Department of Planning and Environment

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Hills of Gold Wind Farm

State Significant Development Assessment Report (SSD 9679)

December 2023

Acknowledgement of Country

The Department of Planning and Environment 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 and Environment's (the Department) assessment and evaluation of the State significant development (SSD) application for the Hills of Gold Wind Farm located near Nundle, Hanging Rock and Crawney, lodged by Hills of Gold Wind Farm 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

Hills of Gold Wind Farm Pty Ltd (the Applicant), a project entity owned by ENGIE Australia & New Zealand, proposes to develop a 390 megawatt (MW) wind farm approximately 60 kilometres southeast of Tamworth near Nundle, Hanging Rock and Crawney in the Tamworth Regional, Upper Hunter Shire and Liverpool Plains Shire local government areas.

The proposed project involves the development of up to 64 turbines up to 230 metres high, a 100 MW battery energy storage system, 330 kilovolt transmission line connecting to Transgrid's existing transmission network at Wallabadah and other associated ancillary infrastructure.

The Department publicly exhibited the Environmental Impact Statement for the project, receiving 592 (201 support, 382 object and four comments). In response to agency advice and submissions, the Applicant undertook additional assessments and amended its development application twice, deleting and re-siting turbine locations and proposing an alternative transport route.

The second Amendment Report was also exhibited, and the Department received 425 submissions (144 support, 280 object and one comment). Tamworth Regional and Muswellbrook Shire councils object to the project.

The Department engaged with local councils and relevant government agencies on key issues and visited the site on five occasions, hosting a community meeting in Nundle in October 2018, visiting neighbours in May 2021 and 2022, inspecting Crawney Road site access options with Tamworth Regional Council in April 2023, and for a fifth time in September 2023.

The key assessment issues include energy security, visual amenity, biodiversity and transport.

The Department has undertaken a comprehensive merit assessment of the project, and recommends removing 17 turbines from the project layout due to unacceptable impacts on visual amenity, biodiversity and Ben Halls Gap Nature Reserve, reducing the wind farm to 47 turbines.

In the absence of the Applicant securing agreements with key non-associated dwellings, 15 of the 17 turbines (T9, T10, T11, T24, T53, T54, T55, T56, T57, T58, T59, T60, T61, T62, T63) recommended to be removed are primarily to address visual impacts.

The Department acknowledges that developing a wind farm with the recommended reduction in wind turbines (i.e. 47 turbines) and associated ancillary infrastructure would still be visually apparent, however this layout would meet the objectives prescribed in the *Visual Assessment Bulletin* as it would not dominate the existing visual catchment.

The Applicant has amended the project layout, reducing proposed vegetation clearing from 206.7 ha to 190.54 ha. This includes 35.39 ha of threatened endangered ecological communities (TECs) listed as either endangered or critically endangered under the *Biodiversity Conservation Act 2016*.

The Department considers further avoidance of these TECs is necessary, and recommends removing two turbines, T24 (also recommended for removal due to visual impacts) and T28, which would reduce clearing of moderate and high condition Ribbon Gum-Mountain Gum-Snow Gum by 3.53 ha and 5.02 ha of habitat for threatened species such as the Koala, Barking Owl and Large-eared Pied-bat.

The Biodiversity Conservation Division and National Parks and Wildlife Service also raised concerns about impacts to avifauna (including microbats) and the proximity of turbines to Ben Halls Gap Nature Reserve. Turbine 42 is recommended for removal as its impact zone overlaps the Ben Halls Gap Nature Reserve, and the Applicant could not move the turbine further away.

The removal of three turbines (T24, T28 and T42) and the requirement to implement a smart curtailment strategy would reduce and mitigate potential impacts to avifauna and further reduce native vegetation clearing down to 183.60 ha.

The Department considers the residual biodiversity impacts are acceptable, subject to further minimisation during detailed design, management via the implementation of a Biodiversity Management Plan and offset through the biodiversity offset scheme.

The Department considers the proposed transport routes could be appropriately upgraded to facilitate the transportation of large turbine components to site, noting that the final road upgrade specifications would be subject to detailed design and approval of the road asset manager or Council. Traffic could be managed in a manner that would not adversely affect the level of service on all roads and intersections required for the project.

The Department has also undertaken a comprehensive assessment of the full range of other potential impacts, including noise, heritage, soil, water, hazards, electro and magnetic fields, aviation safety, bushfire safety and emergency management, social, economic and cumulative impacts. The Department has recommended a range of detailed conditions, developed in consultation with agencies and Council, to ensure all potential impacts are effectively minimised, managed or offset.

With 47 turbines, the project would have a capacity of around 282 megawatts, generating enough electricity to power about 150,000 homes and save over 800,000 tonnes of greenhouse gas emissions per annum. This would contribute towards the State meeting its net zero targets and the renewable energy objectives of the *Electricity Infrastructure Roadmap.*

The Department considers that the site is suitable for a wind farm as the site has a high wind resource, would connect to existing transmission lines with capacity which may allow the wind farm to generate renewable energy earlier than other projects that rely on new transmission lines to be built and is located adjacent to two REZs where infrastructure in the region would be supported by NSW Government.

The project would provide flow on benefits to the local community, including around 200 construction and 28 operational jobs, and up to $11.6 million (plus CPI) in contributions to Tamworth Regional Council and Upper Hunter Shire Council through voluntary planning agreements for community enhancement projects. There would be broader benefits to the State through an injection of over $826 million in capital investment into the NSW economy.

On balance, the Department considers that the benefits of the Hills of Gold Wind Farm outweigh its costs, and the project is in the public interest and approvable.

Contents

1 Introduction

1.1 The Proposal

1. Hills of Gold Wind Farm Pty Ltd (the Applicant), owned by ENGIE Australia & New Zealand (Engie), is proposing to develop the Hills of Gold Wind Farm (the project). The site is located approximately 60 km south-east of Tamworth near Nundle, Hanging Rock and Crawney within the Tamworth Regional Council, Upper Hunter Shire Council and Liverpool Plains Shire Council local government areas (LGAs) (see **Figure 1**).

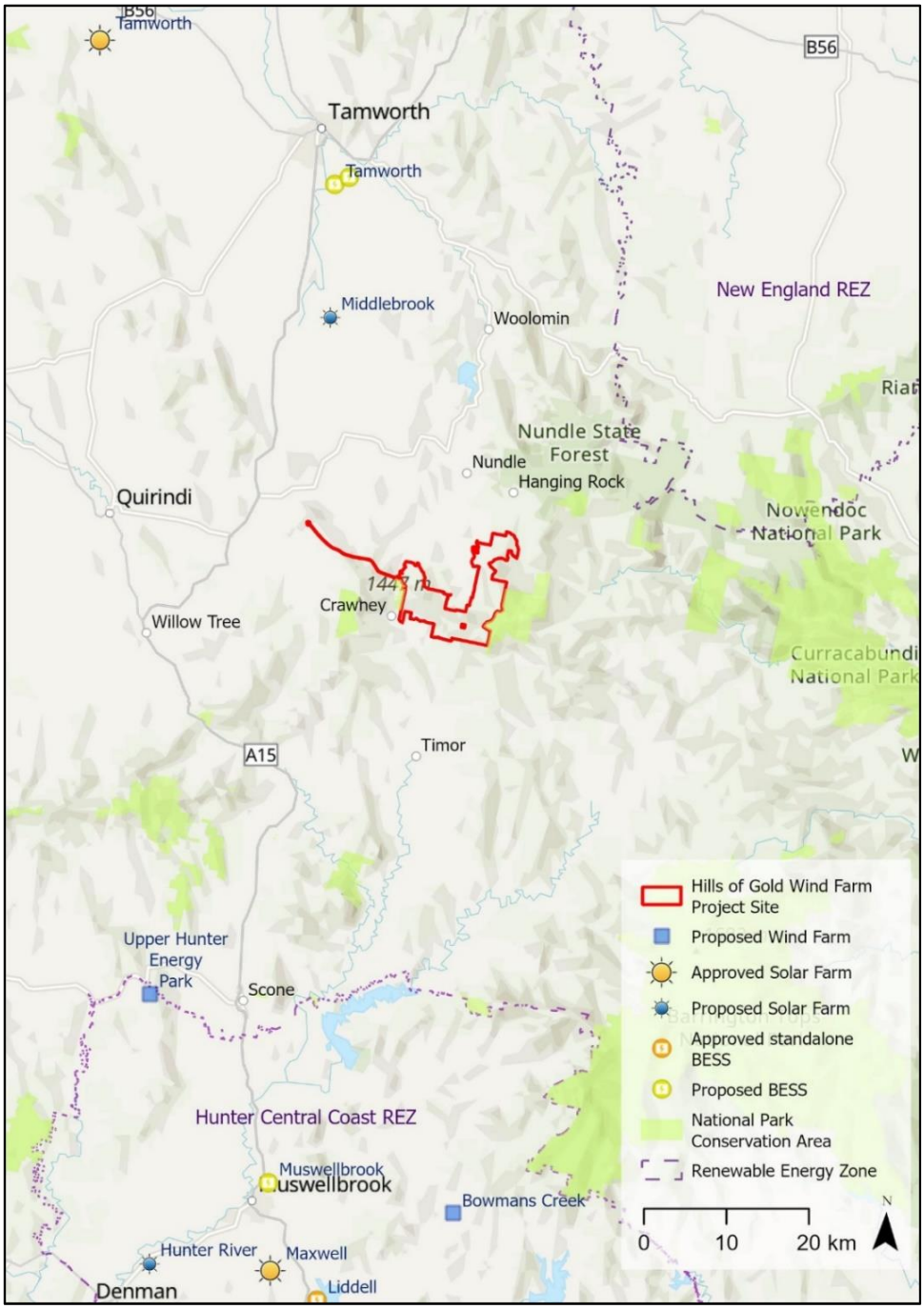

Figure 1 | Regional context map

2 Project

2.1 Project overview

2. The Applicant is proposing to develop a wind farm with up to 64 wind turbines with a maximum tip height of 230 metres (m). The project would have a capacity of approximately 390 megawatts (MW), generating up to 1 million megawatt hours (MWh) of electricity annually.

3. The project also includes a battery energy storage system (BESS) with a capacity of up to 100 MW (400 MWh), and the wind farm would connect to the existing 330 kilovolts (kV) transmission network at Wallabadah, approximately 13.5 km west of the wind farm site.

4. Following the Department's assessment of the project (as summarised in **section 6** of this report), the Department considers that 17 turbines should be deleted from the project due either to unacceptable amenity impacts and/or biodiversity impacts, reducing the total number of turbines to 47.

5. The key components of the project as amended are summarised in and shown in **Figures 2** and **3**, and described in the Environmental Impact Statement (EIS) (see **Appendix B**), Submissions Reports (see **Appendix D**), Amendment Reports (No.1 dated January 2022 and No.2 dated November 2022) and Amendment Letter (see **Appendix E**), and additional information provided during the Department's assessment of the project (see **Appendix F**).

Table 1 | Key aspects of the project as proposed

Aspect	Description
Project summary	• Up to 64 wind turbines and associated infrastructure • Centralised energy storage facility up to 100 MW/400 MWh
Project area	• Project Site: 8,732 ha • Development footprint: 447 ha • Operational footprint: 145 ha
Wind turbine dimensions	• Maximum tip height of 230 m • Turbine hub height of 150 m • Maximum blade length of 82 m
Electrical transmission infrastructure	• 13.5 km overhead transmission line with onsite substation and switchyard connecting to the Transgrid network • 15 km of internal transmission lines and 330 kV substation • 90 km of underground transmission lines
Ancillary infrastructure	• Operation and maintenance facility, utility services and signage • Up to 48.7 km of new internal access tracks • Five permanent and five temporary meteorological masts up to 150 m in height
Construction facilities	• Temporary facilities, including 2 construction compounds, 2 temporary concrete batching plants, and up to 7 materials storage and laydown areas
Off-site road works	• Upgrades to intersections, local road network and waterway crossings
Construction & Operation	• Construction would last approximately 24 months with a 6 – 14 month peak. Construction hours to be limited to Monday to Friday 7 am to 6pm, and Saturday 8 am to 1 pm • The project would be operation for approximately 35 years. However, the project may involve infrastructure upgrades that could extend its operational life.
Access routes	• Access from the Port of Newcastle via New England Highway, Lindsays Gap Road, Nundle Road, Barry Road and Morrisons Gap Road (for general construction traffic) and via Nundle and Crawney Road for heavy vehicles requiring escort
Decommissioning and rehabilitation	• The project includes decommissioning at the end of the project life, which would involve removing all above ground infrastructure.
Employment	• Up to 211 construction jobs and 28 operation jobs
CIV	• $826.4 million
Voluntary planning agreement	• Upper Hunter Shire Council – up to $1.3 million (adjusted to CPI and based on Applicant's proposed turbines within local government area for 64 turbine layout) for community projects within 20 km of the site and projects in the broader region • Tamworth Regional Council – up to $9.5 million (adjusted to CPI based on Applicant's proposed turbines within local government area for 64 turbine layout) for community projects within 20 km of the site and projects in the broader region.

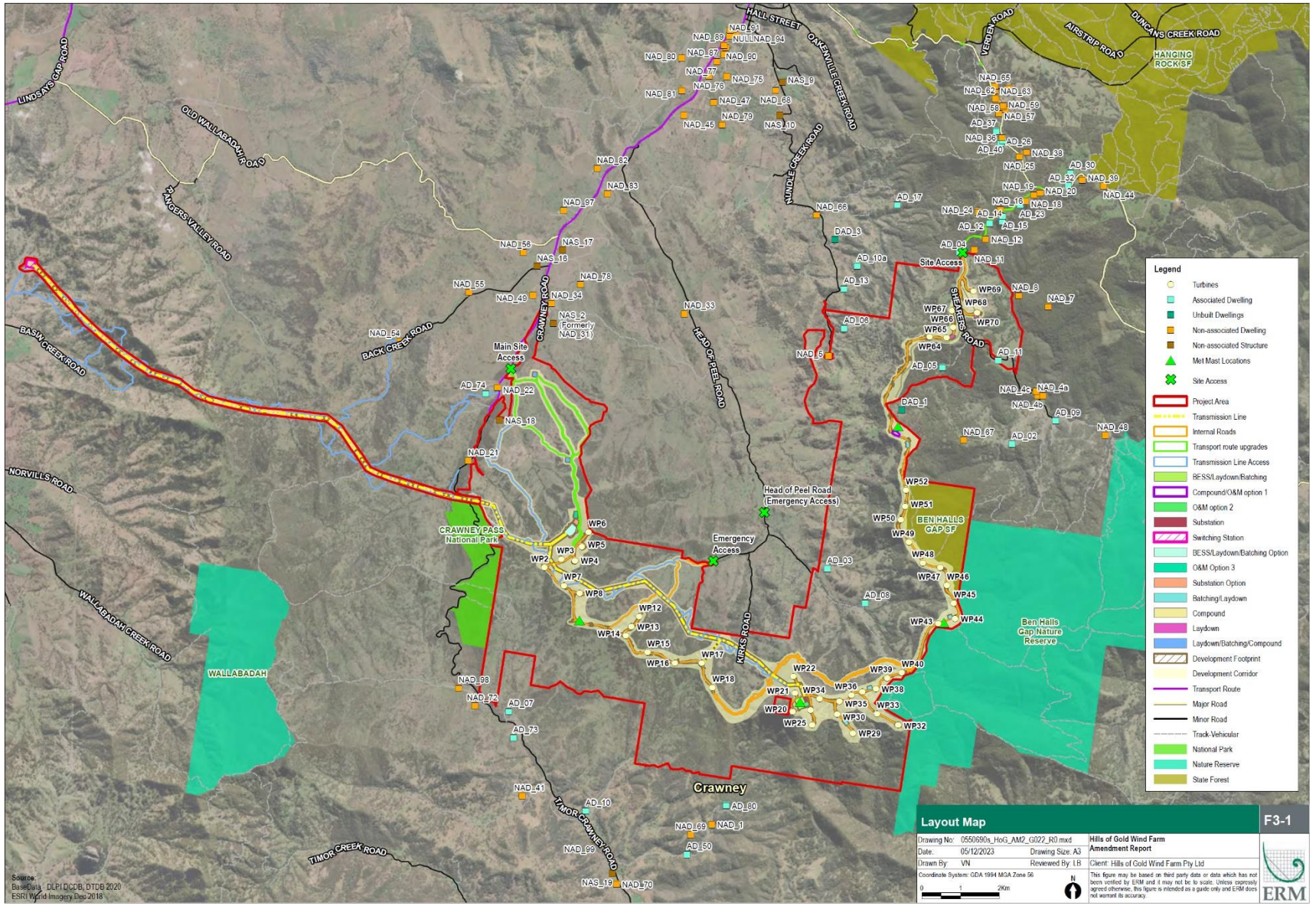

Figure 2 | Project layout including the Department's proposed changes

Facing north towards the project site near Crawney Road

Near Head of Peel Road facing south east towards the project site

Figure 3 | Project site

3 Strategic context

3.1 Site and Surrounds

6. The project is located in the New England region of NSW and 15 km south west of the New England Renewable Energy Zone.

7. The topography features a range of slopes and plateaus associated with the Great Dividing Range, broadly positioned in a north-south direction, at an elevation between 770 to 1420 m.

8. The three closest localities are Nundle, Hanging Rock and Crawney, with Nundle village the most populous and home to around 470 people. Nundle village is approximately 8 km north-west of the site, Hanging Rock is 5 km to the north along Barry Road, while Crawney is immediately south of the site consists of multiple remote rural properties.

9. The site is 8,732 ha with a 447 ha development corridor located on a ridgeline with turbines located between 1,080 and 1410 m AHD. Historic and recent land clearing has occurred extensively within the site which is currently used for grazing, with intact native vegetation mostly located on the slopes leading to the ridgeline and areas adjoining national park.

10. Ben Halls Gap Nature Reserve and Crawney Pass National Park border the project site to the east and west respectively. Within 10 km of the site are Ben Halls National Park, Wallabadah Nature Reserve and Hanging Rock State Forest.

11. Historic and recent land clearing has occurred extensively within the site for agricultural purposes which is predominantly beef cattle grazing. Approximately 34 ha of the development footprint is within mapped Biophysical Strategic Agricultural Land (BSAL).

12. The site is located within the Namoi, Hunter and Manning catchment areas. Numerous first and second order ephemeral streams are located in the site, with the majority flowing north and west into the Peel River catchment, a major sub-catchment of the Namoi which services the town water supply needs of Tamworth and agricultural production in the area. The southern portion of the site flows south to the Hunter catchment area.

13. There are 17 non-associated dwellings located within 3.1 km of a proposed turbine location. Potential amenity impacts on these dwellings are discussed in **section 6**.

14. The main industries in the region are agriculture, forestry and tourism. The surrounding land is predominantly a rural landscape, interspersed with broad acre rural residential development, farm buildings, and infrastructure associated with supplying major towns (transmission lines and roads etc.).

15. There are five State significant renewable energy projects within 60 km of the site, the nearest located 30 km from the site. These projects are listed in **Table 2**.

Table 2 | Nearby energy generation or storage projects

Project	Capacity (MW)	Status	Distance from the project
Middlebrook Solar Farm	500	Proposed	30 km north west
Kyoto Energy Park	113	Approved	55 km south west
Bowmans Creek Wind Farm	347	Proposed	60 km south
Tamworth BESS	200/2hr	Proposed	50 km north west
Calala BESS	300/4hr	Proposed	50 km north west

3.2 Renewable Energy Context

16. 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.

17. The Commonwealth and State energy context is described in **Table 3**.

Table 3 | Energy Context

Policy/Year	Summary
Australia's Long Term Emissions *Reduction Plan (2021) and Nationally Determined Contribution (2022)*	Sets a pathway to net zero emissions by 2050 and affirms Australia's commitment to meeting its revised 2030 target (43% below 2005 levels).
Australian Energy Market Operator's *2022 Integrated System Plan (ISP)*	Notes that: • without coal, investment is needed to meet significantly increased electricity demand requiring a nine-fold increase in large-scale variable renewable energy generation; and • a mix of wind and solar is needed, and they offer complementary daily and seasonal profiles.
NSW: *Climate Change Policy Framework (2016),* *Transmission Infrastructure Strategy (2018),* *Electricity Strategy (2019),*	Relevant aspects of these policy documents include: • aim 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

Policy/Year	Summary
Electricity Infrastructure Roadmap (2020), *Net Zero Plan Stage 1: 2020 – 2030 (2020) and Implementation update (2022),* *New England North West Regional Plan* *Hunter Regional Plan*	• 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 • regional goals to support the State's transition to lower emissions and take advantage of opportunities to diversify and leverage employment opportunities; and • Councils' goals to support renewable energy generation and benefit from the transition to renewable energy.

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

3.3 NSW Wind Energy Framework

19. 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.

20. 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.

21. The Department's assessment of the project against the requirements of the Framework are detailed in **section 6**.

22. 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

23. 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 (State and Regional Development) 2011* (SRD SEPP), as it is development for the purpose of electricity generating works with a capital investment value of over $30 million.

24. Under section 4.5(a) of the EP&A Act and section 2.7 of the *State Environmental Planning Policy (Planning Systems) 2021* (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 Tamworth Regional Council objects to the project.

25. Since lodgement of the EIS, all NSW State Environmental Planning Policies (SEPP) have been consolidated into 11 policies. The consolidated SEPPs commenced on 1 March 2022, with the exception of the *State Environmental Planning Policy (Housing) 2021*, which commenced on 26 November 2021.

26. 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. 22. As the development application for the project had been made but was not finally determined before 1 March 2022, the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) continues to apply to the assessment and determination of this project (instead of the *Environmental Planning and Assessment Regulation 2021*).

4.2 Amended Applications

27. In accordance with Clause 55 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), a development application for State significant development can be amended at any time before the application is determined. The Applicant has sought to amend its application, the details of which are summarised in **section 2** of this report.

28. An application can be amended with the agreement of the consent authority (i.e. the Commission for this development), however, under the delegation dated 19 November 2021 and 14 June 2022, the Director, Energy Assessments can agree to amendments to an application.

29. The Department considers that it can accept the Applicant's amended applications for the following reasons:

- the project amendments have reduced the impacts of the project as a whole;
- the amended application directly responds to the key issues raised in submissions received by the Department during the exhibition of the original application;
- the Applicant assessed the impacts of the amended project (see Appendix E); and
- the Department made the additional information available online and sent it to the relevant agencies for comment.
- the Department also publicly exhibited and sought comment on the second amendment relating to the change in transport route to Crawney Road.

4.3 Permissibility

30. The site is primarily located within land zoned RU1 Primary Production under the *Tamworth Regional LEP 2010* (Tamworth Regional LEP). The RU1 zone includes various land uses that are permitted with and without consent. As electricity generating works are not expressly listed as permitted with or without consent, it is permissible with consent.

31. The balance of the site is zoned RU3 Forestry (Ben Halls Gap State Forest, the development within this zone is limited to an internal access road) and C2 Environmental Conservation (Crawney Road access) under the Tamworth Regional LEP, RU1 Primary Production under the *Upper Hunter LEP 2013* (Upper Hunter LEP) and the *Liverpool Range LEP 2011* (Liverpool Range LEP).

32. Under the Tamworth Regional, Upper Hunter and Liverpool Plains LEPs, electricity generating works in these zones are not expressly listed as permitted with or without consent, and is therefore a prohibited land use under a strict reading of the LEPs. However, each LEP expressly references the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) and acknowledges that electricity generating works are regulated by the Transport and Infrastructure SEPP, rather than the LEP.

33. Under the Infrastructure SEPP, electricity generating works are permissible on any land in a prescribed rural, industrial or special use zone, including land zoned RU1 – Primary Production and RU3 – Forestry.

34. Although the Infrastructure SEPP does not permit, and the Tamworth Regional LEP prohibits electricity generating works on land zoned C2, section 4.38(3) of the EP&A Act enables development consent for State significant development to be granted despite the partial prohibition. Consequently, the project is permissible with development consent.

35. While the consent authority can override a partial prohibition for a State significant development, it must assess the merits of such a decision. This is discussed further in **section 6** of this report.

4.4 Integrated and other approvals

36. 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.

37. 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*).

38. As the project access route traverses Crown land, authority to use Crown land is required separately under the *Crown Land Management Act 2016* prior to its use. Because the Crown land is also subject to a native title claim, the Applicant will need to negotiate an Indigenous Land Use Agreement with the native title claimants under the federal *Native Title Act 1993*.

39. The Department has consulted with the relevant government authorities responsible for these integrated approvals (see **section 5.1**), considered their advice in its assessment of the merits of the project (see **section 5.4**), and included suitable conditions in the conditions of consent to address these matters (see **Appendix H**).

4.5 Mandatory matters for consideration

40. 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).

41. In addition, under section 92 of the EP&A Regulation 2000, a consent authority must also consider the *Dark Sky Planning Guideline* for SSD projects less than 200 km from the Siding Spring Observatory.

42. The Department has considered these matters in its assessment of the project, as well as the Applicant's consideration of environmental planning instruments in its EIS. Detailed consideration of the relevant provisions of the environmental planning instruments is provided in Appendix E and the Department concluded the project is consistent with the relevant provisions.

4.6 Application of the Biodiversity Conservation Act 2016

43. 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 (SAII) on biodiversity values and if so, whether there are any additional and appropriate measures that will minimise those impacts.

44. The EIS for the project included a BDAR, which was prepared in accordance with the Biodiversity Assessment Methodology (see Appendix D of the EIS, which is included in **Appendix B** of this report). The BDAR was updated to address comments raised in submissions on the project and to account for project amendments (see **Appendix E** of the second Amendment Report), which is included in **Appendix E** of this report.

45. The Department has considered the findings of the BDAR as well as the advice from the Biodiversity, Conservation and Science Directorate (BCS) in its assessment (see **Appendix E**).

4.7 Commonwealth Matters

46. On 23 December 2019, a delegate of the Commonwealth Minister for the then Department of Environment and Energy (now Department of Climate Change, Energy, Environment and Water (DCCEEW)) determined the development (EPBC 2019/8535) 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 (section 18 and 18A) and listed migratory species (section 20 and 20A).

47. 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 6.4**. Further information on the matter that the Commonwealth Minister must consider under the EPBC Act is provided in Appendix I.

5 Engagement

48. The Department publicly exhibited the EIS from 2 December 2020 until 29 January 2021 (59 days) on the Department's website.

49. The exhibition was advertised in the Tamworth Northern Daily Leader, the Country Leader, the Quirindi Advocate, the Sydney Morning Herald, the Daily Telegraph and The Australian, and the Department wrote directly to landowners near the project site, notifying them of the proposal and exhibition dates.

50. The Department publicly exhibited the second amendment report between 16 November 2022 until 13 December 2022.

51. The Department also consulted widely with the community and government agencies during its detailed assessment of the project. This included:

- engaging with relevant government agencies and Councils on key assessment issues;
- five site visits;
- meeting local landholders near the project site on two separate occasions; and
- meeting with the Hills of Gold Preservation Incorporated community group on several occasions.

5.1 Summary of submissions

52. The Department received submissions during the exhibition of the original application and the second amendment. The unique submissions received during both exhibitions are summarised in **Table 4**, and a summary of the issues raised in the submissions is provided in **section 5.4**. All submissions are publicly available on the Department's major projects website (see **Appendix C**).

Table 4 | Summary of submissions

Application	Support	Object	Comment	Total
Original Application	201	382	3	592*
Amended Application	144	280	1	425

* The Department received 16 duplicate submissions (13 objections, 3 support) which were not included in the final submissions count.

53. The majority (around 65%) of the submissions received during the public exhibition of the original application objected to the project. However, submissions from people living within

10 km of the project site were more evenly split, with approximately half (42%) supporting the project (see **Table 5**).

Table 5 | Summary of submissions on the EIS

Submitter distance	Objection	Support	Comment	Total
< 5 km	35	21	0	56
5 – 10 km	119	90	1	210
10 – 50 km	46	24	1	71
> 50 km	200	70	1	271
Total	**387***	**202***	**3**	**592***

* The Department received 16 duplicate submissions (13 objections, 3 support) which were not included in the final submissions count.

54. A similar majority (around 66%) of the submissions received during the second public exhibition (of the amended application) objected to the project. 34% of the 425 submissions received on the second amendment supported the project.

55. The Department received another 54 statements on the project after the end of the second public exhibition, with 39 (72%) objecting to it and 15 (28%) supporting the project.

5.2 Summary of public submissions

5.2.1 Submissions in objection

56. Most of the submissions objecting to the project questioned the suitability of developing a wind farm at this location, raising concerns about site access, impacts to the high biodiversity values present in the region, the proximity of Ben Halls Gap Nature Reserve and Crawney Pass National Park, the project being an impediment to aerial firefighting, noise and visual impacts and loss of tourism, significant erodibility and landslip risk present on site and the subsequent risk to receiving environments, including multiple drinking water catchments.

57. Objections also raised concerns about social impacts, division in the community resulting from the project, loss in property values, economic viability, waste management and the costs and responsibility for decommissioning and rehabilitation.

58. Some submitters also criticised the adequacy and accuracy of the EIS and its supporting documentation and the need for meaningful engagement from the Applicant.

59. The key issues raised in public objections are summarised in **Figure 3**.

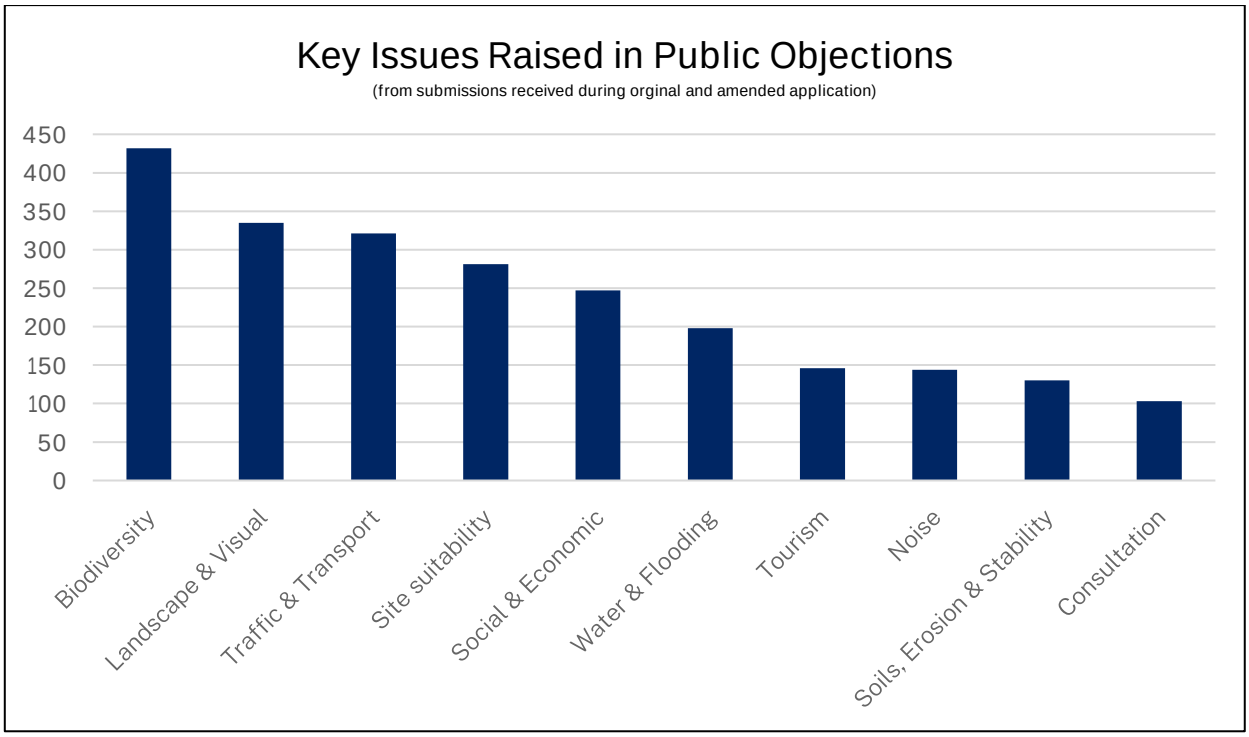

Figure 4 | Key issues raised in objections

5.2.2 Submissions in support

60. Of the submissions received that support the project, reasons provided included the economic benefits of the project, the creation of jobs, road upgrades and improvements to road safety conditions and the benefits of renewable energy.

5.2.3 Special Interest Groups

61. 12 submissions on the original and amended applications were from special interest groups with matters raised summarised in **Table 6**.

62. **Table 6** | Summary of matters raised in special interest group submissions

Position	Groups	Key Issues
Object (8)	*Local groups:* Hills of Gold Preservation Incorporated (HOGPI), Timor Community, Volunteer organisation PTSD Care *Other*: Newcastle and Hunter Valley Speleological Society, Friends of Kentucky, Yass Landscape Guardians, Australian Cave and Karst Management Association Inc	Suitability of the site, impacts on biodiversity through the loss of habitat, bird and bat strike, consideration of bat roosting habitat and proximity to national parks. Constructability, impacts on hydrological and geological features including downstream karst areas and the Timor Caves. Inadequate community consultation, impacts on local heritage values, amenity, natural landscape, tourism and property values. Bushfire risk and road safety. Decommissioning and site rehabilitation.
Support (2)	RE-Alliance, Ryde Gladesville Climate Change Action Group	Reduces greenhouse gas emissions intensity, economic benefits, community enhancement, local road upgrades, wind resource at the site.
Comment (1)	Tamworth Regional Residences and Ratepayers Association	Hydrology, constructability, water quality, biodiversity and transport.

63. The Hills of Gold Preservation Incorporated made multiple submissions throughout the assessment process, including peer reviews of noise, soil, land and water impact studies prepared by the applicant.

64. The Department has carefully considered the submissions provided by the community, including all expert reviews.

5.3 Summary of council submissions

65. The Department received submissions from 6 local councils, with Tamworth Regional Council and Muswellbrook Shire Council objecting to the project. A summary and overview of the key comments is provided in **Table 7**. A full copy of Council submissions agency advice is available on the Department's major projects website (see **Appendix B**). Further consideration of the submissions is provided in **section 6**.

Table 7 | Summary of Council submissions

Council	Key matters raised
Tamworth Regional (TRC)	Objects to the project. Suitability of the site, traffic and transport, constructability, assessment of swept paths, flooding, impacts to Council infrastructure, adequacy of road upgrades, impacts to local heritage features in Nundle, impacts to Black Snake Gold Mine at the Devils Elbow, amenity and visual character impacts, water supply, firefighting capability, community benefit sharing, biodiversity including SAII.
Upper Hunter Shire (UHSC)	Community enhancement fund, community concerns regarding amenity, biodiversity impacts, erosion and sediment, property valuation and firefighting capability.
Muswellbrook Shire (MSC)	Objects to the project. Traffic and transport, cumulative impacts with traffic from existing mining operations on the local road network, community benefit sharing and road network contributions.
City of Newcastle	Road upgrades.

66. Cessnock City Council and Liverpool Plains Shire Council did not raise any concerns.

5.4 Summary of agency advice

67. The Department received advice from 19 government agencies. A summary and overview of the key comments made by public authorities is provided in **Table 8**. 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 8 | Summary of Government Agency and Utility Provider advice

Agency	Key matters raised
Transport for NSW	Traffic generation, impacts on the classified road network, road safety, mobilisation of heavy vehicles requiring escort, interaction of construction traffic with planned road upgrades, road and intersection upgrade requirements, post approval details.

Agency	Key matters raised
Biodiversity, Conservation and Science Directorate (BCS)	Technical adequacy of the Biodiversity Development Assessment Report (BDAR), Serious and Irreversible Impacts (SAII) on listed threatened bat species, proximity of the site to Ben Halls Gap Nature Reserve, indirect and prescribed impacts, barrier effects, individual turbine risk ratings for bird and bat strike. Recommendations regarding smart curtailment approach to mitigate bird and bat strike and applying avoidance, mitigate and offset in design.
Environment Protection Authority (EPA)	Construction hours, wind farm operational noise, implementation of noise curtailment modes, assessment of approved but not yet constructed dwellings. Recommendations regarding operational noise verification, the management of blasting, dust, waste and water pollution.
National Parks and Wildlife Service (NPWS)	Proximity of the site to Ben Halls Gap Nature Reserve and Crawney Pass National Park, disruption to NPWS aviation activities and telecommunications, bushfire management, site access, bird and bat strike, erosion and sediment control, impacts to listed threatened species and communities including the Booroolong Frog and the Ben Halls Gap Sphagnum Moss Cool Temperate Rainforest endangered ecological community. Recommendations regarding operating procedures in the event of a bushfire.
Heritage NSW (HNSW) Aboriginal Cultural heritage	Recommendations regarding archaeological salvage excavations to be addressed through a Heritage Management Plan.
Crown Lands	Impacts on Crown Reserve, Native title claims and indigenous land use agreement requirements, incompatible land use and assessment pathway. Recommendations regarding authorisations required under the *Crown Land Management Act 2016* and advice that Site Access Option B at Crawney Road is the lowest impact option to Crown Land.
Water Group (DPE Water)	Water supply and aquifer interference. Recommendations regarding works on waterfront land and water entitlements.

Agency	Key matters raised
Department of Primary Industries (DPI) - Agriculture	Recommendations for operational and decommissioning measures to maintain the agricultural use and capability of the land.
DPI – Fisheries	Recommendation that development complies with *Guidelines for Fish Habitat Conservation and Management.*
Civil Aviation Safety Authority	Risk to aviation safety, including aircraft collision risk with turbines, risk to aerial firefighting operations. Recommendations for obstacle lighting.
Airservices Australia (ASA)	Recommendation that the minimum sector altitude at Scone aerodrome requires a permanent amendment, consultation with aviation operators to communicate changes to safe flight procedures needed if the project proceeds.
Department of Defence	Recommendations for the provision of obstacle lighting and 'as constructed' details of tall structures to ASA.
WaterNSW	Interaction with WaterNSW water quality monitoring sites. Recommendations requiring consultation prior to construction with WaterNSW to ensure no impacts to water quality monitoring sites occur, soil and water management plan to detail and implement measures to avoid impacts on the Chaffey Dam and Glenbawn water catchments.
NSW Rural Fire Service (RFS)	Recommended requirements for a Bush Fire Risk management strategy and further risk assessment where vegetation planting is proposed within 100 m of an existing dwelling.
Fire and Rescue NSW (FRNSW)	Recommendations requiring the implementation of a Fire Safety Study and Emergency Response Plan.
Forestry Corporation of NSW	Recommendations relating to retaining rights to any commercial timber removed from Ben Halls Gap State Forest and compliance with all regulatory requirements.
Office of the Energy and Climate Change	Upcoming removal of around 7,400 MW of dispatchable electricity generation capacity from the grid over the next decade, project may be eligible to provide paired generation services to the Waratah Super Battery project, system benefits is dependent on available transmission capacity at the time the project is generating.

Agency	Key matters raised
Heritage Council and MEG	Heritage NSW as delegate of the Heritage Council of NSW, and the Mining, Exploration and Geoscience division did not raise any concerns.

5.5 Response to submissions and amendment reports

68. The Applicant amended its development application on two occasions. Reducing the number of proposed turbines from 70 to 65, reducing the size of the development footprint and consolidating transport route options in January 2022 (first amendment) and down to 64 turbines in November 2022 (second amendment).

69. The Applicant provided submissions reports for the original application and the amended application, addressing issues raised in community submissions and agency advice (see **Appendix C**). The amendments are summarised in **Appendix A**.

70. The Department made each submissions report publicly available on the Department's website and referred to applicable government agencies and councils.

6 Assessment

6.1 Overview

71. 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, visual amenity, traffic and transport and biodiversity (see **section 6.2** to **6.5**).

72. The Department acknowledges that the assessment process has been protracted and very difficult due to inherent site constraints, substantial community opposition, major amendments to the project requiring additional exhibition, and delays in information being provided by Applicant. The nature of the key issues for this project for biodiversity, visual impacts and traffic and transport also required substantial effort to resolve.

73. 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 6.6**.

6.2 Energy Transition

74. 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.

75. As per AEMO's *Integrated System Plan 2022,* current announcements suggest that about 8 gigawatts (GW) of the current 23 GW of coal fired generation capacity will withdraw by 2030 in the National Electricity Market (NEM). 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), the project would contribute to replacing the loss of energy generation in the region and the State.

76. In addition, the *Integrated System Plan 2022* also highlights the need for resource diversity including geographic diversity and a mix of wind and solar noting that wind and solar have complementary daily and seasonal profiles. The project would therefore also contribute to the diversification of the generation profile.

77. Firstly, with the recommended reduction to 47 turbines, the project would have a nameplate capacity of around 282 MW, generating enough electricity to power about 150,000 homes. Furthermore, with a capacity of 100 MW / 400 MWh, the BESS could power around 40,000 homes during peak demand, increasing grid stability and energy security. These are consistent with the *NSW Climate Change Policy Framework* of achieving net zero emissions by 2050 and the *Net Zero Plan Stage 1: 2020 – 2030*.

78. As such, the project would play an important role in increasing renewable energy generation, and allowing dispatchable resources to firm up support during peak loads or when renewable production is low and would contribute to the transition to a cleaner energy system as coal fired generators retire. This was also confirmed in advice from OECC.

79. Secondly, the site is suitable for a wind farm because it would connect to the existing transmission lines with capacity. Although the project is not located within a Renewable Energy Zone, it would still contribute to renewable energy generation with access to the existing electrical grid at a location with available network capacity.

80. OECC advised that the system benefits would depend on the available transmission capacity at the time the project is generating, and the extent of the constraints it may have to dispatch electricity is relative to other generators with the same constraint in each dispatch interval. The advice concludes that even if it is generating when the local network is congested, and it is contributing to network constraints, it could still benefit NSW energy consumers if it offered lower cost electricity than the other generators it displaced.

81. Connecting to the existing electrical grid may also allow the wind farm and to construct and therefore generate renewable energy earlier than other projects that rely on new transmission lines to be built.astly, the site is suitable for a wind farm as it is located in an area with a high wind resource for NSW (see **Figure 5**) and is located on an elevated ridgeline that has an orientation with good exposure to prevailing wind directions. Ridgelines take advantage of the acceleration of the wind due to the sudden change in topography.

82. The project is also located adjacent to two REZs which have been declared and are supported through the *Electricity Infrastructure Investment Act 2020* and the *Electricity Infrastructure Roadmap*. While the project itself is not located within a REZ, by being in a region close to these REZs, the infrastructure in the region such as road upgrades to support the development of renewable energy generation such as wind farms would be coordinated by NSW government through EnergyCo.

83. 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.

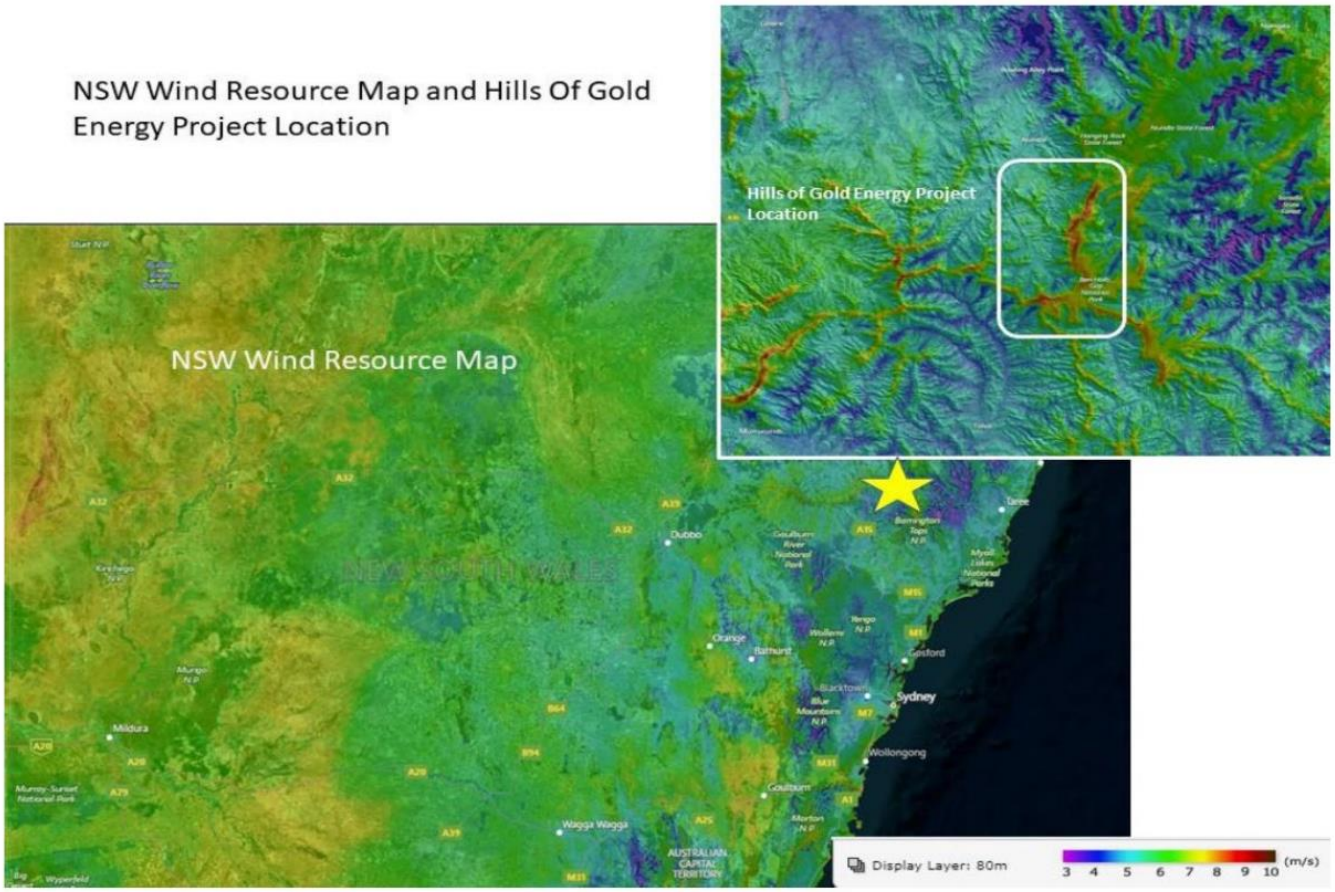

Figure 5 | Wind Resource (Source EIS)

6.3 Visual

84. Over 300 public submissions raised concerns about visual impacts, particularly regarding the size and scale of the wind farm in the landscape.

85. The Applicant commissioned a Landscape and Visual Impact Assessment (LVIA) as part of its EIS and provided additional information, including further assessment of receivers, more photomontages and wireframes, during the Department's assessment.

86. The Department engaged O'Hanlon Design Landscape Architects (OHD) to review the LVIA prepared by the Applicant and provide independent advice against the *Visual Assessment Bulletin* (Appendix K). The Department, with OHD, visited several non-associated dwellings surrounding the project to assess potential visual impacts and listen to residents' concerns.

6.3.1 Avoidance and mitigation

87. The *Visual Assessment Bulletin* (the 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.

88. The Department considers that re-siting or removing turbines is generally the most effective mitigation option, given that re-sizing specific turbines is not a viable option for commercial and maintenance reasons.

89. The Applicant reduced the number of proposed turbines from 97 to 70 throughout its design process prior to submitting the EIS. The Department acknowledges that deletion of 27 turbines has reduced the visual impact on the landscape particularly to the north and west of the project.

90. The Applicant responded to submissions by amending the development application twice after the EIS exhibition, reducing the maximum number of proposed turbines from 70 to 64 and securing neighbour agreements with 8 additional landowners bringing the total to 9 host landowners and 16 neighbour agreements.

91. It is important to note that the Department raised concerns about the potential visual impacts of the project from an early stage and throughout the assessment process, including following the exhibition of the Environmental Impact Statement in December 2020. In addition, following receipt of the Applicant's Submissions Reports in December 2021 and March 2023 and Amendment Reports in January 2022 and November 2022, the Department raised concerns about the need to address the potential visual impacts of the project in request for information letters (summarised in **Table 9)** but encountered significant delays in the provision of key information by the Applicant.

Table 9 | Correspondence between the Department and the Applicant

Department's request	Applicant's response
November 2018 (SEARs request): The Department raised concerns about location of the project in proximity to a high number of existing and proposed dwellings.	**November 2020 (EIS):** The Applicant reduced the proposed number of turbines from 97 to 70.
October 2021: Requested detailed assessment and consideration of visual impacts on properties within the vicinity of the project for which: • dwellings are approved but yet to be constructed or are under construction; • a development application has been lodged, but a determination is yet to be made; and • there are existing dwelling entitlements on the land.	**January 2022:** Amended the project to remove two turbines (T19 and T23) to reduce visual impact to NAD 69. No information on dwelling assessment provided.
February 2022: Requested further information on • status of agreements with the landowners of sensitive receivers where impacts are inconsistent with the Visual Performance Objectives outlined in the Wind Energy Visual Assessment Bulletin (DPE 2016); • mitigation proposed (including consideration of removing turbines) in instances where a landowner agreement cannot be reached.	**March 2022:** Provided dwelling entitlement assessment. No further information provided on the mitigation proposed, instead relying on the earlier information in the LVIA (2020) and LVIA Addendum (January 2022).
March 2022: Reiterated the Department's request of October 2021 and February 2022, including • Provide additional assessment on sensitive receivers in proximity to the project that were missing from the assessment, • Demonstrate how visual screening could be appropriately and effectively implemented for receivers with moderate or high visual effect rating and where visual screening is proposed, • Include the visual magnitude distance buffers on the assessment of visual impacts on lots with dwelling entitlements and detail the percentage of the lot covered by each Zone of Visual Influence band.	**May 2023:** Removal of one turbine (T41) to reduce biodiversity impacts as well as to reduce visual impacts to dwellings to the south of the project. Second LVIA Addendum (2023) provided with further information provided on dwelling assessments and consideration of screen planting.

92. The Applicant proposes to address the residual visual impacts by:

- providing vegetation screening at non-associated neighbouring dwellings where there is an opportunity to further reduce visual impacts from the project;
- using building materials and treatments for associated infrastructure which visually complement the existing landscape character and reduce glint;
- avoiding unnecessary lighting, signage on fences and logos;
- amending the project to remove previously proposed retaining wall and reducing clearing for road upgrades on Morrisons Gap Road;
- reducing the duration of night lighting of ancillary infrastructure by using sensors to activate lighting and timers to switch off lighting when not required;
- installing low intensity and shielded aviation night lighting on 28 turbines only.

93. While the Department supports the proposed avoidance and mitigation measures, further mitigation measures are recommended, including removing turbines and additional vegetation screening for most impacted non-associated dwellings, as discussed below.

6.3.2 Impact Assessment approach

94. 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.

- **Visual Magnitude** – black (3.1 km) and blue (4.55 km) distance thresholds based on turbines 230 m tall indicate where turbines may significantly impact a receiver. In summary, the Bulletin recommends for residences 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.
- **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.
- **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.

95. For ease of assessment, the Department grouped all non-associated dwellings within 4.55 km of the nearest turbine into five clusters (see **Figure 6**):

- Hanging Rock residences to the north and east of the project;
- Nundle Crawney Valley residences to the west and south west of the project;
- Nundle residences including the township to the north of the project;
- Timor Crawney Road to the south of the project; and
- Wallabadah residences to the west of the project.

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

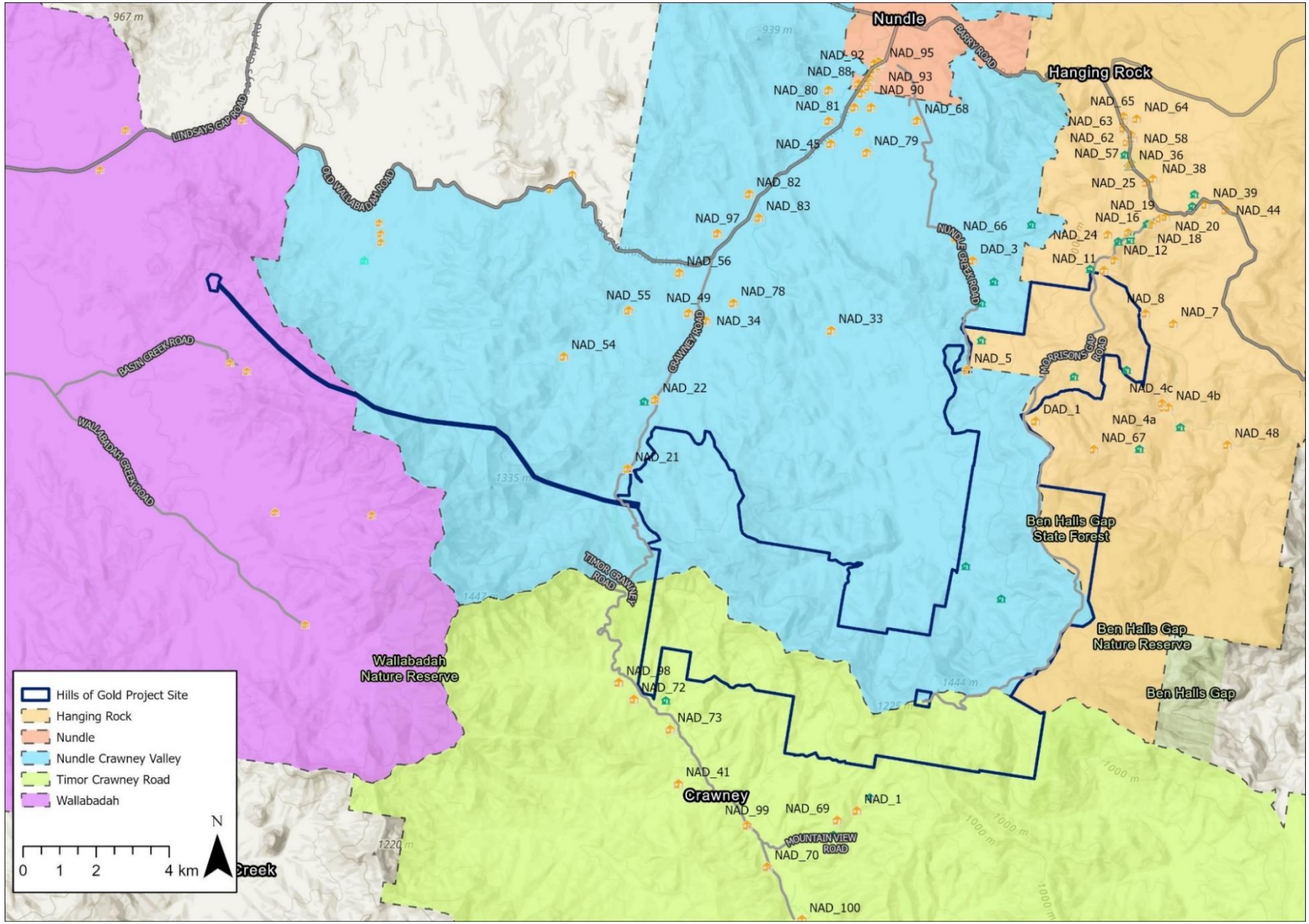

Figure 6 | Visual assessment clusters

6.3.3 Impact Assessment

Hanging Rock Cluster

97. The Hanging Rock cluster is located north and east of the project site and includes dwellings around Hanging Rock, along Morrisons Gap Road, Shearers Road and Barry Road. The Department's assessment of non-associated receivers in the cluster, including consideration on whether the proposed turbine layout aligns with the visual performance objectives is summarised in **Table 10**.

Table 10 **|** Visual Impact Assessment - Hanging Rock Cluster

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department/OHD assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
NAD 04a	T70 (2.64), T65 (2.78), T66 (2.80), T67 (3.10)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 04b	T70 (2.72), T65 (2.90), T66 (2.90)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 04c	T70 (2.52), T65 (2.68), T66 (2.69), T67 (3.00), T68 (3.04), T69 (3.04), T64 (3.07)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 07	T70 (1.83), T69 (1.97), T68 (2.30), T67 (2.48), T66 (2.50), T65 (2.73)	VIZ1	Yes, despite proximity, there is significant existing vegetation screening	Yes	Yes	Vegetation screening
NAD 08	T70 (1.15), T69 (1.17), T68 (1.54), T67 (1.76), T66 (1.87), T65 (2.15), T64 (2.52)	VIZ1	Yes, despite proximity, there is significant existing vegetation screening	Yes	Yes	Vegetation screening

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department/OHD assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
NAD 11	T69 (1.07), T68 (1.40), T70 (1.62), T67 (1.67), T66 (2.07), T65 (2.37), T64 (2.52), T63 (2.84), T62 (2.97)	VIZ1	Yes, despite proximity, there is significant existing vegetation screening	Yes	Yes	Vegetation screening
NAD 12	T69 (1.38), T68 (1.76), T70 (1.91), T67 (2.04), T66 (2.04), T66 (2.42), T65 (2.73), T64 (2.90)	VIZ1	Yes – significant existing vegetation screening	Yes	Yes	Vegetation screening
NAD 16	T69 (2.21), T68 (2.61), T70 (2.73), T67 (2.88)	VIZ2	Yes – significant existing vegetation screening	Yes	Yes	Vegetation screening
NAD 18	T69 (2.67), T68 (3.10)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 19	T69 (2.93)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 20	T69 (3.06)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 24	T69 (2.05), T68 (2.38), T70 (2.60), T67 (2.63), T66 (3.05)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 25	None – nearest is T69 (3.66)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 36	None – nearest is T69 (4.03)	VIZ2	Yes	Yes	Yes	Vegetation screening

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department/OHD assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
NAD 38	None – nearest is T69 (3.83)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 39	None – nearest is T69 (4.01)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 44	None – nearest is T69 (4.37)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 67	T55 (1.44), T54 (1.53), T53 (1.77), T56 (1.90), T57 (1.96), T52 (1.96), T51 (2.28), T58 (2.31), T59 (2.34), T60 (2.41), T61 (2.58), T50 (2.61), T65 (2.68), T64 (2.80), T62 (2.88), T66 (2.92), T49 (2.98)	VIZ2	Yes – topography screens the nearest turbines, T60 at 2.41 km is the nearest visible turbine	Yes	No, T60 – T70 would dominate the primary northward views	Delete T61 to T62
DAD 01 (approved dwelling)	T57 (0.33), T58 (0.54), T56 (0.62), T59 (0.70), T55 (0.76), T60 (0.98), T54 (1.13), T61 (1.38), T53 (1.55), T62 (1.72), T64 (2.02), T52 (2.06), T63 (2.09), T65 (2.48), T51 (2.48), T66 (2.51), T50 (2.83), T67 (2.88)	VIZ1	No – T53 – T63 in close proximity, unscreened and highly visible	No, 3 sectors	No, T53 – T63 highly visible and dominate the landscape	Delete T53 to T63

98. Dwellings in this cluster have a level 2 sensitivity and are in areas of moderate to high scenic quality. There are five VIZ1 locations due to the proximity (less than 2 km) from the nearest turbine, while dwellings out to 8 km are VIZ2.

99. There are 18 existing, one approved non-associated dwelling in this cluster and a dwelling entitlement within 4.55 km of a proposed turbine. Most dwellings benefit from distance, intervening topography and screening from existing mature vegetation along Morrisons Gap Road and between the village of Hanging Rock and the project. Despite the very close proximity of turbines to NAD07, NAD08, NAD11 (see **Figure 7**) and NAD12, existing vegetation screening resolves visual magnitude objectives.

100. Visual performance objectives set out in the Bulletin are not met at DAD01 (see **Figure 8** and **9**) and NAD67, where vegetation screening would be either insufficient, or inappropriate as mitigation.

101. DAD01 has a complying development certificate (CDC) approval to build a dwelling on land immediately adjoining the project site at Lots 46/47 DP753722. The Department notes the landowner lodged a development application with TRC in August 2018 for a new single storey dwelling which was refused by TRC in October 2019, before the landowner subsequently obtained a CDC approval for a single storey dwelling in November 2020.

102. The Department's consideration of receivers is weighted more in favour of existing dwellings than potential future dwellings. Where there is an approved dwelling that is yet to be constructed or where there is the possibility of a future dwelling (subject to approvals processes), these warrant a lower weighting due to their uncertain nature and the ability for them to be designed, sited and oriented to avoid or reduce impacts.

103. The approved dwelling at DAD01 is 330 m east of the nearest proposed turbine, with 6 turbines within 1 km, and turbines visible in three 60-degree sectors spanning from south west to north. The visual impacts would be significant at this location and could not be mitigated through vegetation.

104. Further, the Applicant's noise impact assessment identified that nine turbines (T53 – T61) would need to be removed from the layout for the project to achieve the noise criteria for this receiver and could not be mitigated with curtailment (see **section 6.6**). In addition, one T57 turbine is closer than the maximum ice throw distance from DAD 01 (see **section 6.6**).

105. Given the lot size, steep topography of the site, and the concentration and close proximity of proposed turbines surrounding the site, the Department considers there are limited opportunities to design or construct a dwelling elsewhere on the site that would avoid significant visual and noise impacts. Consequently, while the weighting of impacts on potential future dwellings is lower than impacts to existing dwellings, the specific impacts on DAD01 (both visual and noise) are particularly significant in this case.

106. In circumstances where a neighbouring property would be surrounded by a large number of turbines in close proximity, the Department considers that a model proponent should undertake effective engagement with that neighbour early in the project design phase in order to mitigate the likely impacts. In many cases, the Department has seen model proponents come to early agreements with such affected neighbours to avoid potential conflicts later.

107. While the Department acknowledges that the project has been in the assessment system for a long time (the Scoping Report was lodged in October 2018), the landowner had sought to gain approval for a dwelling in August 2018 (i.e. before SEARs were issued for the wind farm project). The Department understands that the Applicant was unsuccessful in later attempts to negotiate a neighbour agreement with the landowner.

108. The Applicant has now requested the Department provide a condition allowing the voluntary land acquisition of the DAD 01 property. The Department notes that in NSW, all levels of government (including state-owned corporations) can acquire privately owned land for a public purpose. Separately, the NSW Government has published a *Voluntary Land Acquisition and Mitigation Policy* which applies to extractive industry developments and provides for a consent authority to condition voluntary acquisition rights through a development consent, but only as a mitigation of last resort.

109. In considering the Applicant's request for land acquisition rights, the Department considers this is unwarranted for the following reasons:

- Firstly, while the project as proposed would contribute towards the significant transition of the grid needed to achieve NSW Government targets of reducing emissions by 70% below 2005 levels by 2035, removing 11 turbines would not jeopardise this transition.
- Secondly, whereas the design and layout of a mine or quarry depends on the location of the mineral resource of interest, the same does not apply strictly to wind farm developments. There are a significant number of wind farm projects proposed, with over 20,000 MW nameplate capacity in the planning assessment pipeline in NSW.
- Finally, beyond attempting to negotiate a neighbour agreement with the landowner, the Applicant has made no attempt to identify alternative layouts that reduce impacts to DAD01.

110. As such, the Department recommends deleting 11 turbines (T53 – T63) which it considers would sufficiently alleviate visual (and noise) impacts at DAD01. The removal of these turbines would also resolve potential visual impacts to NAD 67, where T60 – T70 would otherwise potentially dominate the primary north facing views from this dwelling.

111. In addition, the Department considered the potential impacts for the dwelling entitlement for Lot 13 DP 249183 where the whole lot is located more than 2 km (closest is 2.39 km) and

would be considered VIZ2. The Department considers that the visual performance objectives could be met for a dwelling on this lot as it could be oriented with primary views away from project.

112. Given the limited visual impacts on the remaining 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 the Applicant to offer visual impact mitigation measures, such as landscaping and / or vegetation screening, at these dwellings if requested by the landowners.

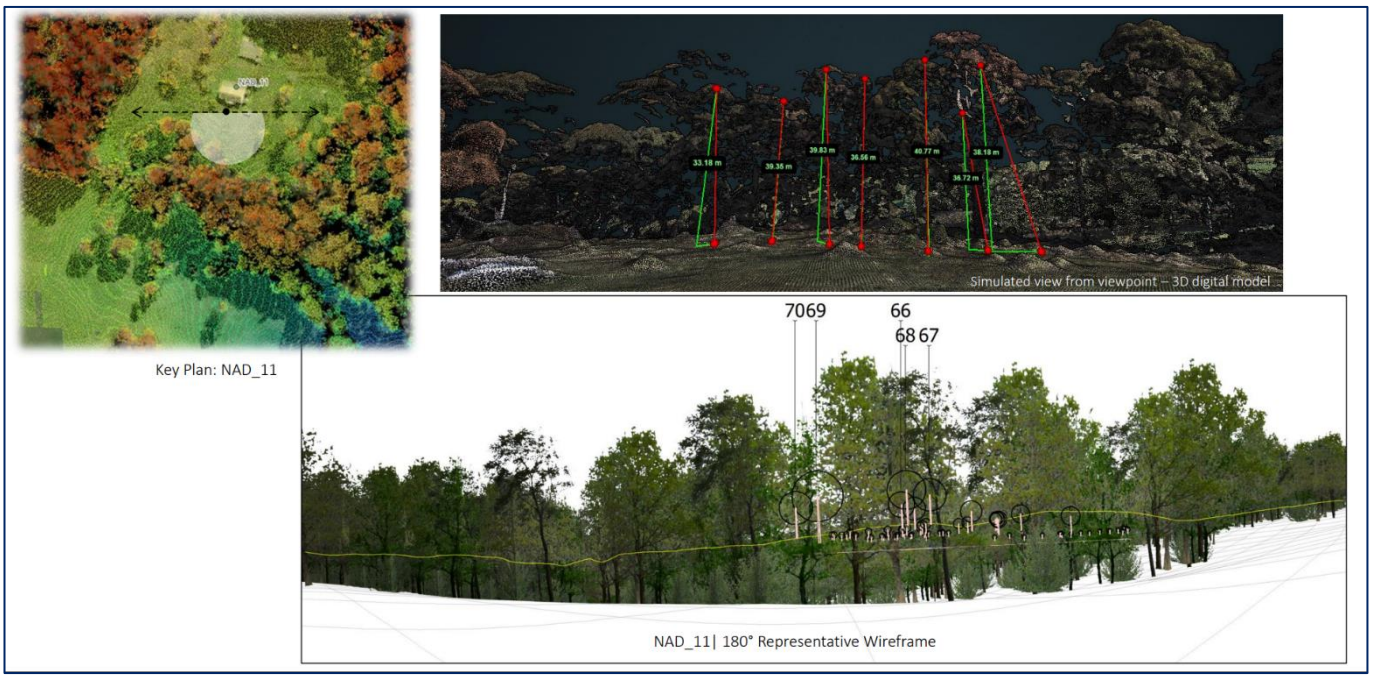

Figure 7 | Wireframe and vegetation point cloud representation from NAD11 (looking south)

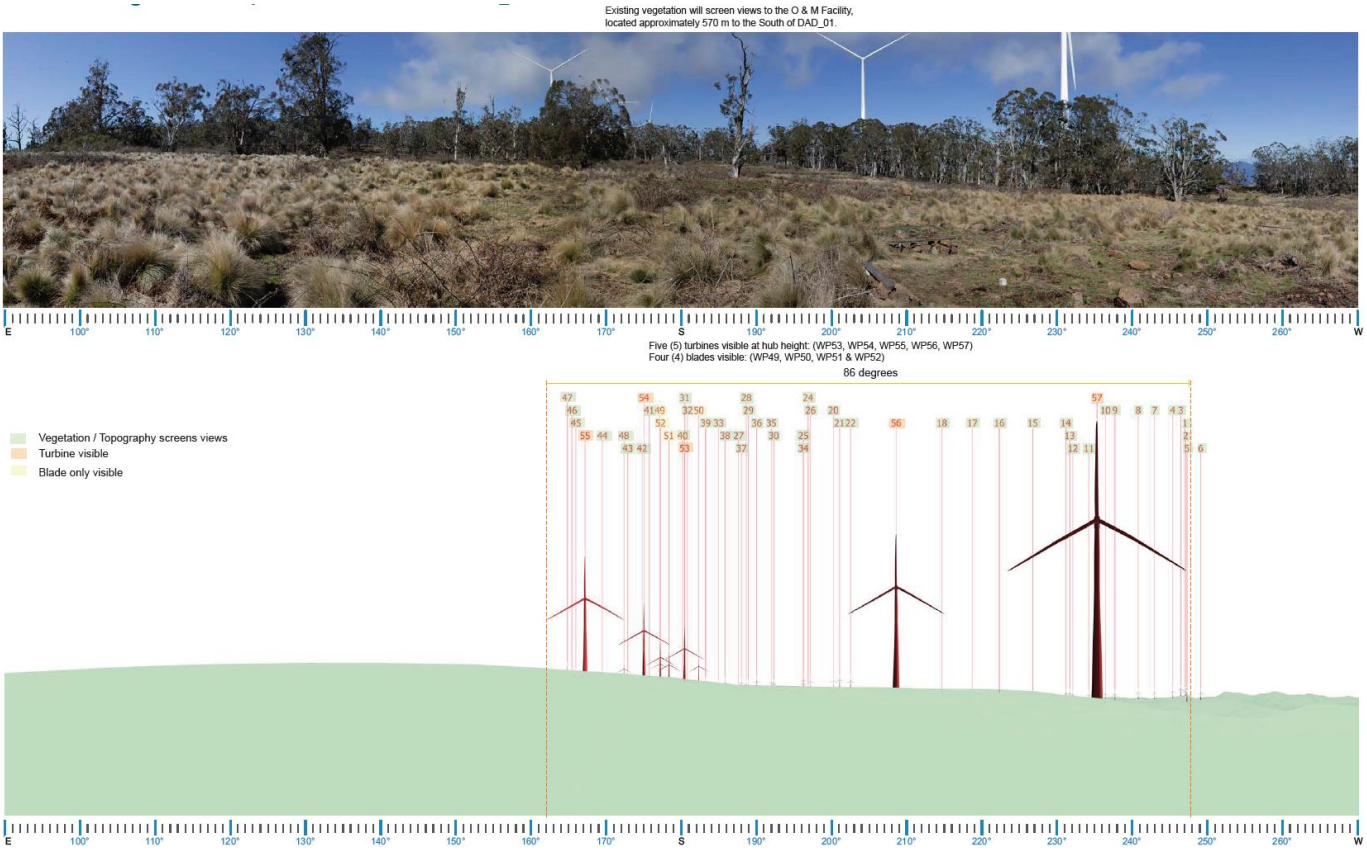

Figure 8 | Photomontage and wireframe for DAD01 (looking south)

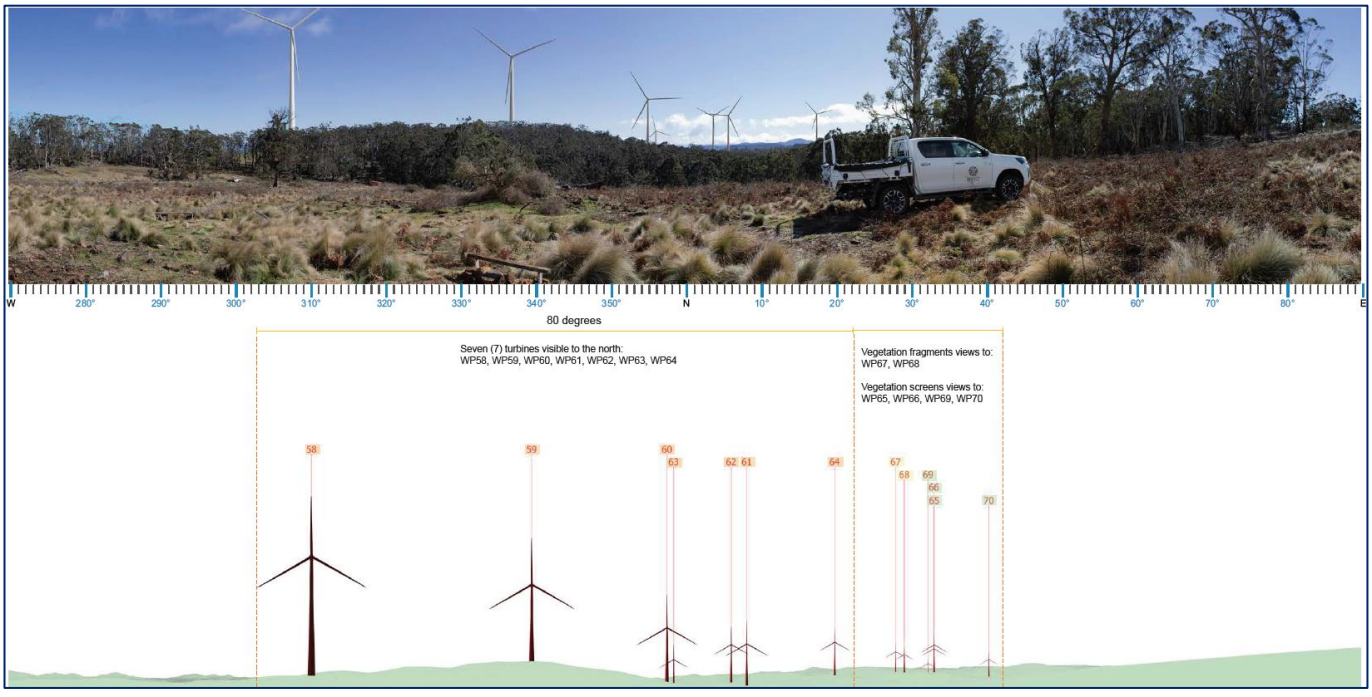

Figure 9 | Photomontage and wireframe for DAD01 (looking north)

Nundle Crawney Valley Cluster

113. The dwellings in this cluster are mostly located along Crawney Road, Back Creek Road, Head of Peel Road and Nundle Creek Road north-west of the project site. All dwellings and tourist

accommodation (NAD34 DAG Station) are level 2 viewpoints, with moderate to high scenic quality and mostly VIZ2. The assessment against visual performance objectives is in **Table 11**.

114. There is one VIZ1 dwelling (NAD05) within 2 km of a turbine which the Department visited twice. Screening views of the project (see **Figure 10**) requires tall and dense vegetation which the Applicant estimates would take up to 10 years to establish. Due to the proximity and elevated position of the encircling turbine string from T59 to T63, such screening would create a sense of enclosure, removing existing views of the ridgeline.

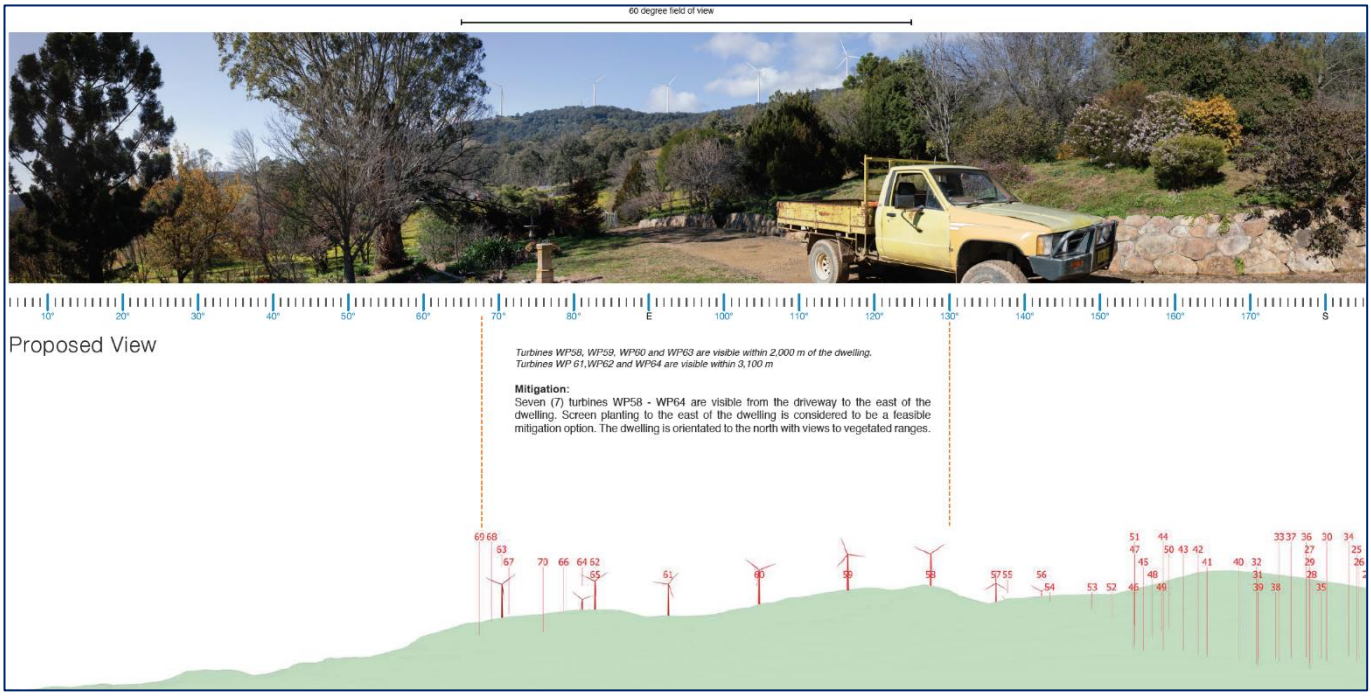

Figure 10 | Photomontage and wireframe for NAD05 (looking north)

115. The Applicant's dependence on planting vegetation screening to justify the close proximity of multiple turbines at this VIZ1 receiver at the expense of existing views of the ridgeline is inconsistent with the visual magnitude objective.

116. In the absence of other appropriate measures to reduce impacts, the Department recommends deleting T59 to T63. The removal of these turbines is also recommended to reduce visual impacts to DAD 01 and NAD 67.

117. The Department and OHD also visited NAD 33 and whilst the dwelling is located beyond the blue line at 5.51 km from the nearest turbine, the Applicant's LVIA identified turbines would be visible in three 60 degree sectors south of the dwelling and confirmed this dwelling is orientated to the south.

118. The owners of dwelling at NAD 33 hold a number of additional land parcels, some of which would meet the minimum lot requirements for dwelling entitlements at Lot 107 DP755349 and Lot 67 DP755349. The landowner has advised the Department of potential future locations of dwellings on these lots and initial preliminary discussions and correspondence with TRC on

the potential for dwellings on the lots with dwelling entitlements, however there are no development approvals in place for dwellings on these lots.

119. As discussed earlier, although there is the possibility of future dwellings (subject to approvals processes), these warrant a lower weighting due to their uncertain nature and the ability for them to be designed, sited and oriented to avoid or reduce impacts. In addition, lots that require further consolidation in order to meet minimum lot requirements warrant a further lower weighting due to their uncertain nature.

120. Although Lot 107 DP755349 and Lot 67 DP755349 adjoin the project site, due to the size of the land parcels at 575 ha (about 60% of the lot is located more than 2 km from a turbine) and 243 ha (about 30% of the lot is located more than 2 km from a turbine) respectively, the potential future dwelling locations could be located beyond 2 km of turbines and oriented away from the project to minimise visual impacts and in locations where the noise criteria could be met.

121. The Department was also advised that a development application was recently lodged with TRC over Lot 2 DP1103716 (as yet unapproved) for two workers dwellings adjacent to NAD 33. The Department considers the proposed workers dwellings are unlikely to have significant visual impacts or noise impacts as they are beyond 4.55 km from a turbine (i.e. the blue line).

122. The Department has also considered the potential impacts for a dwelling entitlement for Lot 175 DP755335. The Department considers that a potential future dwelling location could be located beyond 2 km of turbines (about 95% of the lot is located more than 2 km from a turbine) and oriented away from the project to minimise visual impacts and in locations where the noise criteria could be met.

123. Furthermore, while not required to address potential impacts for the lots with dwelling entitlements, the Department notes that the recommended removal of turbines T53 to T63 and T9 to T11 would significantly benefit NAD 33 and its land parcels with dwelling entitlements and development applications on foot.

124. For all other dwellings in this cluster within 5 km of a proposed turbine, the Department considers that standard mitigation measures via vegetation screening would be sufficient.

Table 11 **|** Visual Impact Assessment – Nundle Crawney Valley Cluster

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department/OHD assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
NAD 05	T59 (1.78), T58 (1.81), T60 (1.87), T63 (1.91), T61 (2.05), T62 (2.06), T57 (2.27), T56 (2.51), T64 (2.64), T55 (2.97), T65 (3.08), T54 (3.22), T66 (3.29)	VIZ 1	No – T59 to T63 in close proximity and unscreened. T58, although closer, is screened by vegetation.	Yes	No, T59 to T63 would be major elements.	Delete T59 to T63
NAD 21	None – nearest is T2 (3.37)	VIZ 2	Yes	Yes	Yes	Vegetation screening
NAD 22	None – nearest is T6 (4.44)	VIZ 2	Yes	Yes	Yes	Vegetation screening
NAD 34 (DAG)	None – nearest is T2 (5.94)	VIZ 2	Yes	Yes	Yes	None
NAD 66	None – nearest is T63 (3.60)	VIZ 2	Yes	Yes	Yes	Vegetation screening
DAD 03	T63 (2.82), T62 (3.27)	VIZ 2	Yes	Yes	Yes	Vegetation screening
NAD 33	None – nearest is T63 (5.51)	VIZ 2	Yes	No, 3 sectors	No, turbines dominate the landscape	Vegetation screening, however, deleting turbines to address DAD01, NAD05, NAD67, NAD72 and NAD98 also benefits

Nundle Village Cluster

125. The sections of Nundle village zoned as RU5 Village and R5 Large Lot Residential is situated just beyond 8 km northwest of the nearest turbine. Dwellings in these zones are Level 1 viewpoints (high sensitivity), are in areas of moderate scenic quality, resulting in a VIZ2 categorisation at these distances. Although the project would be visually apparent and could become a major element in the landscape, the Department considers it would not dominate the existing visual catchment criteria set in the Visual Bulletin.

126. Notwithstanding, the recommended removal of turbines to address impacts to the Nundle Crawney Valley cluster would materially reduce impacts to views from Nundle Village.

Timor Crawney Road Cluster

127. Generally, this cluster of dwellings are located south of the project along Timor-Crawney Road are at around 620 to 650 AHD, while dwellings along Mountain View Road (NAD01 and 69) are higher at 720 to 750 AHD. Dwellings in this cluster are north orientated and considered as Level 2 viewpoints, are in areas of moderate to high scenic quality with views of rolling foothills leading up to the east-west ridgeline on which the site is located. Dwellings within 8 km are VIZ2.

Table 12 | Visual Impact Assessment – Timor Crawney Road Cluster

Receiver	Turbine(s) and distance within black line (km)	VIZ	Department/OHD assessment – aligns with visual performance objective?			Recommended Mitigation
			Visual Magnitude	Multiple wind turbine	Landscape scenic integrity/ Key feature disruption	
NAD 01	T24 (3.04)	VIZ2	Yes	Yes	Yes	Vegetation screening
NAD 69	None, nearest is T24 (3.63)	VIZ2	Yes	Yes	No, turbines dominate the landscape	Delete T24
NAD 72	None, nearest is T9 (3.39)	VIZ2	Yes	Yes	No, turbines dominate the landscape	Delete T9 to T11
NAD 98	None, nearest is T9 (3.46)	VIZ2	Yes	Yes	No, turbines dominate the landscape	Delete T9
NAD A	None, nearest is T9 (3.98)	VIZ2	Yes	Yes	Yes	Vegetation screening

128. The placement of turbines extending across the east-west ridgeline between Ben Halls Gap Nature Reserve and Crawney Pass National Park vary in elevation from 1,080 AHD at T16 up to 1,410 AHD at T20. The string of turbines would dominate the landscape scenic integrity at two landholdings, being NAD72 and 98 on Crawney Station and NAD69.

129. At NAD72 and 98, as the topography drops away in the direction of the view, vegetation screening would need to be planted in close proximity to the dwelling. Whilst obscuring views of turbines, the screening would also result in the loss of existing views to the ridgeline and reduce sunlight to the properties. The Applicant estimates effective screening could take up to 5 years to establish at NAD73, and up to 10 years at NAD72 and NAD98.

130. For these reasons, the Department considers it is unreasonable to solely rely on vegetation screening for mitigation, and the deletion of T9 to T11 is warranted (see **Figure 12** for indicative comparison) as it would materially benefit all three locations.

Proposed View – 60 degree field of view (Second Addendum LVIA April 2023)

Proposed View – 60 degree field of view with deletion of WTG9 to WTG11 (Department modified)

Figure 12 | Cropped 60 degree field of view photomontage comparisons for NAD 72

Key public viewpoints

131. The Applicant identified and assessed the visual impacts of the project from 45 public viewpoints (walking trails, roads and lookouts) surrounding the project in accordance with the visual performance objectives in the Bulletin, including:

- VIZ1 viewpoints (two locations) – both viewpoints located within the Crawney Pass National Park (one on Crawney Road and one on the Ridge Trail);
- VIZ2 viewpoints (20 locations) – including campground "Teamsters Rest" off Crawney Road, Hanging Rock Lookout, "Devils Elbow" (unofficial lookout), locations within Nundle village and several local roads, including Crawney Road, corner of Barrys Road and Morrisons Gap Road, corner of Morrisons Gap Road and Shearers Road; and
- VIZ3 viewpoints (23 locations) – local roads, including locations along Timor Crawney Road, Crawney Road, Head of Peel Road and Nundle Creek Road.

132. Viewpoints assessed as VIZ1 are located within the Crawney Pass National Park approximately 1.1 km and 1.8 km away from the nearest turbines. Both viewpoints have existing dense vegetation surrounding the locations. The LVIA assessed that the project is likely to be screened from the Ridge Trail. Four turbines would be visible when travelling 200 m along Crawney Road, however this view would be very short duration and in between existing vegetation.

133. Most public viewpoints identified as VIZ2 and VIZ3 are located beyond 4.55 km from the project, with the exception of seven VIZ2 and five VIZ3 viewpoints located between 1.4 km and 4.4 km from the closest proposed turbine. The LVIA concluded that the wind turbines would not become a major element in the landscape from any of these viewpoints and views to turbines would be screened by the topography, fragmented by existing vegetation and short duration of exposure as most of the public viewpoints located on public roads.

134. Additional assessment from the Applicant concluded that the turbines along Morrisons Gap Road adjacent to the site boundary would be VIZ2 viewpoints. The Department considers that at this location there would be limited numbers of traffic (up to eight non-associated receivers) and would be very short duration and in between existing vegetation 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 generally obstruct views of the turbines from the broader landscape, and considers that the project would not dominate the existing visual catchment.

135. The key landscape features were identified in consultation with the community, being Crawney Pass National Park, Ben Halls Gap Nature Reserve, State Forests (Nundle State

Forest, Hanging Rock State Forest and Ben Halls Gap State Forest) and Liverpool / Mount Royal Ranges which are part of the Great Dividing Range.

136. The LVIA's key feature disruption assessment concluded that whilst the project may impact views from some areas, key features identified through the landscape baseline study are likely to remain the dominant features of the landscape and undisrupted by the proposal.

137. The Department considers that, given the project's location in a sparsely populated area and away from major transport routes and public viewpoints, the project would not significantly disrupt the central line of sight and/or the central focal viewing fields surrounding it, when seen from viewpoints looking toward key features of the landscape.

138. In particular, the Department notes that the Crawney Pass National Park has retained native vegetation along the roadsides and walking trail which would likely fragment the views towards the project. The project would not significantly modify the visual catchment from the Crawney Pass National Park.

139. In summary, the Department considers that the visual performance objectives would be achieved for most public viewpoint locations.

Wallabadah – grid connection

140. The 330 kV transmission line would consist of either 60 m high steel poles or 50 m high steel towers. The closest receivers to the grid connection switchyard in Wallabadah are two homesteads located at Basin Creek Road just over 1 km from the proposed transmission corridor and over 2 km from the switchyard.

141. At these separation distances, the Department has recommended conditions requiring the Applicant to implement mitigation measures such as landscaping and vegetation screening, to reduce visual impacts in consultation with the owners of the two dwellings.

Ancillary infrastructure

142. In regard to the project's ancillary infrastructure (e.g. 330 kV transmission line, on-site substations and battery energy storage system), the Applicant has sited this infrastructure to minimise visibility from existing residences and publicly accessible viewpoints.

143. The Department also undertook an assessment of the visual impacts associated with the project's ancillary infrastructure, noting that the Applicant provided further information during its assessment.

144. The Department considers 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 the Applicant's proposed landscape treatments and selection of ancillary infrastructure components with low visual contrast.

145. Notwithstanding, the Department has recommended conditions requiring the Applicant 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.

Aviation hazard lighting

146. 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, 2012 (NASAG Guidelines) the Civil Aviation Safety Authority (CASA) is required to 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.

147. 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."

148. The initial Applicant's 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.

149. Following CASA's advice, the Applicant developed a night lighting plan proposing to light 28 turbines out of 64 (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.

150. CASA reviewed the proposed lighting plan and confirmed that low intensity lighting of no lower than 200 candela, which is well below the 2,000 candela required by international standards, was a suitable mitigation measure for the project and would be sufficient. CASA also accepted the proposed spacing between lit turbines.

151. A light source at 200 candela will emit about 1,200 lumens above the horizontal plane and is roughly equivalent to 1.5 traditional 60 W incandescent light bulbs. The Applicant has also committed to install light shielding so that no light is emitted at or below 10 degrees below

horizontal, and no more than 5% of the nominal light intensity is emitted at or below 5 degrees below horizontal.

152. The project is partially located within 200 km east of Siding Spring Observatory and therefore falls within the Dark Sky Region covered by the NSW Government's *Dark Sky Planning Guideline*. A consent authority must consider this guideline for State significant development that is likely to impact the night sky and is within 200 km of the Observatory. The Department has consulted with the Observatory and was advised that the use of low intensity lighting would be imperceptible to the Observatory.

153. Consequently, the Department has recommended conditions requiring the Applicant to install aviation hazard lighting in accordance with CASA requirements and in a manner that minimises any adverse visual impacts.

Shadow flicker and blade glint

154. The Department and OHD consider that the visual performance objectives for shadow flicker and blade glint could be achieved at all non-associated receivers. Although the Applicant's LVIA identified that shadow flicker at NAD 08 could potentially exceed 30 hours per year, the modelling did not account for the significant mature woodland vegetation which would screen these impacts.

155. Blade glint is addressed through the Applicant's commitment to apply an industry standard matt finish to turbines.

6.3.4 Conclusion

156. Although the Applicant has removed multiple turbines and signed nine additional neighbour agreements in response to significant community concerns about the visual impacts of the project, the Department considers further reductions to the 64 turbine layout is necessary.

157. In the absence of the Applicant offering further layout changes, the lack of efficacy of the Applicant's proposed landscape screening measures at key locations, or securing agreements with key neighbouring receivers which the Department flagged with the Applicant following the exhibition of the EIS, the Department recommends removing another 15 of the 64 turbines due to visual impacts. In conjunction with the Department's recommendation to delete two additional turbines due to unacceptable biodiversity impacts, this would leave the Applicant with consent to develop 47 turbines. The Department considers that the turbines recommended for removal are located in the least suitable parts of the site.

158. A summary of the key amendments proposed by the Department is provided in **Table 13** for visual impacts. The table also identifies the recommended changes that influence other issues such as biodiversity, noise and other issues.

Table 13 | Summary of key amendments proposed by the Department - turbines

	Turbine	Visual	Biodiversity	Noise
1	T9	NAD 72, NAD 98, NAD 33		
2	T10	NAD 72, NAD 98, NAD 33		
3	T11	NAD 72, NAD 98, NAD 33		
4	T24	NAD69	Reduce clearing of TECs	
5	T28		Reduce clearing of TECs	
6	T42		Proximity to Ben Halls Gap Nature Reserve	
7	T53	DAD 01, NAD 33		noise exceedance unable to be mitigated
8	T54	DAD 01, NAD 33		noise exceedance unable to be mitigated
9	T55	DAD 01, NAD 33		noise exceedance unable to be mitigated
10	T56	DAD 01, NAD 33		noise exceedance unable to be mitigated
11	T57	DAD 01*, NAD 33		noise exceedance unable to be mitigated
12	T58	DAD 01, NAD 33		noise exceedance unable to be mitigated
13	T59	DAD 01, NAD 05		noise exceedance unable to be mitigated
14	T60	DAD 01, NAD 05		noise exceedance unable to be mitigated
15	T61	NAD 67, NAD 33, NAD 05, DAD 01		noise exceedance unable to be mitigated
16	T62	NAD 67, NAD 33, NAD 05, DAD 01		
17	T63	NAD 33, NAD 05, DAD 01		

* Also within ice throw distance of T57

159. While the removal of the turbines identified above would benefit specific receivers, it is important to note that the removal of these turbines from the project would also have a material benefit in reducing the impact on the broader landscape character and reducing the potential for the project to dominate the existing visual catchment.

160. The Department acknowledges that while developing a wind farm consisting of up to 47 turbines and associated ancillary infrastructure would be visually apparent and could become a major element in the landscape for multiple receivers, this reduced project layout would meet the visual performance objectives prescribed in the *Visual Assessment Bulletin* which are that it should not dominate the existing visual catchment.

161. In addition to the recommendation for 47 turbines, to minimise and manage the residual visual and lighting impacts as far as practicable, the Department has recommended conditions requiring the Applicant 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;
- painting 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 do not exceed 30 hours per annum at any non-associated dwelling.

6.4 Traffic and transport

162. The construction of the project would involve the delivery of large plant, equipment and materials to site including by oversized and over-mass (OSOM) vehicles and heavy vehicles requiring escort which has the potential to impact the local and regional road network.

163. The Applicant prepared a Traffic Impact Assessment as part of its EIS and provided additional information to the Department throughout the assessment process, including details on proposed road upgrades.

164. The Applicant's assessment assumed maximum blade length was 83.5 m with a required vehicle length accessing the site of 91 metres long to transport turbine blades, and the heaviest vehicles would weigh about 171 tonnes to transport the turbine nacelles.

165. Advice from TfNSW and submissions from Muswellbrook Shire Council, Tamworth Regional Council and the public raised concerns with the significant increase in heavy vehicles travelling on the road network, the suitability of the proposed transport routes and the associated impacts to safety and amenity for residents.

166. As part of the original development application, the Applicant proposed to transport blades to the site from the north through Nundle via Barry Road and Morrisons Gap Road. This option would require extensive upgrades to the Devils Elbow on Barry Road, including a haulage road through Crown reserve and the locally listed heritage item, the Black Snake Gold Mine. The Applicant has removed this option for blade transport only, in response to significant concerns raised by the Department, Tamworth Regional Council, Crown lands and the community on this matter.

167. The Applicant consequently proposed a different route for blade transport along Crawney Road to the south and this amendment was exhibited.

6.4.1 Transport route

168. Between the Port of Newcastle to site, the Applicant is proposing different transport routes depending on the dimension of the vehicle. These routes are summarised in **Table 14** and shown in **Figure 13** to **Figure 15**. **Figure 15** | Transport Route - Nundle (blades/loads over 5.2m) - Option 1b (Nundle Loop)

169. Access and egress from the site for light and heavy vehicles would be split approximately 65%/35% between Option 4a via Barry Road and Morrisons Gap Road to the north, and Option 4b Crawney Road to the south.

Table 14 | Transport Route Options

Transport Route Option	Department's Assessment
Common to all route options – all heavy vehicle traffic: Port of Newcastle to Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway and the New England Highway	All roads proposed to be used by heavy vehicles up to and including the New England Highway are approved B-double routes. The Department recommends restricting the transportation of blades to the State road network and the routes proposed for upgrade by the Energy Corporation of NSW (EnergyCo) as far as practical.
Route 1 – vehicles carrying blades or loads over 5.2 m in height: Golden Highway, Denman Road, Bengalla Road, Wybong Road, Kayuga Road, Invermein Street, Stair Street, New England Highway, Lindsays Gap Road, Nundle Road, then either: – **Option a – Herring Street, Innes Street, Jenkins Street and Crawney Road; or** – **Option b (Nundle Loop) – (for blades only) Oakenville Street, Old Hanging Rock Road, Happy Valley Road, Jenkins Street and Crawney Road.**	The Department notes that EnergyCo has committed to facilitating road upgrades to the State road network between the Port of Newcastle and Bengalla Road in Muswellbrook Shire LGA. Some works relate to those required for the Central West REZ and additional works from Bengalla Road in Muswellbrook north would be required to facilitate transport to the New England REZ. Based on comments from Tamworth Regional Council, the Department considers the Nundle Loop (Option 1b – see **Figure 15**) would be least desirable due to the duplication of impacts required with blades passing through the centre of Nundle twice, firstly from the west and then from the north. The Nundle Loop option would

Transport Route Option	Department's Assessment
	also require significant trimming of established street trees on Jenkins Street running through Nundle village. The Department also notes that one landowner required to host road upgrades to facilitate the Nundle Loop objects to the project and has advised the Department that landowners consent to undertake the required works would not be forthcoming. For these reasons, the Department recommends restricting the transportation of blades to Route Option 1a. Route Option 1a would require that over-dimensional vehicles bypass the intersection at Oakenville Street and Jenkins Street, via the construction of a private road as proposed in **Figure 11**, which would be decommissioned following the completion of construction. The Department has recommended conditions to this effect.
• **Route 2 – vehicles carrying loads up to 5.2 m in height: Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Herring Street, Innes Street, Jenkins Street and Crawney Road.**	The Department considers that the proposed transport should, to the fullest extent possible adhere to the road network to be upgraded by EnergyCo. As such, the Department recommends conditions restricting the movement of over-dimensional vehicles to Route 1, as described above.
• **Route 3 – vehicles carrying loads over 5.2 m in height: Golden Highway, Denman Road, Thomas Mitchell Drive, New England Highway, Bell Street, Victoria Street, Market Street, New England Highway, Lindsays Gap Road, Nundle Road, Herring Street, Innes Street, Jenkins Street and Crawney Road.**	The Department considers that the proposed transport should, to the fullest extent possible adhere to the road network to be upgraded by EnergyCo. As such, the Department recommends conditions restricting the movement of over-dimensional vehicles to Route 1, as described above.

Transport Route Option	Department's Assessment
• **Route 4 – standard loads: Lindsays Gap Road, Nundle Road, then either:** – **Option a – Crosby Street, Oakenville Street, Old Hanging Rock Road, Barry Road, Morrisons Gap Road (north); or** – **Option b – Herring Street, Innes Street, Jenkins Street and Crawney Road (south) with 3 options for site access (see section 6.4.2).**	The Department notes that the Applicant proposes a number of road upgrades in Tamworth LGA to facilitate the movement of heavy vehicles to site. These road upgrades are outlined in detail in the EIS and supporting documentation. Road upgrades would be required to be undertaken to the satisfaction of the relevant road authority. The Applicant proposes to split heavy vehicle traffic between Route 4a and Route 4b (65% and 35% respectively). Subject to the implementation of the required road upgrades, traffic mitigation measures as proposed by the Applicant and subject to the recommended conditions, the Department considers that Route 4 is a suitable transport route for standard loads to access the site.

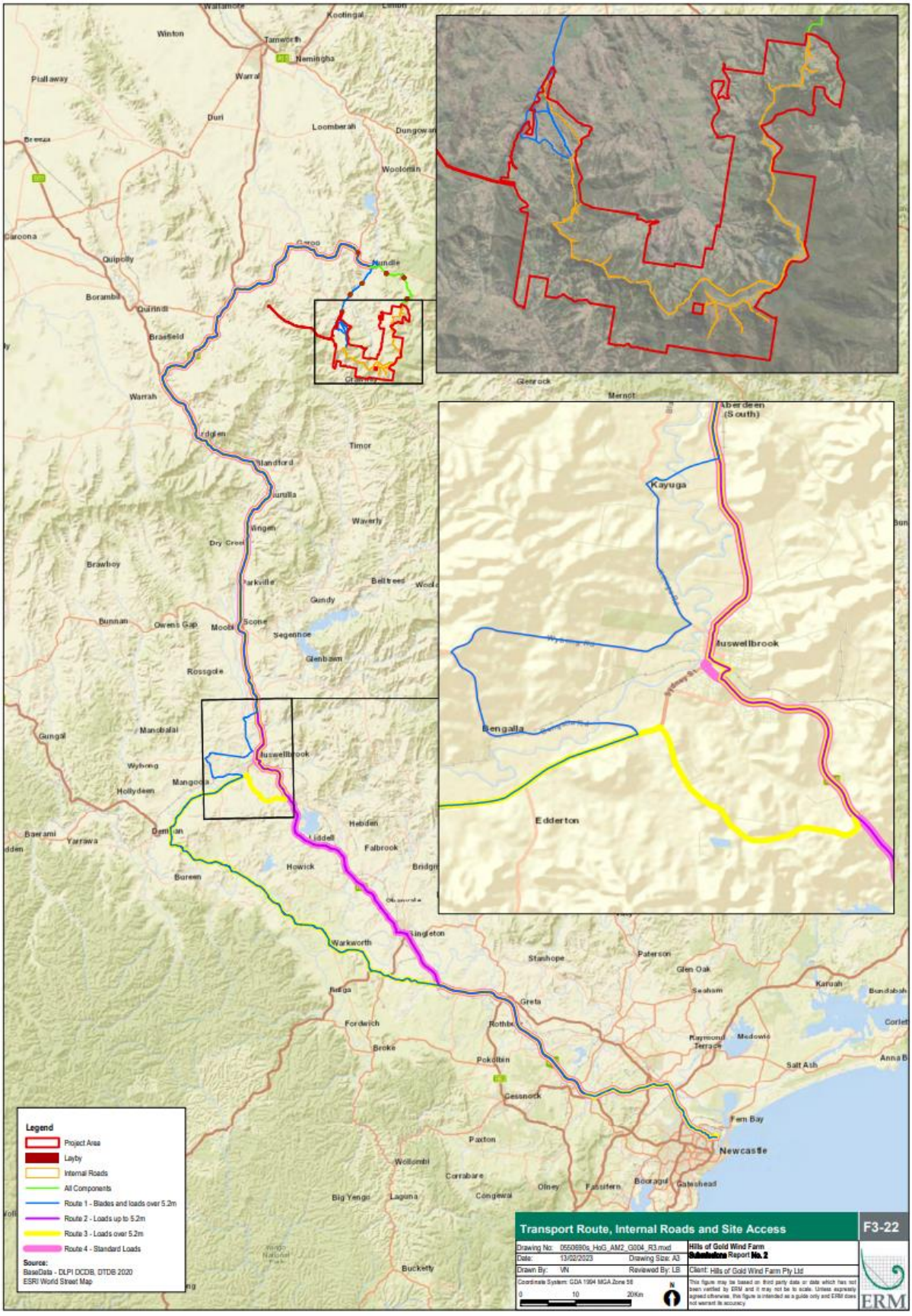

Figure 13 | Transport route between Port of Newcastle to Nundle

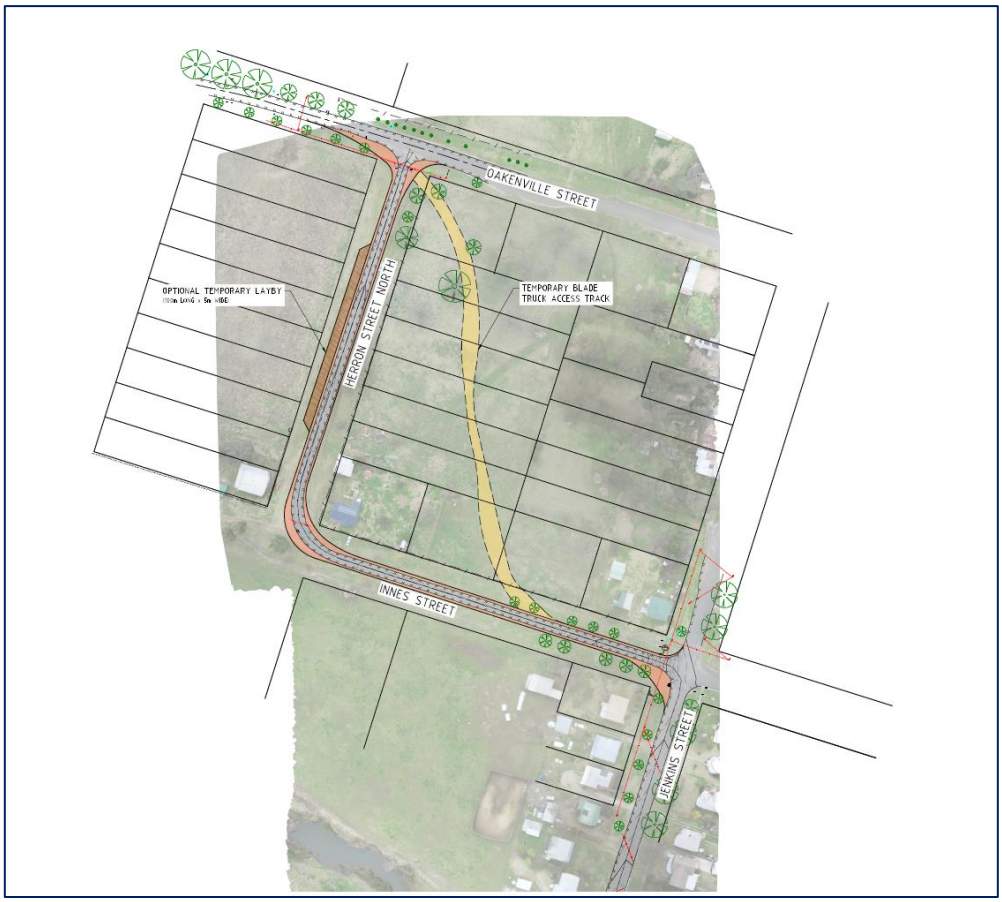

Figure 14 | Transport route - Nundle (blades/loads over 5.2m) - Option 1a

Figure 15 | Transport Route - Nundle (blades/loads over 5.2m) - Option 1b (Nundle Loop)

6.4.2 Site Access

170. The Applicant is proposing three site access options for the southern portion of the site via Crawney Road (Route 4b) to provide access for light and heavy vehicles to the southern portion of the site and all heavy vehicles requiring escort for the whole project. The Applicant has committed to sealing the unsealed portion of Crawney Road up to the proposed site access point. The three options are shown in **Figure 16** and summarised below:

- **Option A** traverses 730 metres of Crown reserve Lot 7301 of DP 1136648 and involves upgrading an existing farm access road. Crown Lands expressed concerns regarding significant and permanent impacts on the potential future use of the travelling stock route and native vegetation clearing required. Crown Lands advised this would be inconsistent with the principles of the *Crown Land Management Act 2016*.
- **Option B** traverses 220 metres of Crown reserve Lot 7301 of DP 1136648 and requires formation of a new site access, access road and creek crossing. Crown Lands advised this option presents the least impact to Crown reserve of the three options identified.
- **Option C** traverses 240 metres of Crown reserve Lot 7302 of DP 1136648 and requires the least amount of native vegetation clearing of the three. However, Option C is located immediately adjacent to the Teamsters Rest campground, potentially impacting recreational users for the duration of the construction period.

171. Noting the above, the Department considers Option B is the most appropriate site access option, as it would minimise impacts to Teamsters Rest campground and have the least impact to Crown reserve.

172. The Department is aware that the Crown reserve is subject to a native title claim. As such, the Applicant will be required to negotiate an Indigenous Land Use Agreement before any Crown land authorisation can be considered. The Department has recommended a condition requiring the Applicant to obtain the necessary authorisations required under the *Crown Land Management Act 2016* prior to the commencement of the development.

6.4.3 Traffic volumes

173. The project would generate up to 78 light vehicle and 63 heavy vehicle movements per day during the peak construction period.

174. A maximum of six heavy vehicles requiring escort are expected to access the site per day over a nine month period, once turbine foundations are established and installations commence. The Applicant has committed to schedule these deliveries outside of peak commuting hours and the Department has recommended conditions to this effect.

175. Operational traffic is expected to be minimal, with up to four daily heavy vehicle movements associated with maintenance and monitoring activities.

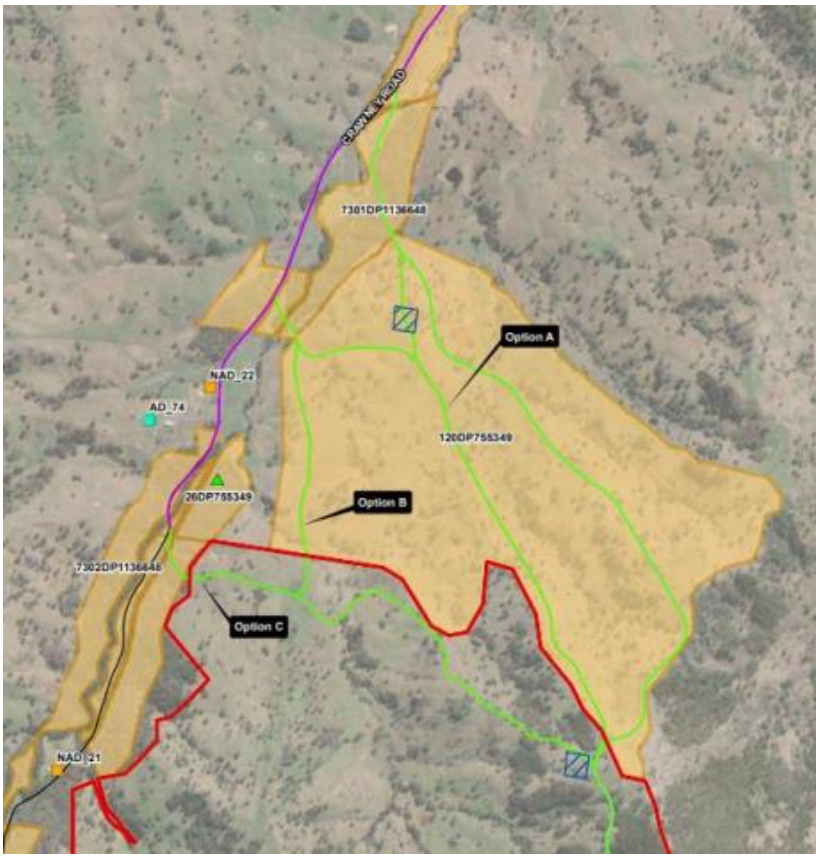

Figure 16 | Crawney Road site access options

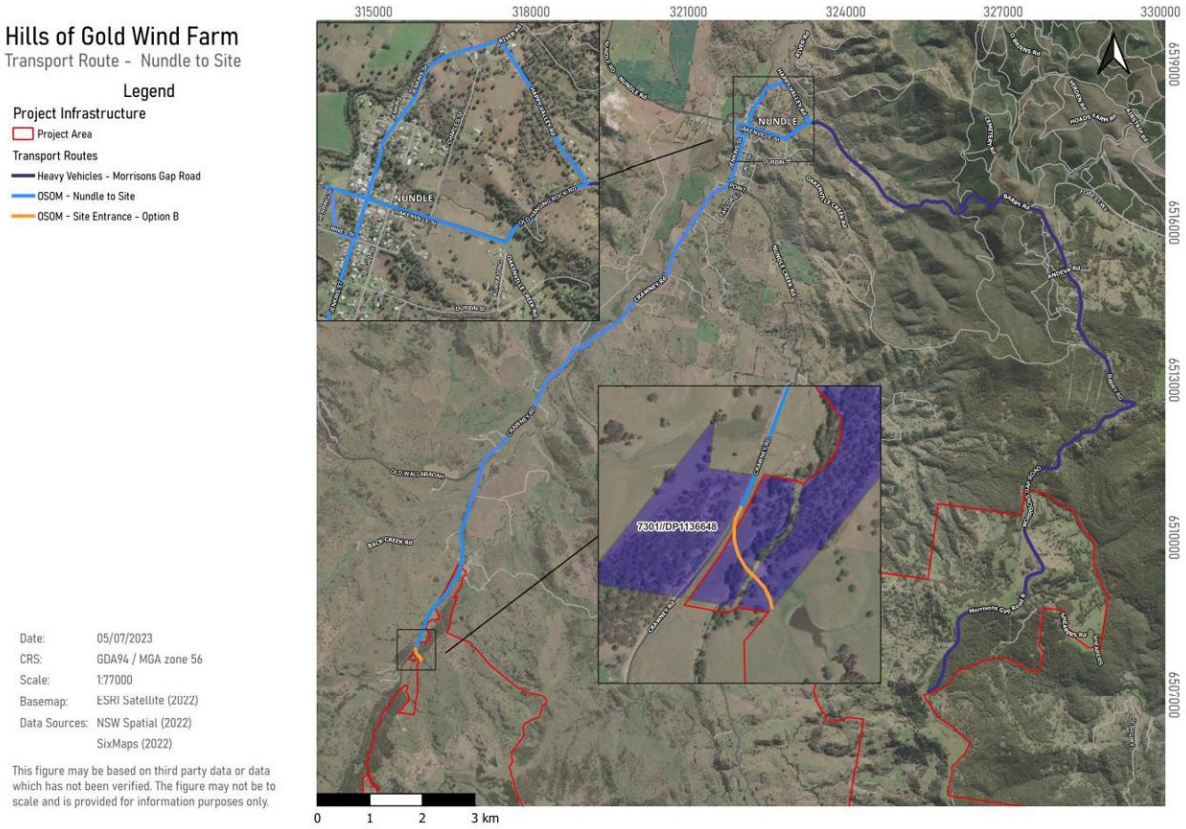

Figure 17 | Crawney Road site access options [note this only shows Option B]

6.4.4 Impacts on roads and road upgrades

176. The traffic assessment assessed the impacts on the intersections and levels of service of the proposed transport routes. The project would not adversely impact intersection performance, and the level of service on all roads and intersections are expected to remain acceptable with the addition of traffic generated by the project.

177. The Applicant proposes to undertake a number of road upgrades in the City of Newcastle Council, Muswellbrook Shire Council, Liverpool Plains Shire Council and Tamworth Regional Council LGAs. The Department notes that the upgrades for heavy vehicles under escort in the City of Newcastle Council and the Muswellbrook Shire Council areas would form part of the route upgrades proposed to be undertaken by EnergyCo or other area of government to support the renewable energy zones. The schedule of road upgrades for the Liverpool Plains Shire Council and Tamworth Regional Council LGAs would need to be undertaken by the applicant and are included in in the recommended conditions of consent (**Appendix G**).

178. A school bus service operates from outside Nundle Public School located on Jenkins Street in Nundle. The Applicant has committed to limiting heavy vehicle movements during school peaks as far as practicable. The Department has recommended conditions for a Traffic Management Plan to address this matter.

6.4.5 Recommended conditions

179. The Department recommends conditions requiring the Applicant to:

- undertake dilapidation surveys of the relevant local roads and repair any damage resulting from project traffic;
- not use Option 1b (Nundle Loop) transport routes for blades / loads over 5.2 m through Nundle;
- not use transport route 3 for loads over 5.2 m through Muswellbrook;
- not use option A or C for site access via Crawney Road;
- undertake all necessary road upgrades to the satisfaction of the road asset manager and/or the relevant roads authority prior to the use of roads for deliveries from heavy and heavy vehicles requiring escort vehicles in the Liverpool Plains Shire Council and Tamworth Regional Council LGAs; and
- ensure the other upgrades from the port for heavy vehicles requiring escort vehicles in City of Newcastle Council and the Muswellbrook Shire Council areas are undertaken by the relevant authority facilitating the renewable energy zones (e.g. EnergyCo or other) prior to the use of roads for deliveries from heavy and heavy vehicles requiring escort vehicles; and
- prepare a Traffic Management Plan in consultation with the road asset manager and relevant roads authority.

6.4.6 Conclusion

180. The Department considers the proposed transport routes could be appropriately upgraded to facilitate the transportation of large turbine components to the site, noting that the final road upgrade works would be subject to detailed design and approval of the road asset manager and/or relevant road authority prior to the implementation of these works or would be upgraded as part of the works to facilitate the renewable energy zones.

6.5 Biodiversity

181. The Applicant proposes to clear 190.54 ha of native vegetation during construction (64 turbine layout) 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).

182. Approximately 45% of the construction footprint comprises native vegetation in a landscape characterised by large patches of remnant native vegetation in an otherwise predominantly agricultural land use setting. Ben Halls Gap Nature Reserve is located immediately to the east of the site and Crawney Pass National Park is located to the south-west of the site.

183. Most submissions objecting to the project raised concerns about impacts on biodiversity, the incompatibility with locating wind turbines immediately adjacent to Ben Halls Gap Nature Reserve and Crawney Pass National Park, loss of listed threatened species and communities, the risk of blade strikes to listed threatened avifauna species and ongoing vegetation clearing occurring on the site.

184. BCS, NPWS and Tamworth Regional Council flagged concerns regarding the risk of blade strike to avifauna due to the proximity of turbines to habitat features such as tree canopies, hollow bearing trees and Ben Halls Gap Nature Reserve.

185. The Applicant commissioned Arup and Biosis to prepare a Biodiversity Development Assessment Report (BDAR) as part of the EIS. The Applicant 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 reports.

186. The Department is aware that land clearing has occurred on the project site prior to any approval of vegetation clearing under this development application. The Department acknowledges that some of this clearing has occurred with approval under the *Local Land Services Act 2013* (LLS Act), and some areas had been cleared without prior approval and a Biodiversity Conservation Order has been issued for these areas. The Department notes that these cleared areas have been included in the calculation of the offset credit liability for the project.

6.5.1 Avoidance and mitigation

187. The Applicant has broadly aimed to avoid and / or mitigate impacts by:

- locating turbines in cleared areas, and where this is not possible, locating turbines in areas that avoid TECs, threatened species and woodland areas of high conservation value, as far as practicable;
- increasing spacing between and removing some turbines adjacent to National Park estate to reduce barrier effects to the movement of avifauna through amendments to the layout during assessment of the project;
- limiting the removal of canopy trees and retaining understory vegetation within overhead transmission line corridors;
- 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.

188. During the Department's assessment of the project, the Applicant provided additional information responding to requests from BCS and the Department, and revised its layout by deleting six turbines (1, 19, 23, 27, 31 and 41), amending the location of another 23 turbines and realigning internal access roads and transmission lines, reducing the amount of proposed native vegetation clearing from 206.7 ha down to 190.54 ha and included removing (3 turbines) or relocating (1 turbine) turbines with a high collision risk.

189. The Department has considered the findings of the revised BDAR, as well as advice from BCD, NPWS and comments from Tamworth Regional Council in its assessment. Based on this information, the Department considers that the further removal of turbines 24, 28 and 42 is an appropriate response to the biodiversity constraints identified in the locality and is discussed further below. The removal of these turbines is in addition to the 14 turbines recommended for removal as discussed in section 6.3.

190. The assessment of biodiversity impacts below is therefore based on a 47-turbine layout.

6.5.2 Native vegetation

191. The project as recommended (47 turbines) and including road upgrades, would disturb around 183.60 ha of native vegetation. The disturbance area includes clearing of up to 8.15 ha of White Box – Yellow Box – Blakely's Red Gum Woodland (Box-Gum Woodland) and Derived

Native Grassland (DNG) listed as Critically Endangered Ecological Community (CEEC) under the BC Act and EPBC Act.

192. Table 15 provides a summary of the estimated impacts of the project on each vegetation type. The Department and BCS consider that all communities including those listed under the EPBC Act, have been correctly identified and assessed.

Table 15 | Native vegetation community impacts (project as recommended)

Plant community type	Conservation Significance		Impact (ha)	Credits liability
	BC Act	EPBC Act		
84 - River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	-	-	0.07	3
433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion	CE SAII entity	CE	0.02	2
434 - White Box grass shrub hill woodland on clay to loam soils on volcanic and sedimentary hills in the southern Brigalow Belt South Bioregion	CE SAII entity	CE	0.01	1
486 - River Oak moist riparian tall open forest of the upper Hunter Valley, including Liverpool Range	-	-	4.52	168
490 - Silvertop Stringybark - Forest Ribbon Gum very tall moist open forest on basalt plateau on the Liverpool Range, Brigalow Belt South Bioregion	-	-	1.88	69
492 - Silvertop Stringybark - Yellow Box - Apple Box – Roughbarked Apple shrub grass open forest mainly on southern slopes of the Liverpool Range, Brigalow Belt South Bioregion	CE SAII entity	CE	3.16	115
507 - Black Sallee - Snow Gum grassy woodland of the New England Tableland Bioregion	-	-	0.09	3
526 - Mountain Ribbon Gum - Messmate - Broad-leaved Stringybark open forest on granitic soils of the New England Tableland Bioregion	-	-	0.75	33

Plant community type	Conservation Significance		Impact (ha)	Credits liability
	BC Act	EPBC Act		
538 - Rough-barked Apple - Blakely's Red Gum open forest of the Nandewar Bioregion and western New England Tableland Bioregion	-	-	0.06	4
540 - Silvertop Stringybark - Ribbon Gum - Rough-barked Apple open forest on basalt hills of southern Nandewar Bioregion, southern New England Tableland Bioregion and NSW North Coast Bioregion	-	-	66.05	2,164
540 - Silvertop Stringybark - Ribbon Gum - Rough-barked Apple open forest on basalt hills of southern Nandewar Bioregion, southern New England Tableland Bioregion and NSW North Coast Bioregion	E	-	1.41	56
541 - Silvertop Stringybark - Rough-barked Apple grassy open forest of southern Nandewar Bioregion, southern New England Tableland Bioregion and NSW North Coast Bioregion	-	-	30.75	1,068
586 - Snow Grass – Swamp Foxtail tussock grassland sedgeland of cold air drainage valleys of the New England Tableland Bioregion	-	-	2.56	53
599 – Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion	CE SAII entity	CE	4.96	311
931 - Messmate – Mountain Gum tall moist forest of the far southern New England Tableland Bioregion	-	-	3.8	89
934 - Messmate open forest of the tableland edge of the NSW North Coast Bioregion and New England Tableland Bioregion	-	-	23.35	517
954 - Mountain Ribbon Gum - Messmate open forest of escarpment ranges of the NSW North Coast Bioregion and New England Tableland Bioregion	-	-	1.23	54

Plant community type	Conservation Significance		Impact (ha)	Credits liability
	BC Act	EPBC Act		
1194 - Snow Gum – Mountain Gum - Mountain Ribbon Gum open forest on ranges of the NSW North Coast Bioregion and eastern New England Tableland Bioregion	E	-	12.66	329
1194 - Snow Gum – Mountain Gum - Mountain Ribbon Gum open forest on ranges of the NSW North Coast Bioregion and eastern New England Tableland Bioregion	-	-	26.17	728
1604 - Narrow-leaved Ironbark - Grey Box – Spotted Gum shrub - grass woodland of the central and lower Hunter	-	-	0.02	1
1691 - Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	-	-	0.04	2
Total			183.56	5,770

193. Box-Gum Woodland is the only SAII entity being impacted. BCS confirmed in its advice that approximately 10,800 ha of this community known to partially or entirely represent Box Gum Woodland are mapped within a 5 km buffer of the project area. Clearing of up to 2.75 ha of Box-Gum woodland and 5.40 ha of Box-Gum woodland DNG represents 0.5% of the community in the immediate vicinity of the site and BCS has confirmed in its advice that the project is not considered likely to reduce the extent of the Box Gum Woodland Critically Endangered Ecological Community (CEEC) at the national, bioregional or local scales, and the project will not lead to a reduction in the geographic distribution of Box Gum Woodland.

194. In response to NPWS concerns about the potential for the sedimentation of waterways in Ben Halls Gap Nature Reserve that could impact the EPBC listed Sphagnum Moss Cool Temperate Rainforest, the Applicant provided an addendum Soil and Water Report and revised the BDAR to include additional measures to manage stormwater and runoff from the site.

195. Biodiversity impacts must be offset prior to the Applicant carrying out any development that could directly or indirectly impact biodiversity values requiring offset in accordance with the requirements of NSW Biodiversity Offset Scheme.

196. Turbines 24 and 28 are proposed within highly vegetated areas, including areas of Ribbon Gum - Mountain Gum - Snow Gum TEC in moderate to good condition. The deletion of these turbines would achieve further avoidance of this TEC (3.53 ha). This would also provide additional benefit by removing turbines that pose a moderate impact risk of blade strike to avifauna, further reducing the potential for impact.

6.5.3 Threatened flora impacts

197. 11 candidate threatened flora species were identified as potentially occurring on the site and were the subject of targeted surveys. Of the 11 candidate species, one threatened species listed as vulnerable under the BC Act was identified (Broad-leaved Pepperbush). The Applicant avoided impacts to this species through the proposed layout. As, such the project does not generate an offset requirement for threatened flora species.

6.5.4 Threatened fauna impacts

198. Of the 33 candidate threatened fauna species considered to have potential habitat within the site, 14 species were identified or assumed present during targeted site surveys.

199. **Table 16** details the impacts and species credit offset requirements for these species.

200. Four species recorded during site surveys are potential SAII entities, being Large-eared Pied Bat, Large Bent-winged Bat, Little Bent-winged Bat and Eastern Cave Bat. The Department and BCS accept that the development corridor is unlikely to support breeding habitat for these species and the potential impact on foraging habitat for the Large-eared Pied Bat and Eastern Cave Bat would be offset via the species credit offset requirement.

Table 16 | Threatened species impacts

Species	Conservation Significance		SAII Entity	Impact on habitat (ha)	Credit liability
	BC Act	EPBC Act			
Large-eared Pied Bat	V	V	Yes	14.52	416
Eastern Cave Bat	V	-	Yes	14.52	416
Southern Myotis	V	-	-	3.88	88
Eastern Pygmy-possum	V	-	-	20.56	799
Koala	E	E	-	42.45	1,517
Squirrel Glider	V	-	-	13.97	509
Booroolong Frog	E	E	-	0.95	47
Border Thick-tailed Gecko	V	V	-	0.67	33
Powerful Owl	V	-	-	12.59	407
Sooty Owl	V	-	-	1.99	114

Species	Conservation Significance		SAII Entity	Impact on habitat (ha)	Credit liability
	BC Act	EPBC Act			
Barking Owl	V	-	-	80.64	3,338
Masked Owl	V	-	-	15.83	597
Southern Greater Glider	E	E	-	31.11	1,081
Spotted-tailed Quoll*	V	E	-	45.62	0
Total				299.3	9,362

* Offsets to be provided through ecosystem credit.

201. BCS confirmed in its advice that SAII to cave dwelling microbats and their potential breeding habitat have been avoided through removal and relocation of turbines from the project footprint. The removal of these turbines is discussed further in **section 6.5.5**.

6.5.5 Bird and bat strike

202. The area surrounding the project site is known to have a high species diversity and density of microbats. The revised BDAR includes a strike risk assessment for the bird and bat species most at risk of blade strike and barotrauma. The assessment considered conservation status, flight character, distribution across the site and whether the species is migratory.

203. The Department acknowledges that the Applicant's original risk assessment identified four turbines with high collision risk and through the assessment process, three turbines were removed from the layout and the remaining one was relocated further from roost sites to reduce the collision risk.

204. Of the 34 bird species considered in the strike risk assessment, a moderate risk of blade strike is anticipated for four species, the Little Eagle (*Hieraaetus morphnoides*), Nankeen Kestrel (*Falco cenchroides*), Square-tailed Kite (*Lophoictinia isura*) and Wedge-tailed Eagle (*Aquila audax*). The remaining 30 bird species are considered a low risk of experiencing blade strike.

205. Of the 27 bat species considered in the strike assessment, a moderate risk of blade strike is anticipated for nine species, the White-striped Free-tailed bat (*Austronomus australis*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*), Little Bent-winged Bat (*Miniopterus australis*), Large Bent-winged Bat (*Miniopterus orianae oceanensis*), Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*), Greater Broad-nosed Bat (*Scoteanax Rueppellii*) and Little Broad-nosed Bat (*Scotorepens greyii*). The remaining 18 bat species are considered a low risk of experiencing blade strike.

206. BCS and NPWS raised concerns in their advice regarding the risk of blade strike to bird and bat species resulting from the proximity of turbines to habitat features such as tree canopies, hollow bearing trees and Ben Halls Gap Nature Reserve. Of particular concern to BCS were the 18 turbines assessed as having a moderate risk of collision impacts to avifauna (turbines 6, 7, 9, 16, 18, 21, 22, 32, 33, 40, 42, 43, 49, 50, 51, 58, 59 and 61).

207. In response to concerns raised by BCS, the Applicant identified a correlation between bat activity at hub height and wind speed (see **Figure 18**) and has proposed to prepare and implement a smart curtailment strategy (ie. conditions when the turbines would not operate) for all turbines rated as a moderate risk of blade strike to avifauna.

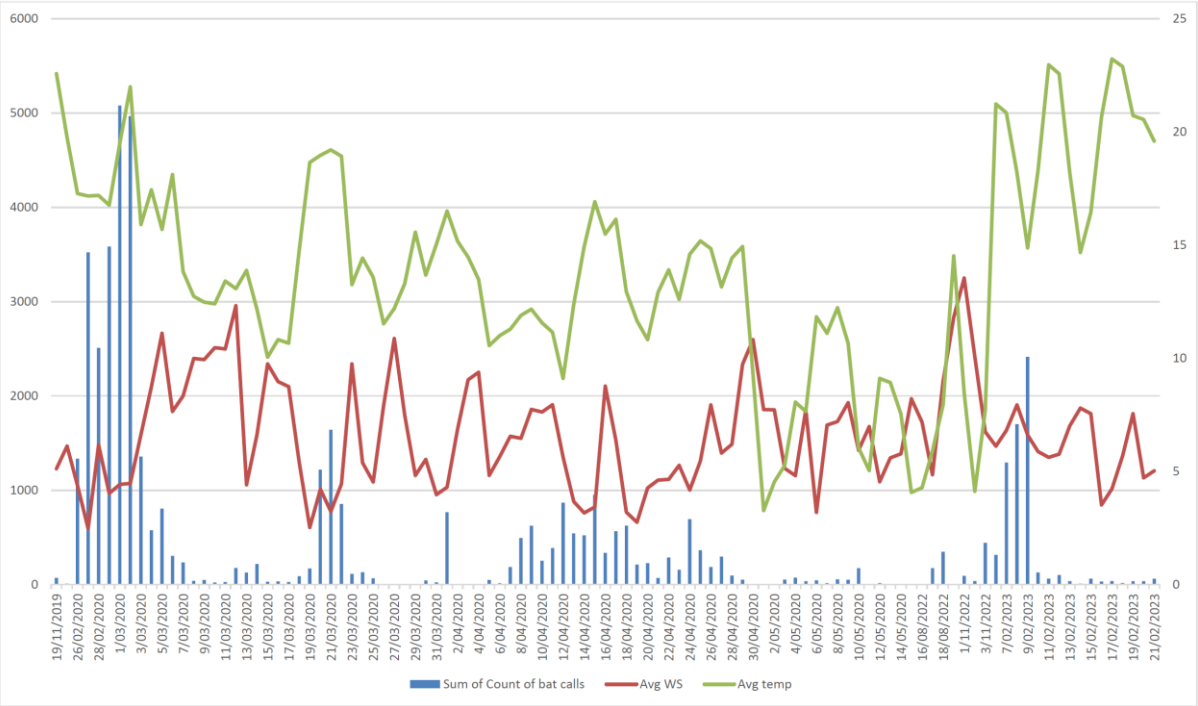

Figure 18 | Bat activity (no. calls per night) vs average wind speeds (m/s) and average temperatures (degrees Celsius) for all bat utilisation survey nights (Biosis, 2023)

208. The curtailment strategy would be detailed in a BBAMP and developed based on the collection of baseline data on variables including microbat activity, wind speed, time, month, temperature and weather conditions. The efficacy of the curtailment strategy would be confirmed through regular monitoring. Broadly, the curtailment strategy would involve:

- restricting free-wheeling of all turbines (spinning before energy generation) below a predetermined cut-in wind speed prior to commencement of energy generation;
- curtailment of moderate risk turbines below the cut-in speed of 5.5 m/s; and
- curtailment of turbines based on acoustic monitoring.

209. Turbine 42 is proposed within 130 m of canopy of Ben Halls Gap Nature Reserve. The Department does not support the impact zone of turbine 42 overlapping with the boundary of

the National Park estate. The Department notes that in this location the turbine could not be moved further from the boundary and as such, the Department considers that the removal of turbine 42 is an appropriate response to the collision risk with avifauna.

210. The Department has recommended conditions requiring the Applicant to carry out detailed monitoring of the bird and bat strike impacts of the project, and carry out adaptive management if the impacts are higher than predicted or result in adverse impacts on any threatened bird or bat species in the locality, 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;
- identifying trigger levels for further investigation of the potential impacts of the project on particular bird or bat species or populations;
- an adaptive management program that would be implemented if the development is having an adverse impact on a particular threatened or 'at risk' bird or bat species or population;
- a detailed program to monitor and report on the effectiveness of these measures; and
- provisions for a copy of all raw data collected as part of the monitoring program to be submitted to BCS and the Department.

211. The Department and BCS are satisfied that implementation of the curtailment strategy and the recommended conditions would be effective in mitigating the collision risk to avifauna.

6.5.6 Significance of impacts on Commonwealth listed species and communities

212. The Applicant identified and addressed all threatened species and communities included in the Commonwealth Referral Decisions (EPBC 2019/8535) (the Referral Decision).

213. Assessments of significance were undertaken for threatened species and communities that were recorded during field surveys or were identified as having a higher potential to occur on the site, including one threatened ecological community and seven threatened fauna species.

214. Assessments of significance concluded that although there is potential for impacts to occur to White Box-Yellow Box-Blakely's Red Gum Grassy TEC Woodland and DNG, clearing represents approximately 0.5% of the community in the immediate vicinity of the site.

215. Assessments of significance concluded that although there is potential for impacts to occur to seven EPBC listed threatened fauna species, these are not considered significant.

216. Two EPBC Act listed migratory species were considered to potentially occur within the project area, being the Fork-tailed Swift (*Apus pacificus*) and White-throated Needletail (*Hirundapus caudacutus*). The Applicant considered that the removal of potential foraging habitat is negligible compared to the potential foraging habitat available to these species within the vicinity of the project.

217. BCS considers that while the White-throated needletail was not recorded on site, there is potential for the species to occur within the locality and to interact with the rotor swept area and recommended that it be assumed that a significant impact is possible. The Department considers that with the recommended conditions, including the requirement to further avoid and minimise impacts with micro-siting and during detailed design, and to prepare and implement the BBAMP, the potential impacts on these species would be appropriately minimised and managed.

218. The Department considered Commonwealth matters in consultation with BCS and DCCEEW, including consideration of the Applicant'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 M.**

6.5.7 Biodiversity Offset

219. The project would generate a credit liability of 5,770 ecosystem credits and 9,362 species credits requiring offset under the NSW Biodiversity Offset Scheme for the project.

220. Both the Department and BCS are satisfied that the offset credit requirements have been correctly calculated, noting that the credit requirements proposed relate to the impacts for the 47 turbine layout. The Applicant 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.

221. The Department notes that the Applicant proposes to meet its offset liability through either the purchase and retirement of credits, payment to the Biodiversity Conservation Fund or by establishing a Biodiversity Stewardship Site. 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.

222. The Department has recommended conditions requiring the Applicant 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.

223. Subject to the recommended conditions, the Department and BCS 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.

6.5.8 Recommended conditions

224. The Department has recommended conditions requiring the Applicant 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 including a curtailment strategy in consultation with BCS; and
- retire the applicable biodiversity offset credits in accordance with the NSW Offsets Policy prior to carrying out any development that would directly or indirectly impact biodiversity values requiring offset.

6.5.9 Conclusion

225. Overall, the Department considers that the biodiversity impacts of the project would not be significant, subject to the additional removal of turbines 24, 28 and 42, the implementation of the recommended conditions, and by offsetting the residual biodiversity impacts of the

project. The Department considers that the turbines recommended for removal are located in the least suitable parts of the site.

226. The Department considers that the recommended condition for a Biodiversity Management Plan and Bird and Bat Adaptive Management Plan including a smart curtailment strategy would further minimise the impacts on vegetation and fauna, including the collision risk to avifauna.

227. The Department considers that the removal of turbines 24, 28 and 42 is an appropriate response to the biodiversity constraints identified in the locality, would reduce the native vegetation clearance from 206.7 ha down to 183.60 ha, reduce the impact to identified EECs and reduce the avifauna strike risk.

6.6 Other issues

228. The Department's consideration of other issues is summarised in **Table 17** below.

Table 17 | Assessment of other issues

Findings	Recommended conditions
Riparian areas and erosion risk	
• Many public submissions raised concerns about the high erosion and landslip potential of the site, disturbance to steep sloped areas such as the transverse track and the unacceptable risk to water quality as the site is located on the headwaters of the Peel River, Hunter and Manning water catchment areas. The Peel River flows into the Chaffey Dam approximately 46 km downstream, which regulates the flow of the Peel River and augments water supply to Tamworth. • The EIS included an assessment of the soil, concluding that there is a moderate to high erosion risk across the site. In areas with slopes greater than 20% or where concentrated flows occur, specialised erosion and sediment controls are proposed. • The HOGPI special interest group commissioned three peer review reports on the soil and water assessments in the EIS (see Appendix L). The criticisms raised in these reports can be broadly summarised in three areas: – lack of clear quantification and underestimating the disturbance area required to accommodate appropriate mitigation measures; – insufficient or incorrect classification of the soil types and land and soil capability classes; and – lack of consideration of future effects and their impacts, including operation, decommissioning and the effects of climate change.	• Comply with section 120 of the *Protection of the Environment Operations Act 1997*; • Minimise erosion and control sediment generation; and • Undertake activities in accordance with applicable guidelines including OEH's Managing Urban Stormwater: Soils and Construction Volumes 1 and 2C, and DPE's *Water Guidelines for Controlled Activities on Waterfront Land*. • Prepare and implement a Soil and Water Management Plan.

Findings	Recommended conditions
• The Department engaged technical expert David Piccolo of Pell Sullivan Meynink (PSM), to provide an independent expert review (see Appendix M) on matters relating to the constructability of the project and the management of soil and water impacts. • PSM reviewed the concerns raised in the HOGPI peer review reports on soil classification, and advised the differences in assessment methodology are largely inconsequential as the EIS ultimately accounted for the high erodibility of the site, while the consideration of future effects and their impacts are second order effects unlikely to significantly change the impact assessment. • The Department requested concept level designs of the earthworks and information on the specialised erosion and sediment control strategies for the transverse track and turbine hardstand areas of high and very high erosion potential. Following the PSM review of this information, the Department and PSM considers that appropriate mitigation measures and strategies to manage erosion and sediment impacts can be developed and implemented during the detailed design stage within the proposed development corridor and predicted disturbance limits. • The Applicant has committed to a range of mitigation measures to address potential soil and water impacts. The Applicant has committed to implementing mitigation measures which are commensurate with the erosion risk across the site. • Based on the findings of the EIS, community submissions as well as independent advice from PSM, the Department considers the implementation of best practice control measures can adequately manage the risks. 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.*	
Water use	
• The amount of water required for the construction of the wind farm is estimated to be around 55 ML.	• Ensure the development has adequate water supplies for the project and that it obtains any

Findings	Recommended conditions
• The Applicant proposes to obtain the water for construction from sources licensed under the *Water Management Act 2000*, including groundwater purchased from associated or adjacent landowners, water purchased from Tamworth Regional Council, installation and extraction from a new groundwater bore or water storages in the region where pumping stations are available. • The Applicant proposes to source the operational water supply from runoff captured from operational disturbance areas and water sourced from nearby dams in Hanging Rock State Forest, under an agreement with Forestry Corporation NSW. • The Department, including DPE Water Group, and WaterNSW are satisfied that the project's water use is unlikely to have any significant impact on water supply and demand in the region. However, DPE Water noted that all works on waterfront land are required to be in accordance with the *Guidelines for Controlled Activities on Waterfront Land* and that any water sourced for the project is required to be appropriately licensed.	necessary licences under the *Water Act 1912* or *Water Management Act 2000*.
Noise and Vibration	
• The existing background noise levels are less than 30 dB(A) during calm weather conditions and is typical for such rural settings. • Community submissions objecting to the project raised concerns about construction, traffic and operational noise impacts. The HOGPI special interest group commissioned L Huson & Associates to peer review (see Appendix L) the Applicant's noise impact assessments (NIA) prepared by Sonus in the EIS. • The Applicant's NIA predicts that during the 24-month construction period, seven non-associated receivers would be noise affected >45 dB(A) but well below the highly noise affected criteria of 75 dB(A). The noise assessment is conservative, assuming all plant and equipment is used concurrently under weather conditions most conducive to noise propagation. Construction works can be managed	• Delete turbines T53-T61. • Restrict construction to standard construction hours (ie 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday). • Construction outside of standard construction hours subject to approval from the Planning Secretary on a case-by-case or activity specific basis. • Limit blasting on site to between 9 am and 5 pm

Findings	Recommended conditions
in accordance with requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009) and the Department recommends restricting construction works to standard construction hours. • The Department acknowledges that there may be some instances where construction activities, such as concrete pouring and turbine erection may be time or climate sensitive, requiring construction to occur outside standard construction hours. Where these activities are inaudible at non-associated receivers, or if agreed with the Planning Secretary, the Department recommends conditions allowing these activities to considered on a case-by-case or activity specific basis. • The distances required to achieve the construction vibration criteria provided in *Assessing Vibration: A Technical Guideline* (DECC, 2006) are in the order of 20 m from the project, with vibration from construction activities unlikely to be detectable to humans at a distance of 100 m. With the exception of road upgrades, the proposed construction activities would be located more than 100 m from all receivers and would comply with the criteria provided in DECC 2006. The Applicant has committed to implementing a monitoring regime where construction activities may occur within 100 m of a dwelling. The Department has recommended conditions to limit vibration impacts generated by the project. • Construction traffic noise impacts were assessed in accordance with the *NSW Road Noise Policy* (DECCW, 2011) (RNP). All dwellings identified within 20 m of a local road were found to comply with the 60 dB(A) criteria for existing residences along a sub-arterial road under worst case hourly traffic noise level. In accordance with the RNP, the Applicant has committed to implement all reasonable and feasible noise mitigation measures to minimise road traffic noise, including scheduling of vehicles and consultation with any residents who raise concerns about traffic noise to identify other possible noise mitigation measures. • Blasting may be required to excavate bedrock for turbine foundations. The Applicant has committed to implementing a monitoring regime to ensure compliance with the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990). The Department has recommended conditions on blasting, including strict criteria for airblast	• Verify through noise monitoring that the noise generated by the operation of the wind farm does not exceed 35 dB(A) or the existing background noise level ($LA_{90\ (10\text{-}minute)}$) plus 5 dB(A) for each integer wind speed.

Findings	Recommended conditions
overpressure and allowable exceedances for any blasting carried out for the project, and requiring the Applicant to comply with blasting limits at all receivers. • 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 the hub height of the turbines. In summary, the criterion for each integer wind speed is the greater of 35 dB(A), or the background noise level ($LA_{90,\ 10\ minute}$) plus 5dB(A). • The Applicant's NIA predicts that five non-associated receivers would not comply with relevant environmental noise criteria. As such, the Applicant has committed to curtailment regime to operate turbines T52-58 and T68-T70 in a noise reduced mode at wind speeds above 8m/s. The noise levels are expected to comply with the adopted criteria at four of the five non-associated receivers with implementation of the curtailment regime. In order to meet noise criteria at the fifth non-associated receiver (DAD 01), the Applicant's assessment identifies that the implementation of a curtailment strategy would not be able to mitigate the impacts and nine turbines (T53-T61) would need to be deleted. The Department has already recommended these turbines be deleted, as discussed previously in section 6.2. • The operation of all other associated infrastructure, including the substation, would comply with the 35dB(A) criteria established by the Noise Bulletin. • The Department notes that the project would also be required to have an Environment Protection Licence regulated by the EPA. • The Department acknowledges that a number of submissions raised concerns about potential low frequency noise. The Department accepts the conclusion of the Sonus report, that the highest predicted low frequency noise level of 52 dB(C) is significantly under the 60 dB(C) level, above which the Bulletin requires further assessment. As such, the Department is satisfied that any low frequency noise impacts would be minor and acceptable.	

Findings	Recommended conditions
• The main criticisms provided in the L Huson & Associates review focus on the assessment of operational noise impacts, namely – Sonus' sound power level assumptions based on an unspecified nameplate and capacity, that noise predictions underestimate impacts and ignore possibility of tonality, reliance on the original South Australian 2009 noise guidelines, downplay of the potential health effects of infrasound and equipment used to determine background noise levels. • The Department acknowledges the concerns raised in the L Huson & Associates review. The Department considers that assessment against the South Australian 2009 noise guidelines is an acceptable approach, as per the Noise Bulletin. The Department considers the information provided by the Applicant 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 Department and the EPA consider that the operational noise impacts of the project can comply with the requirements of the Noise Bulletin and the Department has recommended conditions to this effect.	
Aboriginal heritage	
• The Applicant prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) accompanying the EIS and an updated the ACHAR during the Department's assessment of the project to include additional site surveys of land within the amended development corridor. • Eight sites were identified in the ACHAR comprising three isolated finds, four artefact scatters and one potential archaeological deposit (PAD). Most of the sites were of low overall significance, except for the PAD and two artefact scatters (Hills of Gold AFT 1 and AFT3). No other sites were recorded during survey of the amended development corridor.	• 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 identified for impact to suitable alternative locations in consultation with Aboriginal stakeholders. • Implement all reasonable and feasible measures to avoid and minimise harm to Aboriginal

Findings	Recommended conditions
• One of the eight sites would be located outside the proposed amended development corridor and would not be impacted. • Where sites cannot be avoided, the Applicant has committed to surface collection and relocation of items to suitable alternative locations. Salvage excavations would be conducted at sites of moderate significance where impact is unavoidable. Surface collected and salvage excavations would be undertaken in consultation Aboriginal stakeholders. • Subject to the implementation of recommended conditions, the Department considers the potential impacts on Aboriginal cultural heritage values would be appropriately managed. Any unexpected finds of potential heritage significance on site could be appropriately managed by an unexpected finds protocol.	heritage items located within the development corridor. • Undertake consultation with Aboriginal stakeholders prior to construction. • Prepare and implement a Heritage Management Plan in consultation with Heritage NSW and Aboriginal stakeholders, including procedures for unexpected finds and detailed photographic archival records.
Non-indigenous heritage	
• Tamworth Regional Council consider the project would cause impacts on the heritage character of Nundle village and community objections opposed the proposed impacts to items of local heritage value, including the Black Snake Gold Mine located on Crown Land. • The Applicant amended the proposed transport route for heavy vehicles requiring escort to avoid impacts to the Black Snake Gold Mine and Crown Land. • The turbine blade proposed transport route would traverse the rear of the Peel Inn property which is locally listed. Tamworth Regional Council expressed concern that the access route would need to remain for the life of the project and cause ongoing impacts on the heritage curtilage of the Peel Inn. • The Applicant has committed to remove and rehabilitate the access road through the Peel Inn curtilage at the conclusion of construction. This access road would need to be reinstated and rehabilitated as required during operation and decommissioning. • Tamworth Regional Council also expressed concerned about construction traffic causing vibration damage to buildings in Nundle village.	• Prepare and implement a Heritage Management Plan in consultation with Heritage NSW and Tamworth Regional Council, to the satisfaction of the Planning Secretary. • Prepare and implement a Traffic Management Plan with measures to rehabilitate the access road through the curtilage of the Peel Inn and reinstate and rehabilitate as required during operation and decommissioning.

Findings	Recommended conditions
• The Department notes that the proposed transport route for heavy vehicles through Nundle passes close locally listed heritage items St Peters Catholic Church and the Nundle Shire Offices (approximately 80 m and 20 m from the roadway respectively). The Department considers that impacts to St Peters Catholic Church are unlikely. As the Nundle Shire Offices are closer to the roadway, the Department has recommended conditions regarding road noise and vibration limits at the building. The Department also recommends the Applicant undertake pre and post construction dilapidation surveys of the building to monitor for potential impacts. • Although the TIA identified that proposed transport route through Muswellbrook would require the installation of hardstand in proximity to known burials at Kayuga Cemetery, works through the Muswellbrook Shire LGA would be undertaken as part of the upgrades to support the renewable energy zones by EnergyCo or other area of government. Subject to the implementation of recommended conditions, the Department considers the potential impacts on heritage values would be appropriately managed. Any unexpected finds of potential heritage significance on site could be appropriately managed by an unexpected finds protocol.	
Aviation safety	
• Multiple public submissions had concerns with the safe operation of aircraft in the vicinity of wind turbines, particularly the impediment to aerial firefighting capabilities. • To minimise the impacts on aerial operations within Ben Halls Gap Nature Reserve (to deploy baits for pest control or surveying) the Applicant is committed to further consult with NPWS aerial operators to develop procedures, which may include stopping the rotation of turbine blades prior to commencement of aircraft operations. • The Applicant will provide the location and height of wind turbines and monitoring masts to landowners to be shared with the aerial application pilots. This information will be provided on an ongoing basis through the construction phase. The Department has recommended a condition	• Notify the relevant aviation authorities of the final location and specifications of the wind turbines and any wind monitoring masts and reach agreement with Airservices regarding operating procedures at Scone Airport. • Install aviation hazard lighting in accordance with CASA's requirements. • Minimise the off-site lighting impacts of the project.

Findings	Recommended conditions
requiring the Applicant to compensate the difference in cost of aerial agricultural spraying for surrounding non-associated landowners, should this be attributed to the operation of the project. • The project is located 52 km east of Quirindi Airport and 52 km north of Scone Airport. • The EIS includes an aviation impact assessment (AIA), which concluded that the project would not adversely impact air safety subject to the implementation of mitigation measures and administrative controls. • Airservices Australia noted the project would require a permanent amendment to the operating procedures at Scone Airport. The Applicant has committed to reaching commercial agreements with AirServices Australia to amend flight procedures as required, and would consult with Scone Airport and aircraft operators should the project proceed. • The Applicant would install low intensity obstacle lighting (200 candela) on turbines in line with CASA requirements. • The top third of wind monitoring masts would also be painted in alternating contrasting bands of colours in accordance with the Manual of Standards for Part 139 of the *Civil Aviation Safety Regulations 1998* as per the request from the Department of Defence. • Prior to construction of any wind turbines or meteorological monitoring masks masts, the Applicant has committed to consultation with CASA, Airservices Australia and any relevant aerial agricultural or firefighting operators to communicate the final turbine coordinates and heights. • As requested by NPWS, the Department also recommends a condition requiring the Applicant to detail operational procedures in the event of a bushfire in its Emergency Plan. This would include measures such as shutting down turbines and positioning blades in a manner to minimise interference with aerial firefighting operations.	• Detail operational procedures in the event of a bushfire in an Emergency Plan. • Fund to the affected landowner the reasonable cost difference between pre-construction aerial spraying and the increased cost.

Findings	Recommended conditions
Bushfire safety	
• A number of public submissions had concerns regarding the impacts of the project on bushfire risk and management. • The project is on bushfire prone land on the Tamworth Regional Council bushfire prone land map. • To mitigate bushfire risk, the Applicant would prepare and implement a Bushfire Management Plan and Emergency Response Plan to manage the fire risk. Additionally, the Applicant has committed to: – maintaining a minimum 20 m asset protection zone (APZ) around the operation and maintenance (O&M) buildings, BESS, substation and switching station; – development and distribution of operational guidelines regarding water-bombing setbacks from wind turbines to fire authorities; and – provision of water supplies during construction for fire fighting. • To address the aerial firefighting concerns raised by NPWS, the Applicant has amended project's design and removed T41 to create a 1.2 km buffer along Ben Halls Gap Nature Reserve and T1 to create a 1.2 km buffer between the Crawney Pass National Park and the nearest turbine (now T2). The Applicant has committed to program all turbines to shut off, remaining in the "Y" position in the event of any emergency operations within the vicinity of the project. • RFS also expressed concern about the potential for any additional landscaping proposed for visual mitigation at dwellings to create a bushfire risk. The Department has recommended conditions requiring the Applicant to consider bushfire risk (including the provisions of *Planning for Bushfire Protection 2019*) when implementing visual mitigation. • The Department, NPWS, RFS and FRNSW are satisfied that the bushfire risks can be suitably managed through the implementation of standard fire management plans and procedures.	• Ensure compliance with relevant asset protection requirements in the RFS's *Planning for Bushfire Protection 2019* (or equivalent). • Ensure the site is suitably equipped to respond to fires on site, including the provision of a 20,000 litre water supply. • Prepare and implement a Bushfire Management Plan, and an Emergency Response Plan. • Landscape planting to be in accordance with *Planning for Bushfire Protection 2019*.

Findings	Recommended conditions
Electric and magnetic fields (EMF)	
• Several public submissions raised concerns regarding the potential health impacts of EMF. • Sources of EMF from the project include the substation, BESS, electrical equipment within the turbine and high voltage transmission lines. • The EIS assessment indicates that EMF levels would be significantly lower than the current internationally acceptable level for human health outlined in the *International Commission on Non-Iodizing Radiation Protection* guidelines. • The Department notes that EMF reduces rapidly with distance from its source. The Applicant has adopted the approach of prudent avoidance by incorporating significant setback distances in excess of 700 m between residential dwellings and project components that will generate EMF. • The Department is satisfied the project is unlikely to have any significant EMF related impacts.	• No specific conditions required.
Blade and ice throw	
• Several submissions raised concerns regarding the risk of blade throw (where a turbine blade falls off a tower) and ice throw to public safety. • The Applicant's risk assessment concluded that there was a very low likelihood of blade throw risk to off-site receivers and the proposed location of the operational facilities would be beyond the risk of impact from blade throw. • Similarly, the risk assessment concluded that with a maximum ice throw distance of 473 m, was less than the distance between a proposed turbine and the closest dwelling (which is associated with the project – AD 05). • The recommendation to remove turbines T53 – T63 including T57 which is 330 m from DAD 01 for visual amenity reasons as discussed in section 6.3 would also alleviate the risk of ice throw to DAD 01.	• No specific conditions required.

Findings	Recommended conditions
As such, the Department is satisfied the project is unlikely to pose significant blade or ice throw risk to the community.	
Waste	
• A number of public submissions raised concerns about contaminants from the wind turbines released into the environment (soil and water) and affecting humans health. The wind turbine blades generally comprise of composite materials such as epoxy resin and glass fibre, or carbon fibre, which are bonded together. To readily release these materials into the environment, wind turbines would need to be ground to a fine dust. Because of this, the Department considers that use of these materials in wind turbines would not pose a risk to the environment or adverse health effects in humans. • The project is not expected to generate large volumes of waste during the development. The Applicant has committed to the preparation of a Waste Management Plan that will detail measures to reduce waste generated by the project. • The Department has imposed a condition requiring the Applicant 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.	• Condition requiring waste be dealt with in accordance with the following hierarchy of: – avoid or reduce where possible; – re-use, recycle and recover; – treat or dispose of to a licenced facility.
Planning Agreements	
• The Applicant has committed to enter into a Voluntary Planning Agreement (VPA) with UHSC and VPA or Community Benefit Fund with TRC, to support the provision of social infrastructure in local and regional area.	• Applicant to enter into VPA with UHSC in accordance with the agreed terms which is up to $1.3 million (adjusted to CPI and based on Applicant's proposed turbines within local government area for 64 turbine layout).

Findings	Recommended conditions
• The offer made to both Councils was for a total contribution payable of 0.5% of CIV for community projects within 20 km of the project site and 1.0% of CIV for use in the broader region, for the portion of turbines within the relevant local government area over the operational life of development. • The Applicant and UHSC agreed (see Appendix H) on the contribution with annual payments for local community projects to commence from the start of construction and for the life of operation (32 years adjusted to CPI, and payments for regional projects would commence from the start of construction and for the life of operation (30 years) or an upfront payment of 33% of the regional payment and then balance over the life of the project (30 years) adjusted to CPI. • The Applicant made the offer to TRC (see Appendix H) revising previous offers made to the council and included annual payments for local community projects that would commence from the start of construction and for the life of operation (32 years) (adjusted annually to increases to CPI), and payments for regional projects would be an upfront payment of 25% of the regional payment and then balance paid annually commencing on the second anniversary of the commencement of construction over the life of the project (32 years including 2 years of decommissioning) (adjusted annually to increases to CPI). • TRC advised (see Appendix H) that it: – accepted the offer of the total of 1.5% of CIV; – did not accept the terms of the payment including 25% upfront payment; – requested that the upfront payment be 50% but would be prepared to negotiate an upfront payment in the range between 25-50%; – accepted that the balance of payments would be made annually over 32 years of operation; including the construction period; – did not accept the proposal that funds be administered by community committees; – requested the fund be administered through Council;	• Applicant to enter into an agreement with TRC in accordance with the offer made by Applicant which is up to $9.5 million (adjusted to CPI based on Applicant's proposed turbines within local government area for 64 turbine layout) or if unable to reach an agreement then a contribution of $6.3 million would be made by the Applicant.

Findings	Recommended conditions
– expressed an openness to the management of the funds by a third-party Community Benefit Fund provider in accordance with council's adopted policy • TRC 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 a total contribution of approximately $6.3 million (as a prorata rate for the 53 of 64 turbines located in the TRC local government area). The TRC contributions plans does not include any formula or provisions for local government area cross boundary apportionment of contributions. • 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 VPA offered by the Applicant is not accepted by TRC and therefore unable to be executed, it is reasonable to include a condition that the Applicant make a monetary contribution to TRC of $6.3 million (rate for 53 turbines in TRC area of the 64 proposed) to be recalculated prorata for the number of approved turbines within the local government area, for infrastructure, services and community projects in towns, villages and rural areas within the Tamworth LGA including Nundle and Hanging Rock prior to the commencement of construction. • In consideration of TRC's contributions plan, *section 94A (Indirect) Development Contributions Plan 2013,* 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;	

Findings	Recommended conditions
– the capital investment value of $826 million for the original 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 $6.3 million, based on the Applicant's calculation of the CIV for the turbines to be located in the TRC LGA; – the Applicant has offered a total contribution of $11.6 million across both local government areas; – the Applicant has divided the total $11.6 million between TRC and UHSC based on the number of turbines proposed in the respective area; 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	
• The project would create social benefits in the local community through job creation and economic opportunities. Nevertheless, potential negative impacts include increased pressure on local services and facilities affecting the social dynamics of the community. • Of the submissions lodged during the public exhibition of the project, 58% of submitters within 10 km of the project supported the project and 42% objected to the project. • The main social impacts raised by objectors relate to community division, decline in property values, loss of amenity, impacts to tourism and human health. Supporters of the project highlighted the economic benefits to local business and job opportunities. • Several public submissions were concerned the project would adversely impact property values.	• 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.

Findings	Recommended conditions
• The Department notes that property values are influenced by a number of factors, that the project is permissible with consent under applicable planning instruments, and with the Department's recommended removal of turbines, the project would align with applicable amenity goals established by the NSW Government for wind farm developments. • The Department also notes a study commissioned in 2016 by OEH (now BCS) in 2016 regarding the impact of wind farm developments in NSW concluded that wind farms are unlikely to have a measurable negative impact on surrounding land values in rural areas. • Accordingly, the Department considers that the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm. • The Department has considered the potential for the project to impact tourism in the village of Nundle and would be related mainly to visual and traffic impacts. • As discussed in section 6.3.3, the Department considers that while the project would be visually apparent and could become a major element in the landscape, it would not dominate the views from the village of Nundle located more than 8 km north west of the turbines. Consequently, the Department considers that potential visual impacts would have limited impacts on tourism. • The potential for traffic impacts would occur predominantly during the construction period (approximately 24 months) and would be managed through a Traffic Management Plan and the recommended conditions limiting transport routes and to provide road upgrades. • Consequently, the Department considers that with these measures the potential visual and traffic impacts would not have a significant impact on tourism in the locality. • The Applicant has proposed to enter into a VPA or similar with TRC and UHSC for up to $11.6 million (adjusted to CPI and based on Applicant's proposed turbines within local government area for 64 turbine layout).	

Findings	Recommended conditions
Radiocommunications	
• Electromagnetic signals transmitted from telecommunication systems (such as radio transmitters, television, mobile phones) are most efficient where a clear line of sight exists between the transmitting and receiving locations. Wind farms and other tall obstacles have the potential to cause interference with these links. • NPWS raised concerns regarding potential electromagnetic interference on radio communications. • The Applicants electromagnetic interference (EMI) assessment noted that one radio link operated by NPWS, and other emergency services could experience some interference. To address this, the Applicant has committed to conduct a pre-construction assessment to establish the baseline reception strength of this link to implement measures to reduce impacts if required. • The NSW Telco Authority advised that the project would not interfere with the transmission network of the Public Safety Network (PSN) which provides critical, secure and reliable radio communications to frontline responders. • The EMI assessment concluded that the project is unlikely to impact all other telecommunication links with the exception of one radio link that services a dwelling associated with the project. • With the commitments from the Applicant to rectify impacts to NPWS communications, the Department is satisfied that the project is unlikely to cause unacceptable impacts on radiocommunications.	• If the project disrupts any radio communications services, the Applicant 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.
Air quality	
• Some public submissions raised concerns regarding impacts to air quality during construction of the project and vehicle emissions from construction traffic.	• Road upgrades and sealing prior to use by heavy vehicles. • Ensure off-site dust and fume impacts are minimised.

Findings	Recommended conditions
• The Applicant has committed to a number of mitigation measures to manage any potential air quality impacts, including dust suppression and inspections and maintenance of vehicles to ensure operational efficiency. • 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.	• Ensure surface disturbance of the site is minimised.
Subdivision	
• Subdivisions will be required for two parcels of land, for the switching yard located on Lot 64 DP 751023 and the substation and BESS located on Lot 3 DP1103716. • The new lots created by the subdivision would be transferred to Transgrid (or another network operator) at their request. The subdivision will create new lots that would not meet the minimum lot size for land use zoned RU1 – Primary Production and are therefore prohibited under a strict reading of the *Liverpool Plains LEP* (200 ha). • Notwithstanding, development consent for the project as a whole can be granted despite the subdivision of the application being prohibited by the LEP (under section 4.38(3) of the EP&A Act). • The Department considers that the subdivision be approved as part of the project as the subdivisions are: – necessary for the ongoing operation of the wind far as they are required for the transfer of the substation to Transgrid; – would not result in the addition of any dwelling entitlements on the subdivided land; – consistent with the key objectives of the RU1 zone as it would encourage diversity in primary industry enterprises and minimise conflict between land uses; – 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;	• Subdivide the proposed lots in accordance with the requirements of the EP&A Act, EP&A Regulation, *Conveyancing Act 1919* (NSW) and the NSW Land Registration Services (or its successor).

Findings	Recommended conditions
– the long term leases would be administrative in nature and does not result in any additional environmental impacts. • The Department is satisfied that the proposed subdivisions are in the public interest, as they would allow the wind farm to be development and consequently provide net benefits to the National Electricity Market that can be realised in a timely manner.	
Decommissioning and rehabilitation	
• A number of public submissions raised concerns about the possibility the project could become a stranded asset with insufficient funds to pay for decommissioning and rehabilitation. • Although Upper Hunter Shire Council comment on the potential for bonds for decommissioning, the Department does not consider these are required. • 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. • 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.	• Decommission wind turbines (and associated infrastructure) within 18 months of the cessation of operations; • Rehabilitate the site, and minimise the total disturbance area exposed at any time; and • 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

229. The Department has assessed the development application, EIS and supporting documents prepared by the Applicant, submissions from councils and advice from government agencies, public submissions and considered the relevant objections of section 4.15 of the EP&A Act.

230. The project is located in the New England region of NSW and 15 km south west of the New England Renewable Energy Zone.

231. The wind farm development is a suitable land use for the site as it has good wind resources and access to the existing electricity network.

232. The project has been designed or amended through the assessment process in response to the Department's concerns, including removing six turbines and removing the haulage road transport option on the Devils Elbow in response to concerns from the community, the objection from Tamworth Regional Council and concerns raised by BCD and NPWS.

233. The Department acknowledges that the assessment process has been protracted and very difficult due to inherent site constraints, substantial community opposition, major amendments to the project requiring additional exhibition, and delays in information being provided by Applicant. The nature of the key issues for this project for biodiversity, visual impacts and traffic and transport also required substantial effort to resolve.

234. Following concerns raised by the Department regarding the visual impacts, the Applicant secured neighbour agreements with nine additional landowners following exhibition of the EIS. With the Department's recommendation to delete an additional 15 turbines, the Department considers 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.

235. Subject to the removal of two additional turbines (and one also recommended for removal due to visual impact, reducing the total number of turbines by 17), the Department considers the project 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.

236. The Department considered the submissions made through the exhibition of the project and the issues raised by the community and agencies during consultation. These matters have been addressed through changes to the project and the recommended conditions of consent, including substantially reducing the number of non-associated receivers in close proximity to

the project and the deletion of additional turbines. Overall, the Department recommends limiting the development to no more than 47 turbines.

237. While local communities would experience disruptions, particularly during the two years of construction with increased heavy vehicle movements and construction noise, and the 47 turbine layout would alter the visual landscape from several viewpoints, 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.

238. 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 282 MW, this is enough to power approximately 150,000 homes, and 100 MW of dispatchable energy storage to the grid when most required.

239. 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 adjacent to two REZs where infrastructure in the region would be supported by NSW Government and 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.

240. Furthermore, the project would provide flow on benefits to the local community, including around 200 construction and 28 operational jobs, and up to $11.6 million (plus CPI) in total contributions to Tamworth Regional Council and Upper Hunter Shire Council (plus CPI a) to through voluntary planning agreements for community enhancement projects. There would be broader benefits to the State through an injection of $X million in capital investment into the NSW economy.

241. 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 G).

242. This assessment is hereby presented to the Independent Planning Commission for determination.

Prepared by:

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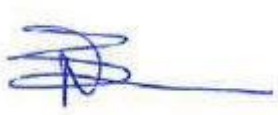
Recommended by:

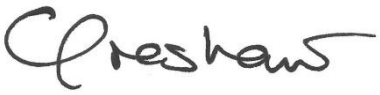


12/12/2023

Nicole Brewer

Director

Energy Assessments



12/12/2023

Clay Preshaw

Executive Director

Energy, Resources and Industry Assessments

Appendices

Appendix A – Summary of key amendments to the project

Since lodgement, some key aspects of the project have been amended by the Applicant in response to public submissions, agency advice and at the request of the Department via an amendment report.

A summary of the key amendments is provided in Table 18 below.

Table 18 | Key amendments by Applicant

Aspect	Original project in EIS	Amended project	Difference
Generation capacity	420 MW	384 MW	- 36 MW
Development footprint	513 ha	447 ha	- 66 ha
Wind turbine layout	70 turbines	64 turbines	- 6 turbines
Biodiversity impacts: Native vegetation: Box Gum Woodland:	 207.7 ha 13.33 ha	 190.54 ha 8.15 ha	 - 17.16 ha - 5.18 ha
Site access	Morrisons Gap Road and Head of Peel Road.	Head of Peel Road removed. Three additional site access options proposed via Crawney Road (Options A, B and C).	Site access amended in response to feedback from TRC and Crown Lands.
Transport route	Port of Newcastle to Nundle via Muswellbrook. Barry Road and Morrisons Gap Road (including Devils Elbow bypass) and Heed of Peel Road.	Additional transport options through Muswellbrook. Removal of Devils Elbow bypass and Head of Peel Road access route for oversize vehicles.	Transport route amended in response to feedback from Councils.

A summary of the project aspects as recommended by the Department is provided in Table 19 below.

Table 19 | Key amendments proposed by the Department

Aspect	Original project in EIS	Amended project	Department's recommendation	Difference
Generation capacity	420 MW	384 MW	282 MW	- 102 MW
Wind turbine layout	70 turbines	64 turbines	47 turbines	- 17 turbines
Biodiversity impacts: Native vegetation: Box Gum Woodland:	 207.7 ha 13.33 ha	 190.54 ha 8.15 ha	 183.56 ha 8.15 ha	 - 6.98 ha
Site access	Morrisons Gap Rd and Head of Peel Road	3 options at Crawney Rd (A, B, C) and Morrisons Gap Rd	1 option at Crawney Rd (Option B) and Morrisons Gap Rd	Optionality at Crawney Road restricted
Transport route	Port of Newcastle to Nundle via Muswellbrook. Barry Road and Morrisons Gap Road (including Devils Elbow bypass) and Head of Peel Road.	Devils Elbow bypass and Head of Peel Road removed Crawney Road added 4 Routes with suboptions for blades through Nundle (1a and 1b)	Restrict blades to route Option 1a through Nundle Restrict standard loads to Route 4 Adhere to Energy Co routes to greatest extent possible	Optionality through Muswellbrook and Nundle restricted

Appendix B – Environmental Impact Statement

Appendix C – Submissions and government agency advice

Appendix D – Submissions Report

Appendix E – Amendment Reports

Appendix F – Additional Information

Appendix G – Recommended Development Consent

Appendices A to G available at: Hills of Gold Wind Farm | Planning Portal - Department of Planning and Environment (nsw.gov.au)

Appendix H – Advice from councils and Applicant regarding Voluntary Planning Agreement

Appendix I – 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 20** below.

Table 20 | Objects of the EP&A Act and how they have been considered

Summary
Objects of the EP&A Act
The objects of most relevance to the Consent Authority's decision on whether to approve the project are found in section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department considers the project encourages the proper development of natural resources (Object 1.3(a) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project: • is a 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. 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. In addition, the Department considers that appropriately designed SSD wind development, in itself, is consistent with many of the principles of ESD. The Applicant has also considered the project against the principles of ESD. As such, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD.

Summary
Consideration of environmental protection (Object 1.3(e)) is provided in section 6 of this report. The Department considers that the project is able to be undertaken in a manner that would at least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department 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 Tamworth Regional Council objects to the project.
Environmental Planning Instruments (EPIs)
The Tamworth, Upper Hunter and Liverpool Plains LEPs apply and are discussed in sections 4.3 and 6.6 of this report, particularly regarding permissibility and land use zoning. As discussed in section 4.3 of this report, electricity generating works are permitted with consent within the relevant land use zoning. Since 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* (Hazards SEPP). 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 been used for predominately agricultural uses, the Department considers the site would be suitable for the proposed development.

Summary

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 also engaged with the Siding Springs Observatory Director, as the project is situated on land within 200 km of the observatory.

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, the Primary Production and Rural Development 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. While the location of State significant agricultural land has not been finalised, the Department has considered all of these matters in section 6.6 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). Tamworth Regional Council and Muswellbrook Shire Council maintain their objections to the project. While the Applicant has attempted to resolve these issues in its second Amendment Report, the Department has recommended additional restrictions, including the removal of transport route options and the deletion of turbines. The Department has also developed conditions of consent to address the recommendations and advice of public authorities consulted for the project including 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 6.6).

The Department has considered the *State Environmental Planning Policy (Koala Habitat Protection) 2021* (Koala SEPP). Whilst the Liverpool Plains, Tamworth Regional and Upper Hunter Shire 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 6.5 of this report.

Appendix J – Consideration of community views

The Department exhibited the EIS for the project from 2 December until 29 January 2021 (59 days) and the second Amendment Report between 16 November 2022 until 13 December 2022 and received 592 unique submissions (201 support, 382 object, 3 comment) for the EIS and 425 unique submissions (144 support, 280 object, 1 comment) on the second Amendment Report.

The Department 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 impacts to amenity, biodiversity, water quality, transport and site suitability with the project being adjacent to Ben Halls Gap Nature Reserve.

Other issues are addressed in detail in the Department's Assessment Report.

Issue	Consideration
Visual impacts • impacts on the surrounding landscape and dwellings • shadow flicker and night lighting	**Assessment** • Concerns about visual impacts, were raised in over 300 public submissions, particularly regarding the size and scale of the wind farm in the landscape. • The Department considers that the landscape and scenic performance measure could only be achieved through deletion of turbines T9-T11, T24 and T53-T63. The Department has recommended the deletion of these turbines in addition to vegetation screening to minimise the residual impacts associated with remaining turbines. • A number of residences located within 4.55 km of a proposed turbine may have some views of turbines and the Department considers these impacts could be sufficiently mitigated through the provision of visual impact mitigation measures (such as landscaping and visual screening). • The Department considers that subject to the implementation of visual mitigation measures, including visual screening, the residual visual impacts of the project would be acceptable. **Recommended conditions** • 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. • Painting 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. • Ensure that shadow flicker from turbines do not exceed 30 hours per annum at any non-associated dwelling.
Noise impacts • Construction & operational noise • Traffic noise	**Assessment** • Community submissions objecting to the project raised concerns about construction, traffic and operational noise impacts. The HOGPI special interest

Issue	Consideration
• Vibration from blasting • Low frequency and infrasound	group commissioned L Huson & Associates to peer review (see Appendix L) the Applicant's noise impact assessments (NIA) prepared by Sonus in the EIS. • Although the NIA predicts seven non-associated receivers would be noise affected but well below the highly noise affected criteria. construction works can be managed in accordance with requirements outlined in the Interim Construction Noise Guideline (DECC, 2009) and the Department recommends restricting construction works to standard construction hours. • All dwellings identified within 20 m of a local road were found to comply with the 60 dB(A) criteria for existing residences along a sub-arterial road under worst case hourly traffic noise level and the Applicant has committed to implement all reasonable and feasible noise mitigation measures to minimise road traffic noise, including scheduling of vehicles and consultation with any residents who raise concerns about traffic noise to identify other possible noise mitigation measures. • The Applicant has committed to implementing a monitoring regime to ensure compliance with *the Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990). • Although the Applicant's NIA predicts that five non-associated receivers would not comply with relevant operational environmental noise criteria, it has committed to curtailment regime to operate selected turbines in a noise reduced mode at wind speeds above 8m/s. The noise levels are expected to comply with the adopted criteria at all non-associated receivers with implementation of the curtailment regime at four of the five receivers. • For one receiver, it would not be possible to employ mitigation or curtailment and the Department recommended deletion of turbines T53-T61. • The operation of all other associated infrastructure, including the substation, would comply with the 35dB(A) criteria established by the Noise Bulletin. • The project will require an Environment Protection Licence administered by the EPA to operate. • Both the Department and the EPA consider that the operational noise impacts of the project can comply with the requirements of the Noise Bulletin and the Department has recommended conditions to this effect. **Recommended conditions** • Restrict construction to standard construction hours (i.e. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday). • Construction outside of standard construction hours subject to approval from the Planning Secretary on a case-by-case or activity specific basis.

Issue	Consideration
	• Limit blasting on site to between 9 am and 5 pm. • Verify through noise monitoring that the noise generated by the operation of the wind farm does not exceed 35 dB(A) or the existing background noise level (LA90 (10-minute)) plus 5 dB(A) for each integer wind speed.
Biodiversity • Ben Halls Gap Nature Reserve and Crawney Pass National Park • adequacy of the BDAR and survey effort • omission of certain threatened species • bird and bat strike • illegal land clearing	**Assessment** • The project has the potential to impact biodiversity values during construction through native vegetation clearing and direct and indirect impacts to listed threatened flora and fauna species and communities, and through bird and bat strike during operation of the wind turbines. • Approximately 45% of the construction footprint comprises native vegetation in a landscape characterised by large patches of remnant native vegetation in an otherwise predominantly agricultural land use setting. • The Department is aware that land clearing has occurred on the project site without prior approval and a Biodiversity Conservation Order has been issued for these areas. The Department notes that these cleared areas have been included in the calculation of the offset credit liability for the project. • The Department is of the view that the removal of turbines 24, 28 and 42 is an appropriate response to the biodiversity constraints identified in the locality, would reduce the native vegetation clearance from 206.7 ha down to 183.60 ha, reduce the impact to identified EECs and reduce the avifauna strike risk. • The project as recommended (47 turbines) and including road upgrades, would disturb around 183.60 ha of native vegetation. The disturbance area includes clearing of up to 8.15 ha of White Box – Yellow Box – Blakely's Red Gum Woodland (Box-Gum Woodland) and Derived Native Grassland (DNG) listed as Critically Endangered Ecological Community (CEEC) under the BC Act and EPBC Act. • Overall, the Department considers that the biodiversity impacts of the project would not be significant, subject to the additional removal of turbines 24, 28 and 42, the implementation of the recommended conditions, and by offsetting the residual biodiversity impacts of the project. **Recommended conditions** • 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:

Issue	Consideration
	– 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 including a curtailment strategy in consultation with BCS. • Retire the applicable biodiversity offset credits in accordance with the NSW Offsets Policy prior to carrying out any development that would directly or indirectly impact biodiversity values requiring offset.
Water and Soils • Water Quality • Soils, erosion and stability	**Assessment** • Many public submissions raised concerns about the high erosion and landslip potential of the site, disturbance to steep sloped areas such as the transverse track and the unacceptable risk to water quality as the site is located on the headwaters of the Peel River, Hunter and Manning water catchment areas. • The Applicant has committed to a range of mitigation measures to address potential soil and water impacts, including the preparation of an Erosion and Sediment Control Plan. The Applicant has committed to implementing mitigation measures which are commensurate with the erosion risk across the site. • Based on the findings of the EIS, community submissions as well as independent advice from PSM, the Department considers the implementation of best practice control measures can adequately manage the risks. • 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.* **Recommended conditions** • Comply with section 120 of the *Protection of the Environment Operations Act 1997.* • Minimise erosion and control sediment generation. • Undertake activities in accordance with applicable guidelines including OEH's Managing Urban Stormwater: Soils and Construction Volumes 1 and 2C, and DPE's Water Guidelines for Controlled Activities on Waterfront Land. • Prepare and implement a Soil and Water Management Plan.

Issue	Consideration
Transport	**Assessment** • Over 300 public submissions raised concerns regarding traffic and transport. • The project would generate up to 78 light vehicle and 63 heavy vehicle movements per day during the peak construction period. • A maximum of six heavy vehicles requiring escort are expected to access the site per day over a nine month period, once turbine foundations are established and installations commence. The Applicant has committed to schedule these deliveries outside of peak commuting hours and the Department has recommended conditions to this effect. • The Department considers the proposed transport routes could be appropriately upgraded to facilitate the transportation of large turbine components to the site, noting that the final road upgrade works would be subject to detailed design and approval of the road asset manager and/or relevant road authority prior to the implementation of these works. **Recommended conditions** • Undertake dilapidation surveys of the relevant local roads and repair any damage resulting from project traffic. • Not use Option 1b (Nundle Loop) transport routes for blades / loads over 5.2 m through Nundle. • Not use transport route 3 for loads over 5.2 m. • Not use option A or C for site access via Crawney Road. • Undertake all necessary road upgrades to the satisfaction of the road asset manager and/or the relevant roads authority prior to the use of roads for deliveries from heavy and heavy vehicles requiring escort vehicles. • Prepare a Traffic Management Plan in consultation with the road asset manager and relevant roads authority.
Site suitability	**Assessment** • The balance of the site is zoned RU3 Forestry (Ben Halls Gap State Forest, the development within this zone is limited to an internal access road) and C2 Environmental Conservation (Crawney Road access) under the Tamworth Regional LEP, RU1 Primary Production under the Upper Hunter LEP 2013 (Upper Hunter LEP) and the Liverpool Range LEP 2011 (Liverpool Range LEP). • Although the Infrastructure SEPP does not permit, and the Tamworth Regional LEP prohibits electricity generating works on land zoned C2, section 4.38(3) of the EP&A Act enables development consent for State significant development to be

Issue	Consideration
	granted despite the partial prohibition. Consequently, the project is permissible with development consent. • Although the project is not located within a Renewable Energy Zone, wind farm development is a suitable land use for the site as it has good wind resources and access to the electrical grid with available network capacity. **Recommended conditions** • Decommission wind turbines (and associated infrastructure) within 18 months of the cessation of operations. • 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.
Hazards • aerial firefighting	**Assessment** • Multiple public submissions had concerns with the safe operation of aircraft in the vicinity of wind turbines, particularly the impediment to aerial firefighting capabilities. • The project is located 52 km east of Quirindi Airport and 52 km north of Scone Airport. • The EIS includes an aviation impact assessment, which concluded that the project would not adversely impact air safety subject to the implementation of mitigation measures and administrative controls. • Airservices Australia noted the project would require a permanent amendment to the operating procedures at Scone Airport. The Applicant has committed to reaching commercial agreements with AirServices Australia to amend flight procedures as required, and would consult with Scone Airport and aircraft operators should the project proceed. **Recommended conditions** • Notify the relevant aviation authorities of the final location and specifications of the wind turbines and any wind monitoring masts. • Install aviation hazard lighting in accordance with CASA's requirements. • Minimise the off-site lighting impacts of the project. • Detail operational procedures in the event of a bushfire in an Emergency Plan.

Issue	Consideration
Socio-economic • property devaluation • lack of local benefit • impacts to tourism • cost of rehabilitation and decommissioning	**Assessment** • The project would create social benefits in the local community through job creation and economic opportunities. Nevertheless, potential negative impacts include increased pressure on local services and facilities affecting the social dynamics of the community. • The Department considers that the project would not result in any significant or widespread reduction in land values in the areas surrounding the wind farm as the project is permissible with consent under applicable planning instruments, and with the Department's recommended removal of turbines, the project would align with applicable amenity goals established by the NSW Government for wind farm developments. • While the project would be visually apparent and could become a major element in the landscape, it would not dominate the views from the village of Nundle located more than 8 km north west of the turbines. Consequently, the Department considers that potential visual impacts would have limited impacts on tourism. • The potential for traffic impacts is predominantly during construction and would be managed through a Traffic Management Plan and the recommended conditions limiting transport routes and to provide road upgrades. • Consequently, the Department considers that with these measures the potential visual and traffic impacts would not have a significant impact on tourism in the locality. • The Applicant has committed to enter into a Voluntary Planning Agreement (VPA) with TRC and UHSC, to support the provision of social infrastructure via a community benefit fund. The total contribution payable is 0.5% of CIV for community projects within 20 km of the project site and 1.0% of CIV for use in the broader region, within the relevant local government area over the operational life of development. **Recommended conditions** • 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 K – Assessment of Matters of National Environmental Significance

In accordance with the bilateral agreement with the Commonwealth, the Department provides the following additional information required by the Commonwealth Minister, in deciding whether to approve a development under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the Hills of Gold Wind Farm Environmental Impact Statement (EIS), Submissions Report, Amendment Reports (dated January 2022 and November 2022), revised Biodiversity Development Assessment Report (BDAR) and additional information provided during the assessment process, public submissions and advice provided by the Department's Biodiversity Conservation Directorate (BCS) other NSW government agencies and the DCCEEW.

This Appendix is supplementary to, and should be read in conjunction with, the assessment included in section 6.5 of this assessment report which includes the Department's 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 2019/8535) (Referral Decision) was based on likely or potential significant impacts on one threatened ecological community (TEC), three threatened fauna species and one migratory species.

The revised BDAR for the project identified and addressed all the listed threatened species and communities and migratory species included in the Referral Decision, and considered potential impacts on additional species with predicted or known habitat within the proposal study area and identified in section 8.8 of the revised BDAR.

No other species or communities under the controlling provisions were considered to occur in the project area.

Assessments of significance were undertaken for the threatened species and communities and migratory species that were identified as having a moderate or higher potential to occur on the site, including four threatened flora species and seven threatened fauna species.

DCCEEW determined that other matters under the EPBC Act are not controlling provisions with respect to the controlled action. These include listed World Heritage, National Heritage, Ramsar wetlands, Commonwealth marine environment, Commonwealth land, Commonwealth action, nuclear action, Great Barrier Reef Marine Park, Commonwealth Heritage places, overseas and a water resource, in relation to coal seam gas development and large coal mining development.

The Applicant 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 8 and Appendix G of the revised Biodiversity Development Assessment Report.

Impact on EPBC Listed Species and Communities

Impacts on threatened ecological communities

The Applicant assessed the potential impacts on all EPBC Act listed threatened ecological communities (TECs) with predicted or known habitat within the proposal study area, including:

- Three TECs identified in the Referral Decision – White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered (Box Gum Woodland), New England Peppermint Eucalyptus nova-anglica Grassy Woodlands – Critically Endangered and Lowland Rainforest of Subtropical Australia – Critically Endangered.

The Applicant concluded that the project is unlikely to have a significant impact on Box Gum Woodland, while assessment was not required for the two other TECs listed under the Referral Decision as they were not recorded during field surveys. The Applicant proposes to offset impacts to Box Gum Woodland via the ecosystem credit requirements detailed in section 6.5.2 of this report.

The revised BDAR (section 8.8) provides the Applicant's detailed assessment of significance for Box Gum Woodland, including consideration of the relevant Commonwealth guidelines and policy statements and recovery plans.

While BCS has advised that it considers that the project is likely to have a significant impact on Box Gum Woodland community but would be appropriately offset via the ecosystem credit requirements detailed in section 6.5.7.

As discussed in section 6.5.2 of this report, Box Gum Woodland is also identified as is a Serious and Irreversible Impact (SAII) entity under the BC Act and assessment against four SAII principles is required. BCS considers that the project is not considered likely to reduce the extent of the Box Gum Woodland Critically Endangered Ecological Community (CEEC) at the national, bioregional or local scales, and the project will not lead to a reduction in the geographic distribution of Box Gum Woodland.

Impacts on threatened flora species

The Department and BCS have considered the potential impacts on all EPBC Act listed flora species with predicted or known habitat within the proposal study area, including the 17 flora species identified in the Referral Decision. As detailed in section 6.1 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

The Department and BCS 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, five species were the subject of significance assessments conducted by the Applicant, as detailed in section 6.1 and section 8.8 of the revised BDAR. The species assessed included:

- Endangered – Booroolong Frog (*Litoria booroolongensis*) and Spotted-tailed Quoll (*Dasyurus maculatus*) (SE mainland population); and
- Vulnerable –Koala (*Phascolarctos cinereus*), Large-eared Pied Bat (*Chalinolobus dwyeri*) and Greater Glider (*Petauroides volans*).

Additionally, advice from DCCEEW also considers that significant impacts are likely for the following species:

- Regent Honeyeater (*Anthochaera Phrygia*) – critically endangered; and
- Swift Parrot (*Lathamus discolor*) – critically endangered.

section 8.8 of the BDAR includes detailed assessments of significance for these species, including the area of potentially impacted habitat and consideration of the relevant Commonwealth conservation advice. The revised BDAR concluded that the project was unlikely to have a significant impact on the Booroolong Frog, Large-eared Pied Bat or the Greater Glider.

The revised BDAR concluded that there was potential for significant impacts to the Koala and the Spotted-tailed Quoll. Advice from BCS considered that while the project would reduce the availability of resources within the locality for these species and that the removal of existing habitat within the development footprint are also to largely fragmented patches located within a matrix of agricultural land. There are no large, intact areas of habitat for either species proposed to be impacted and the project would not cause any permanent barriers to movement within or through the development footprint. The proposed impacts also occur on the edge of an extensive reserve system (greater than 30,000 hectares) and that it is unlikely the overall size of the existing populations will diminish because of the works.

The revised BDAR completed an assessment of the likelihood of impacts to the Regent Honeyeater and the Swift Parrot. The assessment concluded that as neither species were recorded during survey at the site and the removal of potential foraging habitat was not identified as important for either species. As such, the risk of impact was considered to be low and significance assessments were not included in the revised BDAR. BCS noted that while the impact area is outside areas mapped by the Department as Important Areas for both species, any loss of habitat for these critically endangered species is considered significant.

The Department considers that with the recommended conditions, including the requirement to further avoid and minimise impacts during micro-siting and detailed design, and to prepare and

implement a Bird and Bat Adaptive Monitoring Program (see section 6.5 of this assessment report), the potential impacts on these species would be appropriately minimised and managed

BCS and the Department consider that all threatened species likely to be impacted have been assessed adequately under the BAM and an offset obligation has been calculated as per **section 6.5.7** of this report.

Impacts on migratory species

Two EPBC Act listed migratory species were considered to potentially occur within the project area, both of which were listed in the Referral Decision.

The Applicant did not complete assessment of significance for either of these species being the Fork-tailed Swift (*Apus pacificus*) and White-throated Needletail (*Hirundapus caudacutus*), as it was considered that the removal of potential foraging habitat is negligible compared to the potential foraging habitat available to these species within the vicinity of the project.

BCS considers that while the White-throated Needletail was not recorded on site, there is potential for the species to occur within the locality and to interact with the rotor swept area and recommended that it be assumed that a significant impact is possible. The Department considers that with the recommended conditions, including the requirement to further avoid and minimise impacts during micro-siting and detailed design, and to prepare and implement a Bird and Bat Adaptive Monitoring Program (see section 6.6 of this assessment report), the potential impacts on these species would be appropriately minimised and managed.

The Applicant has confirmed that all other migratory species with potential to occur in locality are not present within the development corridor and would not be impacted by the project (see Table 51 of the revised BDAR).

Conservation Advice, Recovery Plans and Threat Abatement Plans

The Department has considered the conservation advice, recovery plans and threat abatement plans, where relevant to each species and community.

Conservation Advice

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 the Applicant 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 and ensure the restrictions on clearing are met;
- 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;
- rehabilitating and revegetating temporary disturbance areas;
- protecting native vegetation and key fauna habitat outside the approved disturbance area;
- maximising the salvage of resources within the approved disturbance area – including vegetative and soil resources – for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
- collecting and propagating seed (where relevant);
- controlling weeds and feral pests;
- controlling erosion;
- bushfire management; and
- a detailed program to monitor and report on the effectiveness of these measures.

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

In addition, the Applicant 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 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 the Swift Parrot and Koala populations and achieving a demonstrable sustained improvement in the quality and quantity of habitat;
- reversing the long-term population trend of decline and increase the number of Regent Honeyeaters to a level where there is a viable, wild breeding population even in poor breeding years;

- enhancing the condition of Regent Honeyeater habitat to maximise survival and reproductive success and provide refugia during periods of extreme environmental fluctuation; 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 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.

All section, table, figure and appendix references in this document (below) refer to sections, tables, figures and appendices in the Biodiversity Development Assessment Report (BDAR) dated 25 May 2023 and the Bilateral Assessment is based on the most recently exhibited Biodiversity Development Assessment Report (BDAR) (dated 25 May 2023).

Background and Description of Action

Does the EIS/BDAR[1]:

☒ 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

☒ depict stages and timing of the action that may impact on MNES

☒ 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

Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements:

The bilateral assessment for this project relates to the construction of a wind farm comprising:

- up to 64 wind turbines (WTGs);
- associated infrastructure including:

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

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

- an electrical substation
- a battery storage system
- aboveground and underground 33 kV electrical reticulation and fibre optic cabling connecting the WTGs to the onsite substation
- temporary elements such as:
    - site offices, car parking and amenities for the construction workforce;
    - two temporary concrete batching plants;
    - rock crushing facilities;
    - earthworks, including cut and fill, for constructing access roads, WTG platforms and foundations;
    - up to eight additional hardstand laydown areas;
    - potential expansion of an existing quarry;

- a 330kV high-voltage overhead transmission line to connect the onsite substation to the existing 330 kV TransGrid Liddell to Tamworth overhead transmission line network
- an internal private access road network (up to a combined total length of approximately 40 km); and
- minor upgrades to the highway and local road network to facilitate haulage of the turbine components from Port of Newcastle to the wind farm site.

The Biodiversity Development Assessment Report (BDAR), dated 10 November 2020, initially formed Appendix D of the Environmental Impact Statement (EIS) for the project. The BDAR was subsequently updated several times, the current version is labelled Appendix F (of which there are eight volumes) and dated 25 May 2023. All references to the 'BDAR' in this assessment refer to the current version.

The proposed project will be staged (section 1.6 of the BDAR). The proponent is proposing a staged construction to ensure ongoing avoidance and minimisation of impact can be achieved as the detailed design of the project progresses, as well as staged retirement of biodiversity credit liabilities. Under the BC Act, consent to a staged development application provides for a corresponding staged retirement of biodiversity credits before each stage of development is carried out. Credits relating to MNES entities are included in each stage. The project is proposed to be staged as follows:

Scope of Work	Description
Haulage and External Route Upgrades	Required public road upgrades associated with bringing in materials and commencing construction on site.
Construction Compound and Internal Roads, Turbine Hardstands and Foundations	Establishment of construction facility and temporary laydown areas and commencement of internal road upgrades. This may be further broken up in stages by area of the project.
Ancillary Infrastructure	Substation, batching plant, O&M Facility and temporary laydown areas.
Transmission Line	External Transmission line construction.
Switching Station	This is located 20km from the wind farm Project Site and may be staged separately.

A detailed staging plan will be based on final turbine and balance of plant contractor selected and associated construction plan preferences.

The location of Matters of National Environmental Significance (MNES) in relation to the development footprint are provided in Figure 9 (White Box Yellow Box Blakley's Red Gum Woodland), Figure 17 (cave bats), Figure 19 (arboreal mammals) and Figure 20 (Booroolong Frog) of the BDAR.

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.

Landscape Context of the MNES

Provide advice on the adequacy of the landscape context information and identify any additional information requirements:

section 3 'Landscape features' of the BDAR 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.

EPBC Act Listed Threatened Species and Communities

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 vicinity[2] via:

☒ field based survey effort

☒ published peer reviewed literature

☒ local data

☒ 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)

☒ 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.

Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements:

Field-based survey effort:

Survey methodology for native vegetation (vegetation integrity plots) is described in section 4.1. Threatened flora survey methodologies and effort is described in section 5.3.1, and threatened fauna survey effort in section 5.3.2 of the BDAR.

Vegetation integrity plots were not completed in all vegetation zones due to access issues and changes to the development footprint over time. As described in Table 23 of the BDAR, 28 out of the total 43 vegetation zones did not have enough plots to meet the minimum number required by the BAM, with 22 zones having no plots completed. Benchmark data were used in the BAM calculator (BAM-C) where insufficient plots were completed. BCS is supportive of this approach in the absence of site-based data, with discussions occurring between BCS and the accredited assessors on this matter to agree on the approach.

The vegetation survey identified White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland (CEEC) on site.

No EPBC Act-listed threatened flora species were found on the project site.

Four EPBC Act-listed threatened fauna species were found on the project site: Koala (*Phascolarctos cinereus*), Spotted-tailed Quoll (*Dasyurus maculatus*), Southern Greater Glider (*Petauroides volans*) and Large-eared Pied Bat (*Chalinolobus dwyeri*). The Booroolong Frog (*Litoria bootoolonensis*) was not recorded but assumed to be present on the project site.

[2] On land to which impacts may extend.

No EPBC Act-listed migratory species were recorded on the project site although BCS notes that there is a record of White-throated Needletail approximately 11 kilometres from the project area.

BCS is satisfied that flora and fauna survey requirements for the BAM have been met.

Published peer reviewed literature:

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. BCS is satisfied that an extensive and broad range of peer-reviewed literature has been used to underpin decision-making in the BDAR.

Local data:

No local data was used for the assessment.

Supporting databases:

Five databases were cited as being used for the MNES assessment:

1. DPE BioNet Vegetation Classification – is cited in many parts of the BDAR, including in section 4.1.3 'PCT confirmation and condition classification';
2. DPE BioNet Threatened Biodiversity Data Collection;
3. DPE BioNet Atlas;
4. 4.DCCEEW EPBC Protected Matters Search Tool (PMST); and
5. 5.DCCEEW Species Profiles and Threats (SPRAT) database.

Appropriate mapping of all EPBC Act-listed species and communities in accordance with relevant Commonwealth Listing Advice:

Mapping of MNES threatened species and threatened ecological communities is in accordance with the BAM and Commonwealth Listing Advice and is depicted in Figure 9 (Box Gum Woodland CEEC), Figure 17 (Large-eared Pied Bat foraging habitat), Figure 19 (Koala, Southern Greater Glider), Figure 20 (Booroolong Frog) of the BDAR. Table 28 of the BDAR provides a TEC equivalency assessment for each PCT.

Two fauna species - Regent Honeyeater and Swift Parrot were assessed as having foraging habitat impacted by the project (Appendix C 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 credit species and 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). An assessment of suitable habitat for these species is provided in Appendix C but this is general and the associated PCTs are not identified in the BDAR. While maps of the PCTs impacted by this project are provided in the

BDAR, habitat for these two MNES threatened fauna species which are considered to be impacted by the project have not been appropriately mapped.

All PCTs that will be impacted by the project that are associated with EPBC Act-listed TECs have been assessed against the relevant Commonwealth Listing Advice. Identification of MNES TECs is described in section 4.3.2 of the BDAR and Appendix B of the BDAR. The mapped extent for the MNES TEC considered to be impacted by the project has been appropriately mapped.

Any important populations and critical habitat, as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans:

There are no 'important populations' or 'critical habitat' likely to be impacted by the project.

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:

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).

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:**

The referral decision brief (dated 23 December 2019) identified that the project was likely to have a significant impact on:

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, listed as critically endangered;
- Regent Honeyeater *Anthochaera Phrygia*, listed as critically endangered;
- Swift Parrot *Lathamus discolor*, listed as critically endangered;
- Booroolong Frog *Litoria booroolongensis*, listed as endangered; and
- Fork-tailed Swift *Apus pacificus*, which is listed as migratory.

In addition, the Commonwealth identified potential for some risk of significant impacts to the following matters (section 6.1 of the BDAR):

- Small Snake Orchid *Diuris pedunculata*, listed as endangered;
- Blackbutt Candlebark *Eucalyptus rubida* subsp. *barbigerorum*, listed as vulnerable;
- Fragrant Pepperbush *Tasmannia glaucifolia*, listed as vulnerable;
- Austral Toadflax *Thesium austral*, listed as vulnerable;
- Spotted-tailed Quoll *Dasyurus maculatus* (SE mainland population), listed as endangered;

- Koala *Phascolarctos cinereus* (combined populations of Qld, NSW and the ACT), listed as vulnerable;
- White-throated Needletail *Hirundapus caudacutus*, listed as vulnerable; and
- *Euphrasia arguta*, listed as critically endangered.

Further information was requested by the Commonwealth to determine the extent of potential impacts associated with the transport route road upgrades for the following relevant protected matters:

- New England Peppermint Eucalyptus nova-anglica Grassy Woodlands ecological community, listed as critically endangered;
- Lowland Rainforest of Subtropical Australia TEC, listed as critically endangered;
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, listed as critically endangered;
- Regent Honeyeater *Anthochaera Phrygia*, listed as critically endangered;
- *Euphrasia arguta*, listed as critically endangered;
- Small Snake Orchid *Diuris pedunculata*, listed as endangered;
- Willi Willi Zieria *Zieria lasiocaulis*, listed as endangered;
- *Diuris eborensis*, listed as endangered;
- White-flowered Wax Plant *Cynanchum elegans*, listed as endangered;
- Milky Silkpod *Parsonsia dorrigoensis*, listed as endangered;
- Guthrie's Grevillea *guthrieana*, listed as endangered;
- Craven Grey Box *Eucalyptus largeana*, listed as endangered;
- Manning Yellow Solanum *sulphureum*, listed as endangered;
- Blackbutt Candlebark *Eucalyptus rubida* subsp. *barbigerorum*, listed as vulnerable;
- Koala *Phascolarctos cinereus* (combined populations of Old, NSW and the ACT), listed as vulnerable;
- Earp's Gum *Eucalyptus parramattensis* subsp. *decadens*, listed as vulnerable;
- Austral Toadflax *Thesium australe*, listed as vulnerable;
- Greater Glider *Petauroides volans*, listed as vulnerable;
- Leafless Tongue-orchid *Cryptostylis hunteriana*, listed as vulnerable;
- Fragrant Pepperbush *Tasmannia glaucifolia*, listed as vulnerable;
- Narrow-leaved Peppermint *Eucalyptus nicholii*, listed as vulnerable;

- Long-nosed Potoroo (SE Mainland) *Potorous tridactylus*, listed as vulnerable;
- Tall Velvet Sea-berry *Haloragis exalata* subsp. *velutina*, listed as vulnerable; and
- Big Nellie Hakea *Hakea archaeoides*, listed as vulnerable.

Two TECs listed in the referral decision brief as likely being significantly impacted were assessed as not occurring in the construction impact zone. These TECs are detailed below:

Entity	BDAR
Listed in referral decision brief (dated 23 December 2019)	
New England Peppermint Eucalyptus nova-anglica Grassy Woodlands ecological community	No PCTs associated with the TEC were identified as occurring within the project area.
Lowland Rainforest of Subtropical Australia TEC	No PCTs associated with the TEC were identified as occurring within the project area.

Three threatened fauna species that were identified by the proponent as having potential to be significantly impacted were considered to have foraging habitat only (not breeding habitat) impacted by the project. These species are summarised below:

Entity	BDAR
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Table 104 in Appendix C of the BDAR describes the assessment for Large-eared Pied Bat. This species was recorded by survey in the project area. Two areas were identified as potential diurnal roost sites for cave-dwelling bat species in the project area (section 5.2 and Appendix F of the BDAR). These areas have been avoided. Roosts for cave-dwelling bats are known at Timor Caves, approximately 5 kilometres to the south of the project area (Table 49 of the BDAR). The project will have 19.75 ha of direct impact to foraging habitat for the Large-eared Pied Bat (Table 65 of the BDAR). The species is also likely to be impacted by blade strike (section 8.3.1, Table 68).
Regent Honeyeater (*Anthochaera phrygia*)	Breeding Table 104 in Appendix C of the BDAR describes the assessment for Regent Honeyeater. No species polygon is required as the study area does not fall within BCS's important habitat mapping for the species.

Entity	BDAR
Swift Parrot (*Lathamus discolor*)	Breeding Table 104 in Appendix C of the BDAR describes the assessment for Swift Parrot. No species polygon is required as the study area does not fall within BCS's important habitat mapping for the species.

Provide advice on whether there are any other MNES species or communities that are missing from the assessment based on BCS knowledge and experience:

No currently listed MNES species or communities are missing from the assessment for this project.

BCS does, however, note that White-throated needletail were not recorded on site but are regarded as having potential to occur within the locality and to intersect with the rotor swept area (Table 71 of the BDAR). It is stated that mortality has been known to occur at other wind farms, however it is uncommon. Despite this statement from the applicant, there is reference in literature of 36 mortalities relating to operational windfarms, nine of these at two NSW windfarms over an 18-month period (Tarburton 2021). Given the uncertainty around the potential for blade strike of this species at this location BCS recommends that it be assumed that a significant impact on this species is possible.

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):

Seven threatened species listed in the referral decision brief as potentially being significantly impacted were assessed as not occurring in the project area.

Two TECs listed in the referral decision brief as likely being significantly impacted were assessed as not occurring in the project area.

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:

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.
Koala (*Phascolarctos cinereus*) (combined populations of Old, NSW and the ACT)	Vulnerable	Recorded.
Spotted-tailed Quoll (*Dasyurus maculatus*) (SE mainland population)	Endangered	Recorded.
Greater Glider (*Petauroides Volans*)	Vulnerable	Recorded.
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Vulnerable	Recorded.
Booroolong Frog (*Litoria booroolongensis*)	Endangered	Assumed present. Was assumed present along Wombramurra Creek, where a known population of the species occurs to the north of the project area. Surveys were undertaken outside the recommended season.

Avoidance, Minimisation Mitigation and Management

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:

☒ designs and engineering solutions;

☒ modes or technologies;

☒ routes and locations of facilities;

☒ sites within the subject site; and

☒ 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).

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:

☒ techniques, timing, frequency and responsibility;

☒ identify measures for which there is risk of failure;

☒ evaluate the risk and consequence of any residual impacts; and

☒ any adaptive management strategy proposed to monitor and respond to impacts.

Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified:

Table 79 in section 8.6 'Serious and irreversible impacts' provides a summary of avoidance and mitigation for microbats. section 7 'Avoid and minimise impacts' addresses the measures that have been taken to avoid and minimise impacts to biodiversity. section 8.9 'Mitigating and managing impacts' summarises the proposed mitigation measures relating to direct, indirect and prescribed impacts. section 8.10.2 'Bird and Bat Adaptive Management Plan (BBAMP)' outlines the monitoring program and strategy to manage and mitigate operational issues relating to bird and bat impacts for the wind farm.

Specific comments on avoidance and minimisation of impacts to MNES are included below.

Box Gum Woodland

The BDAR (Table 79) states that throughout the development of the project layout, design decisions have been implemented to avoid impacts to Box Gum Woodland. Design refinements undertaken since the exhibited BDAR have resulted in a reduction of impact to Box Gum Woodland CEEC from 13.3 ha to 8.15 ha.

Approximately 67 % of the impacts to Box Gum Woodland (5.4 hectares) will occur on areas of Derived Native Grassland or that have been assessed as occurring in Low condition.

Prescribed impacts

section 8.5 of the BDAR describes prescribed biodiversity impacts for the project. This identifies that operation of the wind farm (64 turbines operating over an approximate linear distance of 30 kilometres) along ridgelines has the potential to create an obstacle to movement through the wind farm, impacting upon habitat connectivity in an east to west, and north to south direction within different portions of the development footprint.

Habitat connectivity

Impacts to habitat connectivity have been reduced through the removal of six turbines following turbine risk assessments undertaken following agency and public submissions. Removal of these turbines has resulted in a reduced impact to habitat connectivity in the southern and western portions of the development footprint. The redesigned layout of the turbines adjacent to Ben Halls Gap Nature Reserve (BHGNR) has resulted in a minimum spacing of 400 m between turbines, reducing the potential for impacts associated with barrier effect, between the high-quality habitats in BHGNR and the patchier habitats on the western side of the ridge. BCS considers the potential for some impact to habitat connectivity to remain.

Blade strike

Indirect impacts associated with potential blade strike to individuals utilising the confirmed potential microbat root habitat features have been minimised through the removal of WP27 from the project design, creating a gap of over 400 metres between the habitat feature and the base of the nearest turbine. WP50 has been relocated approximately 130 metres to the north-east, ensuring a separation of over 300 meters from the base of the turbine and the top of the habitat feature.

The rotor swept area of turbines is from 58 m to 232 m above ground level. Low levels of microbat activity have been recorded for all species at higher elevations (i.e., within the range of rotor blades) reducing the potential for blade strike. BCS is aware that some migratory bat species fly higher during migratory flight, potentially putting them at risk of turbine strike. It is expected that a stringent curtailment program of turbines and associated mitigation strategies will minimise these strikes.

The proponent has made commitments to ensure turbine strikes are minimised, particularly for microbats, through both proactive curtailment of turbines and reactive implementation of strict mitigation strategies (including further curtailments) based on rigorous monitoring.

Impact Assessment

Verify that the EIS/BDAR:

☒ 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; and

☒ provides adequate justification and evidence for the predicted level of impact, with reference to the:

- Commonwealth's Significant Impact Guideline: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf
- DPIE Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SAII): (https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf)

Complete the following information for each EPBC Act listed threatened species and/or community (add/remove rows as necessary):

- 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; and
- consequences of impacts on the species, the population and / or extent of the community at local, state and national scales.

Confirm the level of predicted impact (cross appropriate):

☒ high risk of impact (requiring offsets)[#] or SAII ☒ Low risk of impact (not requiring offsets)

[#] 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).

BCS's assessment of the impact assessment is included in Table 1 (below).

Table 1 Summary of Impact Assessment: Hills of Gold Wind Farm

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	8.15 hectares of direct impact	For all MNES entities listed in this table, the impact will occur for the life of the project.	856 ecosystem credits	The CEEC was found to occur along the transmission line corridor, mainly to the west of the wind farm, with a small area in the central portion of the development site downslope (and north) of the wind farm itself. The current transmission line development footprint considers a conservative 'worst case' clearing footprint for the transmission line easement, assessing complete clearing within the areas of the 60-metre easement not spanned by the overhead wires. Furthermore, the CEEC was found to occur at the far northern end of the access track servicing the central portion of the transmission line, and the northern portion of the new site access from Crawney Road. Small occurrences also occur in areas requiring upgrades for the transport route including just east of Nundle, and below Devil's Elbow. Consistent with the topographic, geological and soils requirements of this CEEC, it was not recorded across the ridgelines where the wind turbines and internal roads are located. Impacts to the largest area of high-quality TEC have been avoided with the change in site access no longer requiring impact to the Devil's Elbow area.	All MNES entities listed in this table face a high risk of impact – therefore an offset is required.

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				Any impacts to this TEC are considered likely to be significant, as it is listed as critically endangered. **Local** - approximately 9,000 hectares of this community is estimated to occur within the Nandewar IBRA bioregion, and approximately 39,000 hectares within the NSW North Coast IBRA bioregion. The project will impact upon a total of 8.15 hectares of Box Gum Woodland CEEC, the majority of which occurs within the Nandewar IBRA bioregion, with a small portion of the impact occurring in the NSW North Coast IBRA bioregion. A total of approximately 10,800 hectares of PCTs known to partially or entirely represent Box Gum Woodland are mapped within a 5 kilometres buffer of the project area, and approximately 29,000 hectares are mapped within a 10-kilometre buffer. Impacts associated with the project would again only represent a small fraction (0.5% and 0.2%) of the CEEC likely to be present in the locality. **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 (8.15 hectares; or <0.001 percent of the estimated NSW extent). **National** – Small impact.	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
Koala *Phascolarctos cinereus* (combined populations of Old, NSW and the ACT)	46.28 hectares of direct impact		1,645 species credits	**Local** - Within 10 kilometres of the development footprint, the species has been recorded seven times (EES 2020), with an additional two individuals recorded within the development footprint during the current field assessment. The closest previous records of Koala occur within Ben Halls Gap Nature Reserve, which is east of, and contiguous with, the development footprint. Hanging Rock State Forest, Nundle State Forest, and Tomalla State Forest and Nature Reserve all lie within 20 kilometres of the assessment area and contain scattered Koala records. The proposed works require impacts to 46.28 hectares of native vegetation identified as potential Koala habitat. These impacts will reduce the availability of resources within the locality. Given the proposed impacts occur on the edge of an extensive reserve system (greater than 30,000 hectares), it is unlikely that the overall size of the existing population will diminish because of the works. Impacts to Koala habitats within the development footprint are also to 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.	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				State - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal. **National** – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.	
Spotted-tailed Quoll *Dasyurus maculatus* (SE mainland population)	45.62 hectares of direct impact		374 ecosystem credits (Refer to – offsets below)	**Local** – The Spotted-tailed Quoll has previously been recorded within and adjacent to the development footprint, including during the current assessment. Hanging Rock State Forest, Nundle State Forest, and Tomalla State Forest and Nature Reserve all lie within 20 kilometres of the development footprint and contain scattered previous Spotted-tailed Quoll records. Given the proposed impacts occur on the edge of an extensive reserve system (greater than 30,000 hectares), it is unlikely that the overall size of the existing population will diminish because of the works. Impacts to Spotted -tailed Quoll habitats within the development footprint are also 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.	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				State - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal. **National** – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.	
Southern Greater Glider *Petauroides volans*	36.28 hectares of direct impact		1,251 species credits	**Local** – A total of 25-30 Southern Greater Gliders were recorded within the development footprint during targeted surveys in the current assessment. Previous records of the species are also scattered throughout the adjacent Ben Halls Gap Nature Reserve. Multiple records also occur within the nearby Hanging Rock, Nundle and Tomalla State forests. Approximately 36.28 hectares of known Southern Greater Glider habitat is proposed to be removed from the development footprint as a part of the current project. This encompasses high condition eucalypt woodland, on the wind farm and internal roads development footprint. Given the proposed impacts occur on the edge of an extensive reserve system (greater than 30,000 hectares), it is unlikely that the overall size of the existing population will diminish because of the works.	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				State - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal. **National** – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.	
Large-eared Pied Bat (*Chalinolobus dwyeri*)	19.75 hectares of direct impact		657 species credits	**Local** - Given the abundance of rocky escarpments and caves in the broader locality, it is likely that Large-eared Pied Bat are breeding within the area. This is supported by nearby records of post-lactating females. Whilst there are no direct impacts to the two high potential breeding/roosting habitats within the development footprint, the Project will remove 19.75 hectares of foraging habitat for the species. Vegetation within the development footprint is well connected to surrounding vegetation, with approximately 28,000 hectares of native vegetation within 2.5 kilometre of the development footprint. This area includes large tracts of intact native vegetation within the Ben Halls Gap Nature Reserve, Crawney Pass National Park, Wallabadah Nature Reserve and the Nundle and Hanging Rock State Forests. The removal of 19.75 hectares of native vegetation as part of the proposed works represents a very small portion of the native vegetation within the foraging distance of the	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				species and is therefore not considered to have a significant impact on the species. **State** - The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal. **National** – The proposal is unlikely to significantly reduce the area of occupancy given the nature and extent of the potential habitat removal.	
Booroolong Frog *Litoria booroolongensis*	0.95 hectares of direct impact		47 species credits	**Local** - The closest population occurs along the Peel River within the Namoi Catchment, with the river occurring less than 500 metres from the development footprint. First order streams connected to the Peel River occur within the development footprint in parts. The closest record of Booroolong Frog to the development footprint occurs approximately 400 metres to the north of the transmission line along Wombramurra Creek, and 2.4 kilometres north west, along the Peel River, with abundant records along both watercourses heading further north west. The species was not recorded within the development footprint during the current assessment. It should also be noted that the 0.95 hectares of impacts includes the accumulated total of the three separate access options from	

EPBC Act entity	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g., construction, operation, life of project)	Quantum of impact	Consequence of impact at local, state and national scale	Level of impact (is an offset required?)
				Crawney Road, of which only one will be built, and is as such a substantial overestimation of the actual impact that will occur.	
Regent Honeyeater	Area of direct impact not provided		564 ecosystem credits (Refer to offsets below)	While individuals may forage in the project area on occasion, the habitat to be removed has not been identified as important foraging habitat for this species by Birdlife Australia. **National** - The distributional range of the Regent Honeyeater extends from parts of Victoria, through NSW to southeast Queensland. The area of occupancy is estimated at 300,000 square kilometres. The removal of linear patches of habitat would be unlikely to reduce the area of occupancy of the species.	
Swift Parrot	Area of direct impact not provided		564 ecosystem credits (Refer to offsets below)	The Swift Parrot breeds only in Tasmania. While individuals may forage in the project area on occasion, the habitat to be removed has not been identified as important foraging habitat for this species by Birdlife Australia.	

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:

All threatened species and communities likely to be impacted have been assessed adequately under the BAM and an offset obligation has been calculated. Two entities, Regent Honeyeater and Swift Parrot, have been identified as being at low risk of impact. A summary and assessment of the impact by the project on these species is provided in Table 51 of the BDAR. While the impact area is outside areas mapped by DPE as Important Areas for both species, any loss of habitat for these critically endangered species is considered significant.

Offsets

Verify that the EIS/BDAR:

☒ identifies any MNES that haven't been offset using the BAM;

☒ identifies how impacts requiring offsets correlate to MNES impacts;

☒ identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES;

☒ identifies threatened species requiring offset and the number of species credits required for impacts to MNES;

☒ 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;

☒ identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting; and

☒ 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[#]

[#] In accordance the BAM there is no longer a requirement to define the offsetting approach at EIS stage.

Complete the Impacts and Offsets Summary table below (Table 2) (below):

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, revised BDAR)
Ecological Communities					
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	PCT 433 PCT 492 PCT 599	8.15	428	Three broad options have been identified: • Payment to the Biodiversity Conservation Fund managed by the BCT. • Purchase of credits from the open market, with consideration of applying the 'Like for Like' Variation Rules. • Establish a Biodiversity Stewardship Site(s).	
TOTAL		**8.15**	**428**		
Species Credit Species					
Koala *Phascolarctos cinereus*	Species Credit	46.27	1,645	See above	BDAR Table 65
Southern Greater Glider *Petauroides volans*	Species Credit	36.28	1,251		BDAR Table 65
Large-eared Pied Bat *Chalinolobus dwyeri*	Species Credit	19.75	657		BDAR Table 65
Booroolong Frog *Litoria booroolongensis*	Species Credit	0.97	47		BDAR Table 65

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, revised BDAR)
TOTAL		103.27	3,600		
Ecosystem Credit Species					
Spotted-tailed Quoll *Dasyurus maculatus*	PCT 433, 434, 538, 586, 599, 1604, 1691	45.62[1]	374[1]	See above	BDAR Table 65
Regent Honeyeater	PCT 84, 433, 434, 486, 492, 538, 599, 1604, 1691	11.62[2]	564[2]		BDAR Table 28 and BAM-C
Swift Parrot	PCT 84, 433, 434, 486, 492, 538, 599, 1604, 1691	11.69[2]	564[2]		BDAR Table 28 and BAM-C
TOTAL		69.00			

[1] The area of impact stated in the BDAR is not consistent with the PCTs associated with this species.

[2] Area of impact not provided in BDAR. Credit requirement calculated from associated PCTs (excluding DNG).

Ecosystem credit species have been adequately assessed

BCS is satisfied that all ecosystem credit species have been adequately assessed. BCS confirms that all ecosystem credit species have been retained in all associated PCTs predicted by the BAM-C and that the maximum credit obligation for these species has been calculated.

BCS notes that the area of impact provided for Spotted-tail Quoll in the BDAR (45.62 ha) is greater than that suggested when reviewing the PCTs associated with this species (7.68 ha). No indication is provided in the BDAR as to how the area of impact was arrived at. Based on the area calculated

using the associated PCTs, the calculated credit requirement (374 ecosystem credits) would be less that that generated by the 45.62 ha of impact indicated in the BDAR.

No impact area was provided for Regent Honeyeater and Swift Parrot in the BDAR. The figures in Table 2 have been calculated by BCS using the associated PCTs for these species.

The likely impacts on MNES flora, fauna and communities for the project have been assessed in accordance with the BAM, described in the BDAR and are summarised in Table 1 (above) in this assessment report.

Provide advice on the adequacy of the proposed offsets in meeting the requirements of the BAM:

The project proponent has commenced investigations on a number of properties adjacent the project area where Biodiversity Stewardship Site can be established so that the appropriate credits can be purchased.

Other options available are payment to the Biodiversity Conservation Fund managed by the BCT and the purchase of credits from the open market, with consideration of applying the 'Like for Like' Variation Rules.

The commitment to offset impacts to MNES by either purchasing appropriate credits, establishing Biodiversity Stewardship Sites and retiring the appropriate type and number of credits from those sites, or to pay the required amount of money into the Biodiversity Conservation Fund meets the requirements of the BAM. No details have been provided on the location of Stewardship Sites, or the biodiversity values that they contain, but all credits must conform to the like-for-like offset rules established under the BC Act.

Other considerations

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:

☒ International environmental obligations;

☒ Recovery Plans;

☒ Approved Conservation Advice; and

☒ Threat Abatement Plans.

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

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 threatening processes or recommended conservation actions outlined in Commonwealth policies and plans.

The BDAR has referred to several Commonwealth guidelines and policies but these have not been used to guide and develop potential avoidance and mitigation measures.

Recovery Plans

section 8.8 of the BDAR refers to Recovery plans for White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, Large-eared Pied Bat, Spotted-tailed Quoll, and Booroolong Frog.

Recovery Plans have generally been referenced to inform the threats and recovery objectives for the species. An example of these references is:

Large-eared Pied Bat – the recovery objectives within the Recovery Plan include the protection of known roosts and associated foraging habitats. Direct impacts to potential roosting/breeding sites have been avoided.

Although the BDAR does offer mitigation measures to minimise impacts to Large-eared Pied Bat in foraging habitats this is not related to actions in the Recovery Plan.

Conservation Advice

Conservation Advice for Koala and Greater Glider are referenced in section 8.8 of the BDAR.

In regards Koala, it is stated that "The project cannot be said to be adverse to any of the above conservation actions, and if proposed local biodiversity offsets are secured as planned habitat in the locality surrounding the wind farm will be improved and conserved in perpetuity".

In regards Southern Greater Glider, it is stated that the Ben Halls Hap Nature Reserve contains large areas of high quality habitat for the species and the loss of 36.28 hectares would not reduce the local population size or decrease the viability of the local population.

Key Threatening Processes

Key Threatening Processes (KTPs) are poorly addressed in the BDAR.

Mitigation measures are proposed in section 8.9 of the BDAR to minimise the impact of the proposal, but these are general and do not specifically relate to EPBC Act-listed KTP's.

Recommendations

Provide advice on any recommended conditions and reasons for imposing the conditions:

The proponents have committed to using smart curtailment. During periods of anticipated high bat activity turbines rated as a moderate risk will be curtailed using technology that provides real time detection of bat activity.

It is anticipated that the consent authority will apply conditions mandating the use of this smart curtailment and general conformance with the commitments and requirements of the BBAMP. BCS will be working with NSW Planning in drafting conditions of consent.

Appendix L – Independent Visual Advice

Appendix M Independent Expert Advice on Constructability, Soil and Water Assumptions