW or Commonwealth Government websites, and these are considered to be current and contain reliable information about all MNES considered for this project. While a broad range of peer-reviewed literature has generally been used to underpin decision-making in the BDAR, BCS considers that the assessment of blade strike and indirect impacts on fauna would have benefited from a more comprehensive literature search.</p> <p><i>Local data:</i></p> <p>No local data was used for the assessment.</p> <p><i>Supporting databases:</i></p> <p>Four databases were cited as being used for the MNES assessment:</p> <ol style="list-style-type: none"> 1. DPE BioNet Vegetation Classification Database 2. DPE BioNet Threatened Biodiversity Data Collection 3. DPE BioNet Atlas 4. DCCEEW EPBC Protected Matters Search Tool (PMST). <p><i>Appropriate mapping of all EPBC Act-listed species and communities in accordance with relevant Commonwealth Listing Advice:</i></p> <p>Mapping of MNES threatened ecological communities (Box Gum Woodland CEEC) is in accordance with the BAM and Commonwealth Listing Advice. An assessment of the PCT within the development corridor against the Approved Conservation Advice criteria published by the Commonwealth Threatened Species Scientific Committee for that TEC is provided in Table 3.3 of the BDAR. The location of Box-Gum Woodland CEEC is depicted in Figure 3.2 of the BDAR.</p> <p>The species polygon for koala is presented in Figure 3.4 of the BDAR and for Austral toadflax in Figure 3.5. Spotted-tail quoll and white-throated needletail were not recorded but are assumed to occur on the project site. No species polygons are provided in the BDAR for these species.</p> <p>Two fauna species – regent honeyeater <i>Anthochaera phrygia</i> and swift parrot <i>Lathamus discolor</i>, both listed as critically endangered, are not listed in the referral documentation but were assessed as having foraging habitat impacted by the project (Appendix E of the BDAR). Neither of these species were considered to have breeding habitat (species credit habitat) present on site. Therefore, these species are treated as ecosystem</p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>credit species. The foraging value of the project area to these species, and the likely impact to these species, is defined by the plant community types (PCTs) that the species are associated with in the Threatened Biodiversity Data Collection (TBDC). While maps of the PCTs impacted by this project are provided in the BDAR, specific habitat for these two MNES threatened fauna species have not been mapped.</p> <p><i>Any important populations and critical habitat, as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans:</i></p> <p>There are no 'important populations' or 'critical habitat' likely to be impacted by the project.</p>	
	<p>Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list (if applicable):</p>	
	<p>Verify that the EIS/BDAR demonstrates all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including an analysis of alternative:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> designs and engineering solutions <input checked="" type="checkbox"/> modes or technologies <input checked="" type="checkbox"/> routes and locations of facilities <input checked="" type="checkbox"/> sites within the subject site <input checked="" type="checkbox"/> Verify that the EIS/BDAR identifies any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc). <p>Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> techniques, timing, frequency and responsibility <input checked="" type="checkbox"/> identify measures for which there is risk of failure <input checked="" type="checkbox"/> evaluate the risk and consequence of any residual impacts <input checked="" type="checkbox"/> any adaptive management strategy proposed to monitor and respond to impacts. <p>Confirm that all feasible alternatives and efforts have been made to avoid and minimise impacts on EPBC Act listed threatened species and communities.</p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>Section 3.3 of the EIS provides a broad overview of the project alternatives. This contains no considerations relating to biodiversity.</p> <p>Section 4.0 of the BDAR addresses avoidance and minimisation of native vegetation and prescribed impacts. Much of the infrastructure has been located within exotic grasslands or in derived native grassland. Approximately 62% of the proposed disturbance is located within grassland or disturbed areas.</p> <p>An analysis of bat activity within the rotor swept area has yet to be provided. Given the uncertainty regarding blade strike, BCS has taken a precautionary approach and has recommended the deletion of the three turbines that have been rated as a high risk (T23, T24 and T25) due to their potential for bird and bat strike.</p> <p>Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect, and prescribed impacts)</p> <p>Section 4.2 of the BDAR indicates that mitigation measures will be developed as part of post-approval management plans. A list of potential mitigation measures is provided in Table 4.2 of the BDAR. BCS has requested further detail of these measures.</p> <p>Given the uncertainty surrounding the potential for blade strike and lack of detail regarding mitigation measures the risk and consequences of prescribed impacts cannot be determined.</p> <p>BCS has committed to work with the proponent post-approval during preparation of the bird and bat adaptive management plan (BBAMP) to ensure that mitigation measures appropriate to the risk are implemented.</p>	
<p>Avoidance, Minimisation, Mitigation & Management</p>	<p>Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified:</p> <p>Verify that the EIS/BDAR:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> identifies the residual adverse impacts likely to occur to each EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account <input checked="" type="checkbox"/> provides adequate justification and evidence for the predicted level of impact, with reference to the: <ul style="list-style-type: none"> • Commonwealth’s Significant Impact Guideline: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf 	<p>BAM Chapters 6, 7 and 8 BLA clause 7.1</p>

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Requirement	Information	Reference (BAM / BLA ¹)
	<ul style="list-style-type: none"> • DPIE Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SAIL): (https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf) <p>Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified:</p> <p>Section 4.0 of the BDAR 'Avoidance and Minimisation of Impacts' addresses the measures that have been taken to avoid and minimise impacts to biodiversity.</p> <p>Section 4.4 'Bird and Bat Adaptive Management Plan' outlines the monitoring program and strategy to manage and mitigate operational issues relating to bird and bat impacts for the wind farm. BCS has committed to work with the proponent post-approval when they prepare the bird and bat adaptive management plan (BBAMP) to ensure that mitigation measures appropriate to the risk are implemented.</p> <p>Specific comments on avoidance and minimisation of impacts to MNES are included below.</p> <p><u>Box gum woodland</u></p> <p>The BDAR (Section 4.1.1) states that throughout the development of the project layout, design decisions have been implemented to avoid impacts to box gum woodland. Table 5.9 in Section 5.3.1 of the BDAR provides the impact assessment for the project. The EPBC referral documentation indicated that the impact to Box Gum Woodland would not exceed 7.0 hectares. Table 3.4 of the BDAR indicates that the impact to Box Gum Woodland is 7.26 hectares which includes 5.68 hectares in moderate-good condition. There will also be impacts on 41.58 hectares of box gum derived native grassland in good condition.</p> <p>0.26 hectares of temporary disturbance is associated with a water pipeline. The location and use of the water supply pipeline has been developed to avoid any permanent impacts on the CEEC.</p> <p><u>Prescribed impacts</u></p> <p>Section 4.1.2 and Table 5.3 of the BDAR describe and assess prescribed biodiversity impacts for the project. This identifies that operation of the wind farm (32 turbines) has the potential to result in what are described in the BDAR as minor impacts to connectivity in the north-west of the project area as the project will result in a linear (40–90 m wide) clearing within an area that currently has a contiguous native canopy.</p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p><i>Habitat connectivity</i></p> <p>Section 4.1.2 states that the proponent sought to avoid and minimise the potential impacts on the ecological values of the project area through general avoidance of remnant vegetation. The development footprint is largely in an area of relatively low biodiversity value (predominantly cleared agricultural lands), resulting in reduced disturbance to higher biodiversity areas of native vegetation or fauna habitats.</p> <p>It is stated in Table 5.2 that the development is not considered to introduce a substantial indirect barrier to the movement of avifauna species in the local or broader region. It is considered unlikely that there would be any substantial bird or bat movement from within or across the project area to the east. This statement is not supported by data collected for the project. Table 5.3 indicates that there may be some minor impacts to connectivity in the north-west of the project area (turbines T23, T24 and T25) as the result of linear (40–90 m wide) clearing within an area that currently has a contiguous native canopy.</p> <p><i>Blade strike</i></p> <p>The rotor swept area of turbines is from 80 m to 260 m above ground level. Analysis of bat activity within the rotor swept area has yet to be provided. Given uncertainty regarding blade strike, BCS has taken a precautionary approach and has recommended the deletion of the three turbines that have been rated as a high risk (T23, T24 and T25) due to their potential for bird and bat strike. BCS has committed to work with the proponent post-approval when they prepare the bird and bat adaptive management plan (BBAMP) to ensure that mitigation measures appropriate to the risk are implemented.</p> <p>Complete the following information for each EPBC Act listed threatened species and/or community (add/remove rows as necessary):</p> <ul style="list-style-type: none"> • EPBC Act listed threatened species and/or community • nature and consequences of impacts (i.e. direct and indirect) • duration of impact (e.g. construction, operation, life of project) • quantum of impact • consequences of impacts on the species, the population and / or extent of the community at local, state and national scales <p>Confirm the level of predicted impact (cross appropriate):</p> <p><input checked="" type="checkbox"/> high risk of impact (requiring offsets)[#] or SAll <input checked="" type="checkbox"/> Low risk of impact (not requiring offsets)</p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p># For purposes of EPBC approval, as a minimum, significant adverse residual impacts must be offset (significant impact can be evaluated with reference to the significance impact guidelines)</p> <p>Confirm that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species.</p> <p>BCS confirms that all EPBC Act-listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR (see further information below).</p> <p>If any species and communities identified in the referral documentation (provided by DAWE) have been ruled out because they don't occur on or near the site, verify that there is robust analysis and justification for why these species can be ruled out.</p> <p>The referral decision brief (dated 28 October 2021) identified that the project was likely to have a significant impact on:</p> <ul style="list-style-type: none"> • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, listed as critically endangered. <p>In addition, the Commonwealth identified potential for some risk of significant impacts to the following matters:</p> <ul style="list-style-type: none"> • New England Peppermint (<i>Eucalyptus nova-anglica</i>) Grassy Woodlands, listed as critically endangered. • Bluegrass (<i>Dichanthium setosum</i>), listed as vulnerable. • McKie's stringybark (<i>Eucalyptus mckieana</i>), listed as vulnerable. • Spotted-tailed quoll (<i>Dasyurus maculatus</i> - SE mainland population), listed as endangered. • Koala (<i>Phascolarctos cinereus</i> - combined populations of Qld, NSW and the ACT), listed as vulnerable. • Border thick-tailed gecko (<i>Uvidicolus sphyrurus</i>), listed as vulnerable. • White-throated needletail (<i>Hirundapus caudacutus</i>), listed as vulnerable. <p>Austral toadflax (<i>Thesium australe</i>), listed as vulnerable, was assessed as having a low likelihood of occurrence in the original EPBC referral process and was not listed in the referral decision brief.</p> <p>Regent honeyeater and swift parrot, both listed as critically endangered, are not listed in the referral documentation but foraging habitat has been identified as occurring on the project site. No records of the</p>	

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Requirement	Information	Reference (BAM / BLA ¹)														
	<p>regent honeyeater have been recorded from the locality however 25 records occur in the local region, the closest of which occurs more than 23 km from the project site. The project site does not occur within the Important Habitat Mapping areas for this species. Similarly, foraging habitat for the swift parrot occurs within the project area which does not occur with an Important Habitat Mapping area for this species.</p> <p>One TEC, New England Peppermint (<i>Eucalyptus nova-anglica</i>) Grassy Woodlands, listed in the referral decision brief as likely being significantly impacted were assessed as not occurring in the development footprint.</p> <table border="1" data-bbox="472 571 1675 778"> <thead> <tr> <th data-bbox="472 571 853 624">Entity</th> <th data-bbox="853 571 1675 624">BDAR</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="472 624 853 671">Listed in referral decision brief (dated 28 October 2021)</td> </tr> <tr> <td data-bbox="472 671 853 778">New England Peppermint (<i>Eucalyptus nova-anglica</i>) Grassy Woodlands</td> <td data-bbox="853 671 1675 778">No PCTs associated with the TEC were identified as occurring within the project area.</td> </tr> </tbody> </table> <p>Three threatened fauna species listed in the referral decision brief as likely being significantly impacted were not recorded during surveys. These species are summarised below:</p> <table border="1" data-bbox="472 911 1675 1299"> <thead> <tr> <th data-bbox="472 911 853 951">Entity</th> <th data-bbox="853 911 1675 951">BDAR</th> </tr> </thead> <tbody> <tr> <td data-bbox="472 951 853 1086">Bluegrass <i>Dichanthium setosum</i></td> <td data-bbox="853 951 1675 1086">Section 5.4.2.5 states that this species was detected during vegetation mapping surveys within Stage 2 of the Project south of the New England Highway. It was not detected during targeted surveys on the wind farm project area.</td> </tr> <tr> <td data-bbox="472 1086 853 1299">McKie's stringybark <i>Eucalyptus mckieana</i></td> <td data-bbox="853 1086 1675 1299">Table D2 of Appendix Species E of the BDAR indicated that this species was not detected during targeted transect surveys and with threatened flora surveys have been undertaken during habitat assessments, vegetation (plot-based) surveys and opportunistic meanders within the development corridor.</td> </tr> <tr> <td data-bbox="472 1299 853 1375">Border thick-tailed gecko <i>Uvidicolus sphyurus</i></td> <td data-bbox="853 1299 1675 1375">Section 5.4 of the BDAR indicated that this species was not detected during targeted transect surveys.</td> </tr> </tbody> </table>	Entity	BDAR	Listed in referral decision brief (dated 28 October 2021)		New England Peppermint (<i>Eucalyptus nova-anglica</i>) Grassy Woodlands	No PCTs associated with the TEC were identified as occurring within the project area.	Entity	BDAR	Bluegrass <i>Dichanthium setosum</i>	Section 5.4.2.5 states that this species was detected during vegetation mapping surveys within Stage 2 of the Project south of the New England Highway. It was not detected during targeted surveys on the wind farm project area.	McKie's stringybark <i>Eucalyptus mckieana</i>	Table D2 of Appendix Species E of the BDAR indicated that this species was not detected during targeted transect surveys and with threatened flora surveys have been undertaken during habitat assessments, vegetation (plot-based) surveys and opportunistic meanders within the development corridor.	Border thick-tailed gecko <i>Uvidicolus sphyurus</i>	Section 5.4 of the BDAR indicated that this species was not detected during targeted transect surveys.	
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Border thick-tailed gecko <i>Uvidicolus sphyurus</i>	Section 5.4 of the BDAR indicated that this species was not detected during targeted transect surveys.															

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Requirement	Information	Reference (BAM / BLA ¹)															
	<p>Provide advice on whether there are any other MNES species or communities that are missing from the assessment based on BCS knowledge and experience.</p> <p>No currently listed MNES species or communities are missing from the assessment for this project.</p> <p>Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list (if applicable):</p> <p>Three threatened species (bluegrass, McKies Stringybark and border thick-tailed gecko) listed in the referral decision brief as potentially being significantly impacted were assessed as not occurring in the project area.</p> <p>One TEC (New England Peppermint (<i>Eucalyptus nova-anglica</i>) Grassy Woodlands) listed in the referral decision brief as likely to be significantly impacted was assessed as not occurring in the project area.</p> <p>One threatened flora species, Austral toadflax (<i>Thesium australe</i>), was not listed in the referral decision brief but was located in the project area.</p> <p>BCS is satisfied that it was justifiable to include the threatened species and communities listed below in the assessment of MNES. These entities have been appropriately assessed:</p> <table border="1" data-bbox="465 938 1671 1390"> <thead> <tr> <th data-bbox="474 944 891 986">MNES Entity</th> <th data-bbox="891 944 1182 986">EPBC Listing Status</th> <th data-bbox="1182 944 1662 986">Reason for inclusion</th> </tr> </thead> <tbody> <tr> <td data-bbox="474 1002 891 1088">White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</td> <td data-bbox="891 1002 1182 1031">Critically Endangered</td> <td data-bbox="1182 1002 1662 1031">Recorded.</td> </tr> <tr> <td data-bbox="474 1110 891 1168">Austral toadflax <i>Thesium australe</i></td> <td data-bbox="891 1110 1182 1139">Vulnerable</td> <td data-bbox="1182 1110 1662 1139">Recorded</td> </tr> <tr> <td data-bbox="474 1190 891 1279">Koala <i>Phascolarctos cinereus</i> (combined populations of Old, NSW and the ACT)</td> <td data-bbox="891 1190 1182 1219">Vulnerable</td> <td data-bbox="1182 1190 1662 1219">Recorded.</td> </tr> <tr> <td data-bbox="474 1302 891 1391">Spotted-tailed quoll <i>Dasyurus maculatus</i> (SE mainland population)</td> <td data-bbox="891 1302 1182 1331">Endangered</td> <td data-bbox="1182 1302 1662 1391">Assumed present. Records in the local area (Section 5.4.2.3 of the BDAR)</td> </tr> </tbody> </table>	MNES Entity	EPBC Listing Status	Reason for inclusion	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Recorded.	Austral toadflax <i>Thesium australe</i>	Vulnerable	Recorded	Koala <i>Phascolarctos cinereus</i> (combined populations of Old, NSW and the ACT)	Vulnerable	Recorded.	Spotted-tailed quoll <i>Dasyurus maculatus</i> (SE mainland population)	Endangered	Assumed present. Records in the local area (Section 5.4.2.3 of the BDAR)	
MNES Entity	EPBC Listing Status	Reason for inclusion															
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Recorded.															
Austral toadflax <i>Thesium australe</i>	Vulnerable	Recorded															
Koala <i>Phascolarctos cinereus</i> (combined populations of Old, NSW and the ACT)	Vulnerable	Recorded.															
Spotted-tailed quoll <i>Dasyurus maculatus</i> (SE mainland population)	Endangered	Assumed present. Records in the local area (Section 5.4.2.3 of the BDAR)															

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>Provide advice on whether adequate justification and evidence is provided for species and communities that have been identified as being at low risk of impact.</p> <p>All threatened species and communities likely to be impacted have been assessed adequately under the BAM and an offset obligation has been calculated. Three entities, bluegrass, McKies stringybark and border thick-tailed gecko have been identified as being at low risk of impact and no offset is required.</p> <p>An assessment of the risk of impact by the project on bluegrass is provided in Section 3.3.4.1 of the BDAR. This species was removed as it was not located during targeted surveys. Section 5.4 of the BDAR states that targeted surveys undertaken in accordance with the BAM for border thick-tailed gecko and McKie's stringybark did not record any individuals of these species and therefore they are not predicted to be impacted by the project.</p> <p>The survey effort for these three species was adequate.</p> <p>Assess the consequences of impacts on the species, the population and / or extent of the community at local, state and national scales.</p> <p><u>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</u></p> <p>Local - approximately 10,000 hectares of this community is estimated to occur within the New England Tablelands IBRA bioregion. There is approximately 643 hectares of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland CEEC woodland within the project area. This does not include derived native grassland variants of this community. The project will impact upon a total of 7.26 hectares of Box Gum Woodland CEEC.</p> <p>State – Current extent of approximately 250,000 hectares. The amount of this community to be impacted is small in the context of the NSW community occurrence (7.26 hectares; or <0.001 percent of the estimated NSW extent).</p> <p>National – Small impact</p> <p><u>Austral toadflax</u></p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>Local – 30 individual plants were recorded on the development footprint. The proposed works will impact 0.55 hectares of known habitat and a further 0.25 of assumed habitat for this species.</p> <p>State – Given the small area to be removed, the proposal is unlikely to significantly reduce the area of occupancy.</p> <p>National – The proposal is unlikely to significantly reduce the area of occupancy.</p> <p><u>Koala</u></p> <p>Local – Two Koalas were sighted on the development footprint with a further four recorded on camera traps (Section 3.3.4.2 of the BDAR).</p> <p>The proposed works require impacts to 80.5 hectares of native vegetation identified as potential Koala habitat. These impacts will reduce the availability of resources within the locality.</p> <p>Impacts to Koala habitats within the development footprint are largely fragmented patches located within a matrix of agricultural land. There are no large, intact areas of Koala habitat proposed to be impacted and the project will not cause any permanent barriers to Koala movement within or through the development footprint.</p> <p>State - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.</p> <p>National – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.</p> <p><u>Spotted-tailed Quoll</u></p> <p>Local – Although 212.26 ha of potential quoll habitat will be impacted, the BDAR (Section 5.4.2.3) states that the habitat is considered marginal given that it is highly fragmented and there is a low abundance of potential den sites owing to a history of disturbance. There are few records in the local area, from 2004 and 1980.</p> <p>Impacts to Spotted -tailed Quoll habitats within the development footprint are to largely fragmented patches located within a matrix of agricultural land. There are no large, intact areas of quoll habitat proposed to be impacted and the project will not cause any permanent barriers to quoll movement within or through the development footprint.</p> <p>State - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.</p>	

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>National – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.</p>	
<p>Impact Assessment</p>	<p>Verify that the EIS/BDAR:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> identifies any MNES that haven't been offset using the BAM <input checked="" type="checkbox"/> identifies how impacts requiring offsets correlate to MNES impacts <input checked="" type="checkbox"/> identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES <input checked="" type="checkbox"/> identifies threatened species requiring offset and the number of species credits required for impacts to MNES <input checked="" type="checkbox"/> correctly uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity <input checked="" type="checkbox"/> identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting <input checked="" type="checkbox"/> if known, identifies any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures[#]. <p>[#] In accordance the BAM there is no longer a requirement to define the offsetting approach at EIS stage.</p> <p>Complete the Impacts and Offsets Summary table below (Table 2)</p>	<p>BAM Chapters 8 and 9 BLA clauses 6.2(b)(i)-(ii) and 7.1</p>

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>Provide advice on the adequacy of the proposed offsets in meeting the requirements of the BAM:</p> <p>The project proponent will retire the credits required to offset the through:</p> <ul style="list-style-type: none"> • Land based offsets through the establishment of new stewardship sites (and subsequent retirement of credits) or by retiring credits from existing stewardship sites. • Purchasing credits through the open credit market. • Paying into the Biodiversity Conservation Fund. <p>Section 8.0 of the BDAR indicates that the current preferred option for credit retirement will be the use of the NSW Biodiversity Conservation Fund. The proponent is however actively investigating other options and has consulted with landholders in the locality about the potential to establish stewardship sites for the purpose of generating suitable ecosystem and species credits to retire for the project through the available like-for-like and variation rules.</p> <p>The proponent has proposed several mechanisms for offsetting for prescribed and indirect impacts that are novel and outside the Biodiversity Offsets Scheme. These include offsetting blade strike through the funding of conservation actions and committing to designing and implementing a research program or funding of a PhD student to assess whether indirect impacts are occurring on the project. BCS is prepared to continue discussions around the detail of these offset mechanisms with the proponent as part of the development of the Bird and Bat Adaptive Management Plan.</p>	
Offsets	<p>Verify if any relevant Commonwealth guidelines and policy statements are applicable to the action and listed threatened species and/or community, including but not limited to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> International environmental obligations <input type="checkbox"/> Recovery Plans <input type="checkbox"/> Approved Conservation Advice <input type="checkbox"/> Threat Abatement Plans <p><i>The relevant Commonwealth guidelines and policy statements for each species and community are available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</i></p> <p>For each EPBC Act listed threatened species and/or community, provide advice on whether the assessment has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and</p>	BAM Chapter 10 BLA clauses 7.1 and 7.2

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Requirement	Information	Reference (BAM / BLA ¹)
	<p>threatening processes or recommended conservation actions outlined in Commonwealth policies and plans.</p> <p>The BDAR has not made use of Commonwealth guidelines and policies. Section Table 5.8 of the BDAR refers to the recovery plan for White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC but only in the context of the extent of clearing.</p>	
Other Considerations	Provide advice on any recommended conditions and reasons for imposing the conditions:	BLA clauses 6.2(b)(iv), 7.2(c), 7.3 and 7.4
Recommended Conditions		BLA clause 6.2(c)(iii)

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TABLE 2: MNES IMPACT AND OFFSET SUMMARY

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS, BDAR)
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	510	7.26	322	Retirement of credits through: <ul style="list-style-type: none"> • Land based offsets through the establishment of new stewardship sites (and subsequent retirement of credits) or by retiring credits from existing stewardship sites. • Purchasing credits through the open credit market. • Paying into the Biodiversity Conservation Fund. 	Tables 3.4, 5.1. Appendix H (BDAR)
Austral toadflax	501	0.8	25	Retirement of credits through: <ul style="list-style-type: none"> • Land based offsets through the establishment of new stewardship sites (and subsequent retirement of credits) or by retiring credits from existing stewardship sites. • Purchasing credits through the open credit market. 	Tables 3.6, 7.1. Appendix H (BDAR)

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				<ul style="list-style-type: none"> • Paying into the Biodiversity Conservation Fund. 	
Koala	501, 510, 542, 559	80.5	3,228	<p>Retirement of credits through:</p> <ul style="list-style-type: none"> • Land based offsets through the establishment of new stewardship sites (and subsequent retirement of credits) or by retiring credits from existing stewardship sites. • Purchasing credits through the open credit market. • Paying into the Biodiversity Conservation Fund. 	Tables 3.6, 7.1. Appendix H (BDAR)

Appendix K Additional information

Additional information supplied to the Department is available at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/thunderbolt-wind-farm>