NEOEN

Thunderbolt Energy Hub CCC Meeting

Project Update, 21 February 2022

Acknowledgment of Country

We would like to acknowledge the Traditional Owners of the lands on which the project is located and the Traditional Owners of the lands we meet on today.

1. **Questions from the last CCC Meeting**
2. Project Overview
3. Project Update – General
4. Detailed Assessment Findings – Visual
5. Detailed Assessment Findings – Noise
6. Detailed Assessment Findings – Traffic
7. Detailed Assessment Findings – Aviation
8. Detailed Assessment Findings - Biodiversity
9. Benefits Sharing Programs

Questions from the last CCC Meeting

QUESTION 1

Please provide a link to the NSW Government's plan to underwrite renewable energy projects

- Information on the AEMO Service Ltd as the NSW Consumer Trustee can be found here: https://aemo.com.au/about/aemo-services/aemo-services-as-the-consumer-trustee
- Information on Renewable Energy Zones is available here: https://www.energy.nsw.gov.au/renewables/renewable-energy-zones

QUESTION 2

Will lights be required on top of wind turbines?

- The aviation impact assessment determined that obstacle lighting would not be required on top of wind turbines
- CASA (Civil Aviation Safety Authority) may recommend lighting

QUESTION 3

Is it possible for Councils and/or CCC members to undertake a site visit of the project area?

- Yes, this is possible subject to permission being granted by the host landholders.

QUESTION 4

What was the outcome of consultation with RFS?

- Aviation Projects consulted with RFS on behalf of Neoen as part of the aviation assessment
- Response received from RFS was: *"The NSW RFS has no further comments on the Thunderbolt Wind Farm. Wind Farms are treated like any other potential hazard to aircraft operations. Aerial firefighting strategies and tactics will be selected based on the fire location, what the fire is threatening and hazard in the area."*

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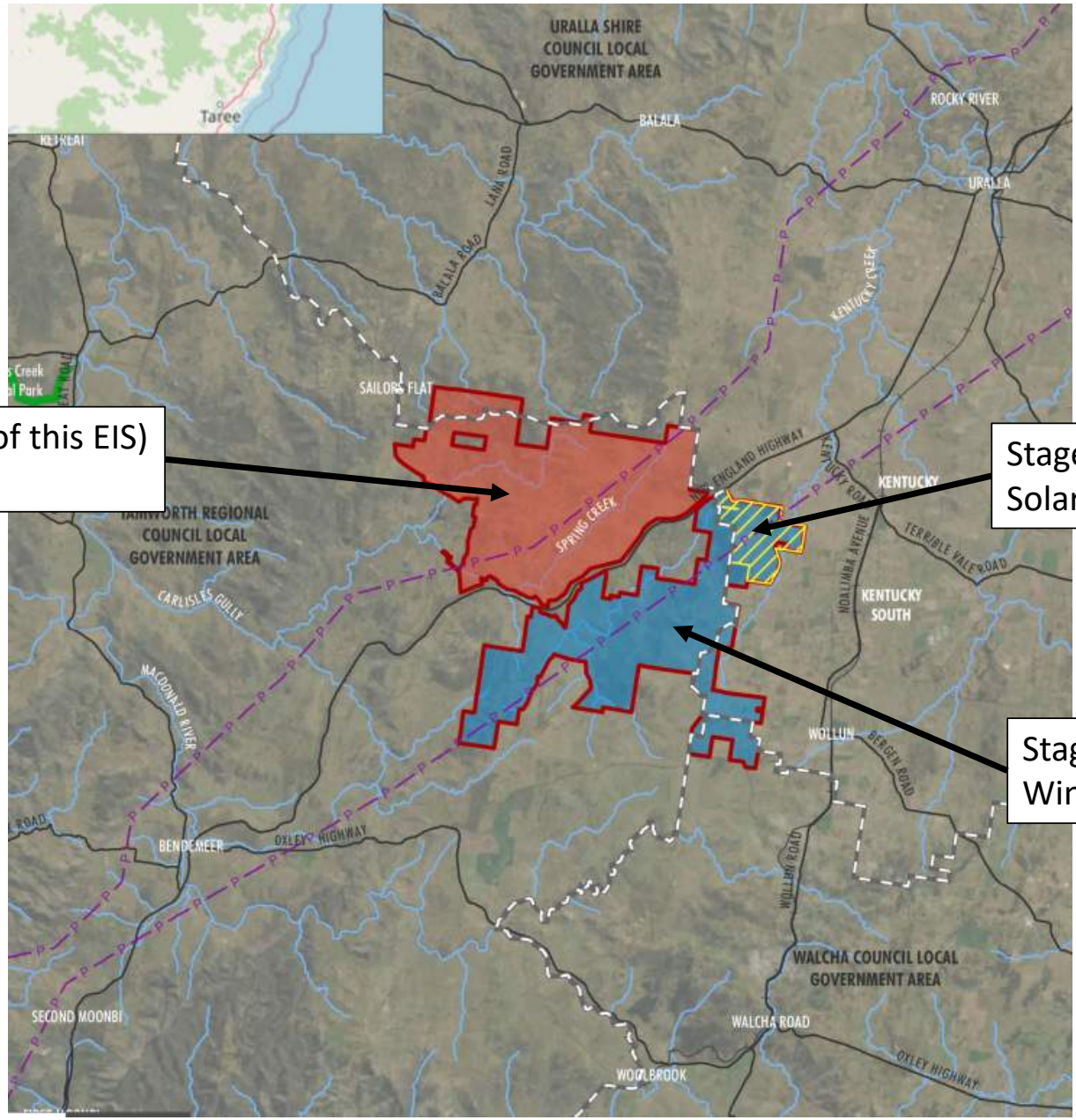
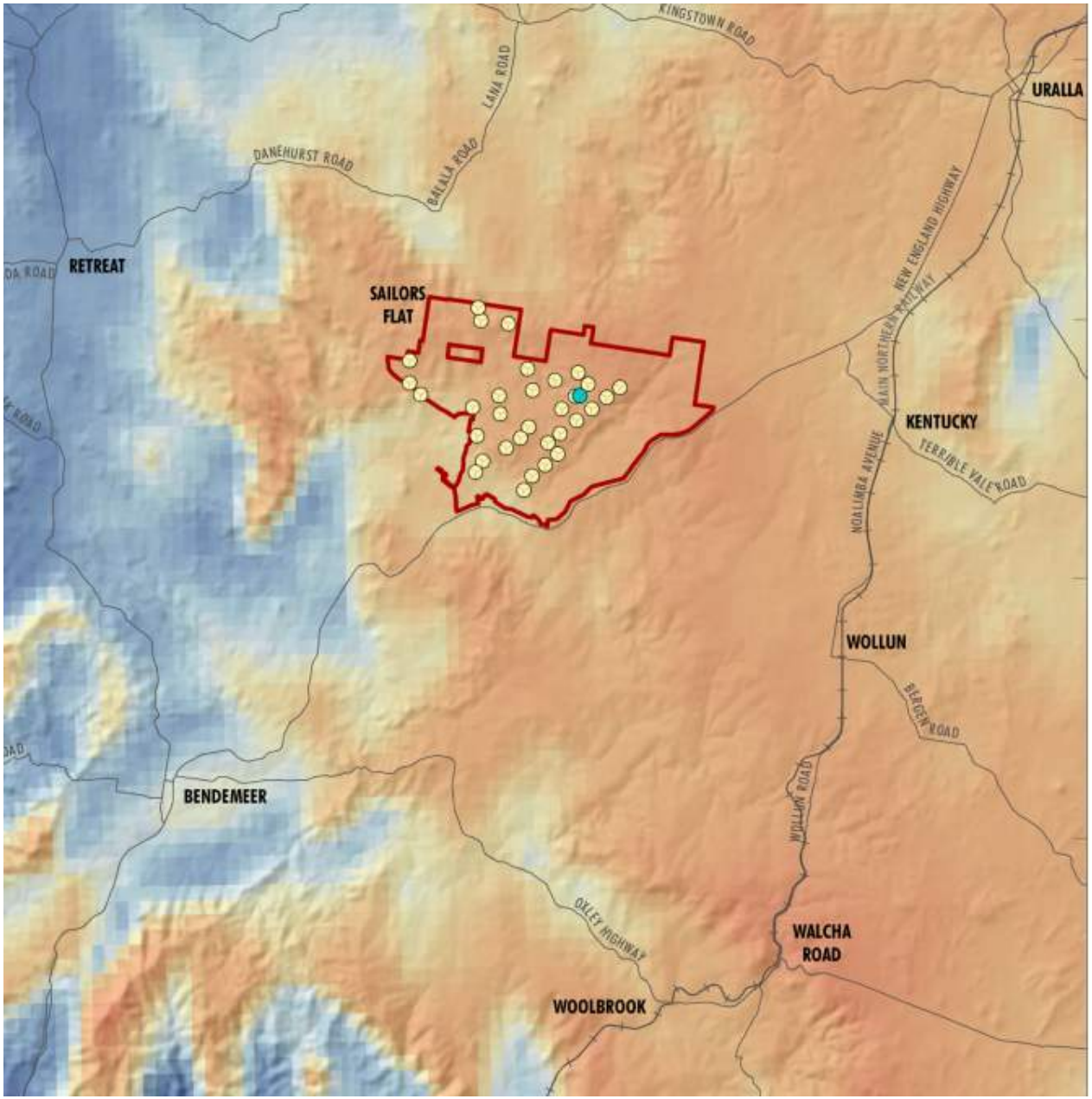

Stage 1 (Subject of this EIS)
Wind farm only
Stage 2 (possible future stage)
Solar Farm
Stage 2 (possible future stage)
Wind Farm
URALLA SHIRE COUNCIL LOCAL GOVERNMENT AREA
TAMWORTH REGIONAL COUNCIL LOCAL GOVERNMENT AREA
WALCHA COUNCIL LOCAL GOVERNMENT AREA
Taree
KEI KEAI
BALALA
ROCKY RIVER
URALLA
LAIMA ROAD
BALALA ROAD
KENTUCKY CREEK
SAILORS FLAT
NEW ENGLAND HIGHWAY
KENTUCKY
KENTUCKY ROAD
NOALIMBA AVENUE
TERRIBLE VALE ROAD
KENTUCKY SOUTH
SPRING CREEK
CARLISLES GULLY
MACDONALD RIVER
WOLLUN
BERGEN ROAD
BENDEMEER
OXLEY HIGHWAY
WOLLUN-WATTON ROAD
SECOND MOONBI
WALCHA ROAD
WOOLBROOK
OXLEY HIGHWAY


KINGSTOWN ROAD
LANA ROAD
DANEHURST ROAD
BAKALA ROAD
URALLA
RETREAT
SAILORS FLAT
NEW ENGLAND HIGHWAY
MAIN NORTHERN RAILWAY
KENTUCKY
NOALLIMBA AVENUE
TERRIBLE VALE ROAD
WOLLUN
BERGEN ROAD
WOLLUN ROAD
BENDEMEER
OXLEY HIGHWAY
WALCHA ROAD
WOOLBROOK
Legend
Project Area
Conceptual Turbine Layout
Temporary Met Mast
Railway
Road
Wind speed (metres per second)
High : 10.2
Low : 2.4

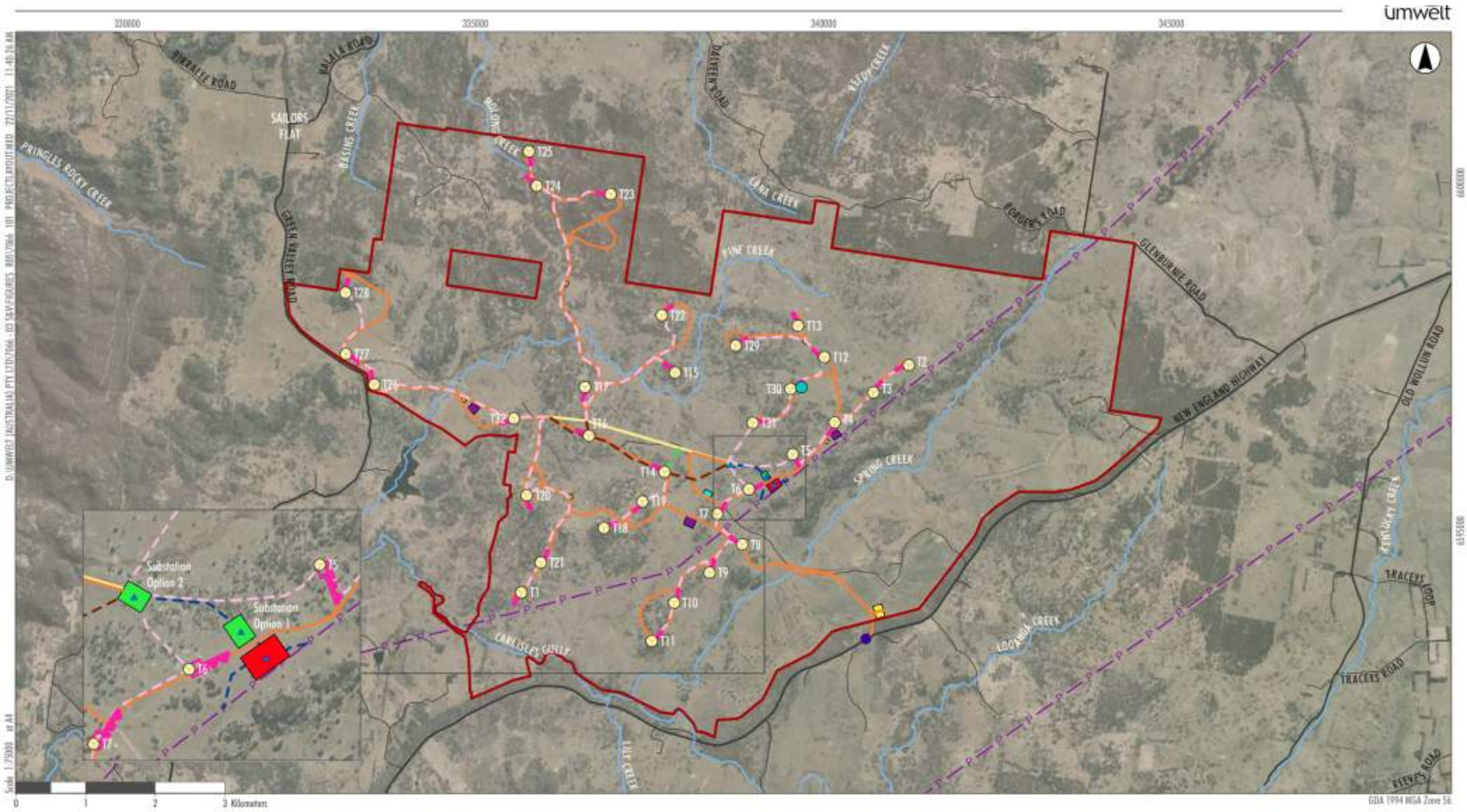


FIGURE 3.2

Conceptual Project Layout

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Project Update – Stage 1

Status

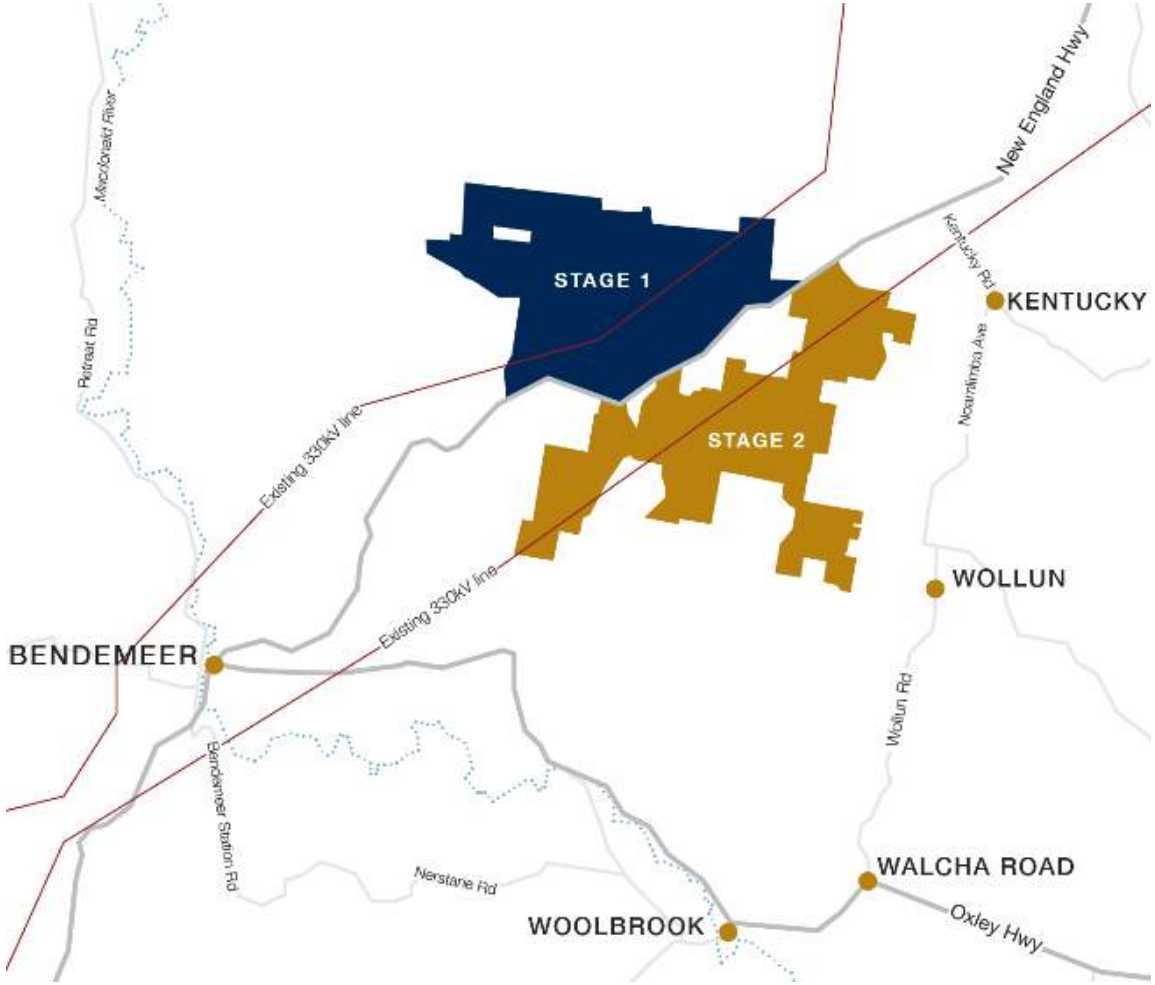
- Development Application for Stage 1 submitted to NSW Government in late Jan-22
- Estimated public exhibition start end of Feb-22
- A copy of the EIS will be made available to Councils, including copies on USB to provide to the community

Size

- 192 MW or 32 wind turbines proposed for Stage 1
- Max tip height of 260m, max blade length 90m

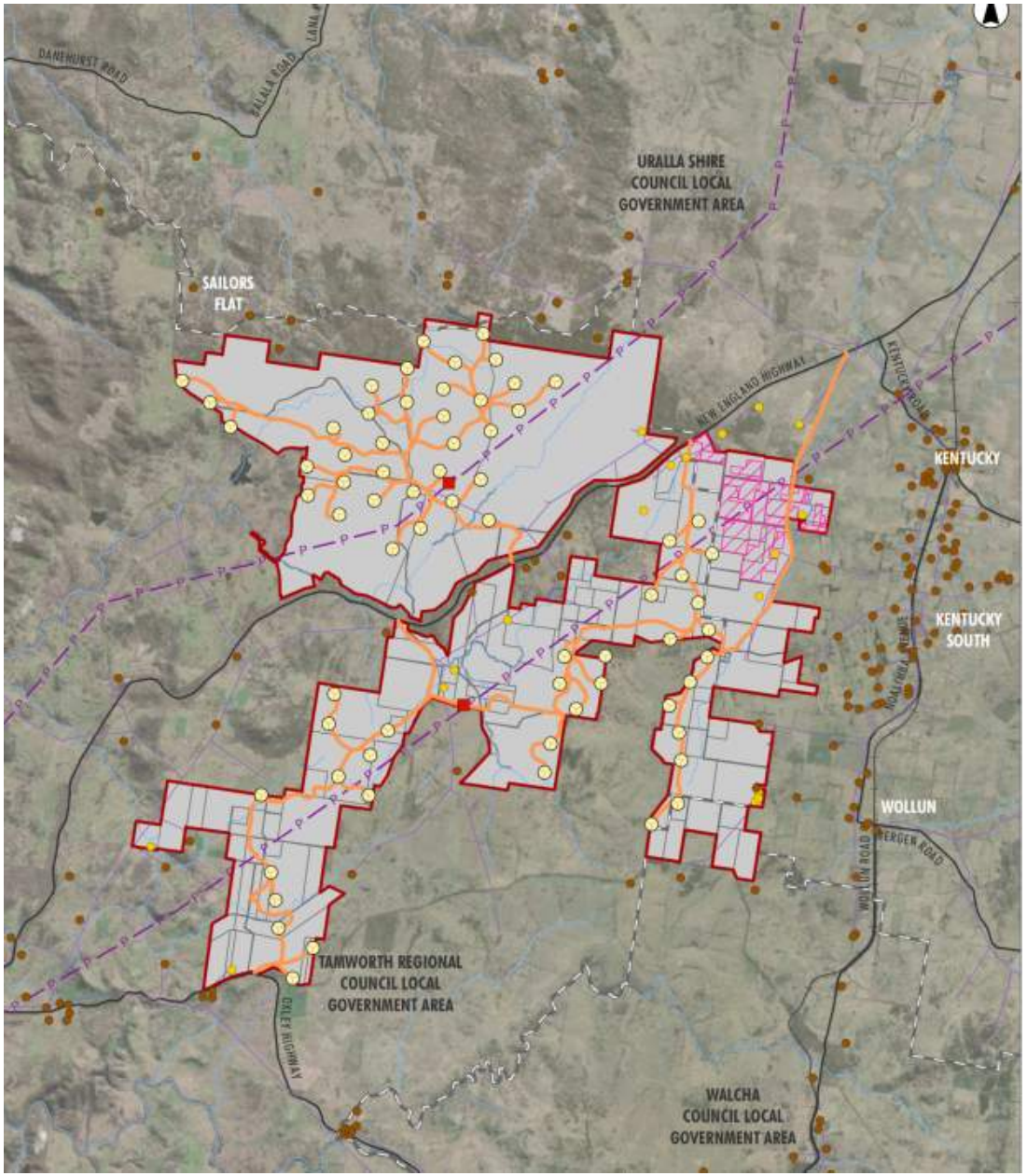
Reasons For Staged Approach

- Staged approach a direct response to feedback received from local community and MPs
- Proximity to Kentucky village and residents
- Neoen would like to prove its professionalism, gain the community's trust and prove our contribution socially & economically
- Stage 2 based on success of stage 1 and will be subject of a separate DA process



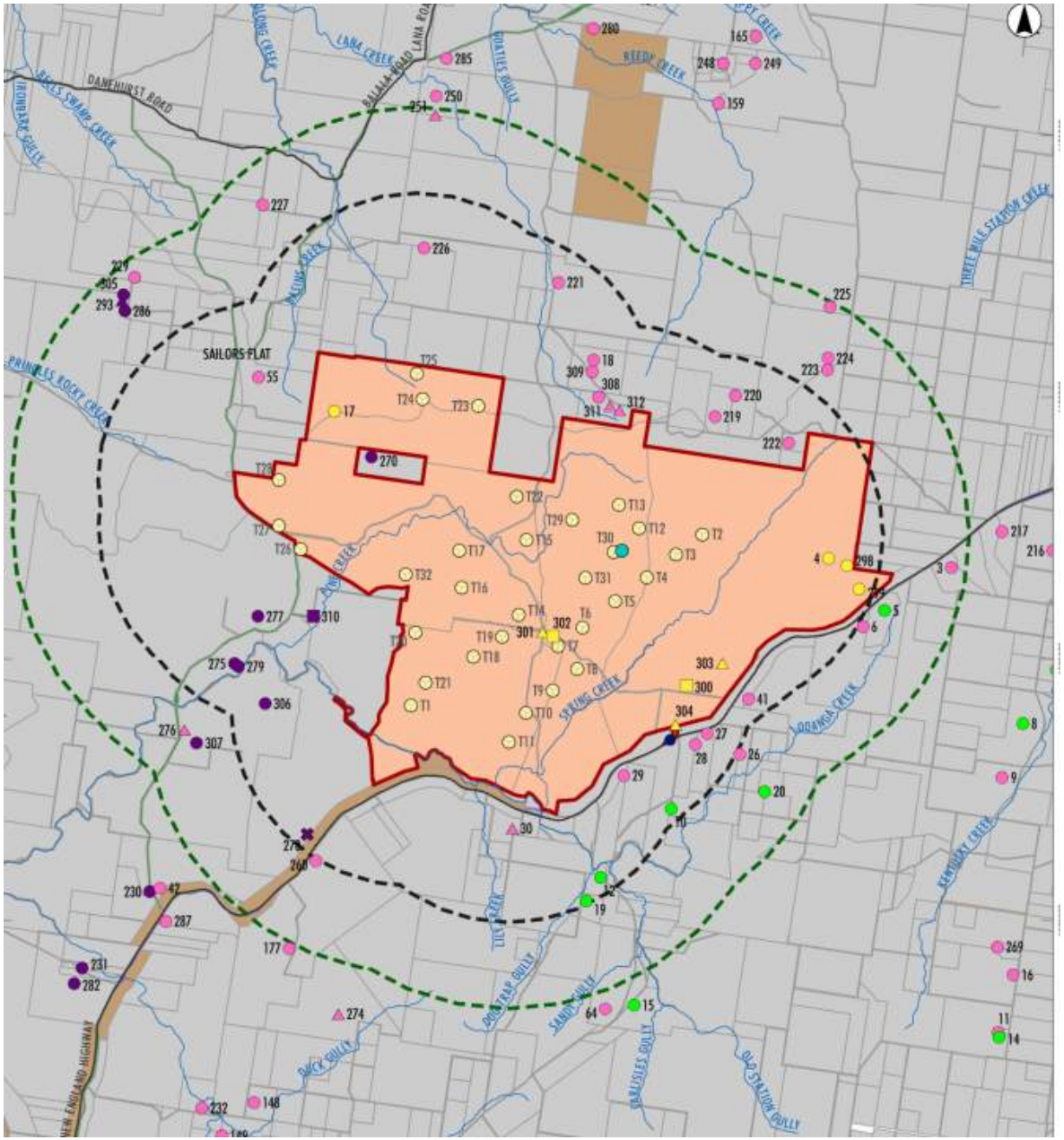
Scoping Stage map
Stage 1 and 2

- Distance of Kentucky village to closest wind turbine on Stage 2 (based on scoping stage layout) is approximately 6.4km
- Distance of Kentucky South to closest wind turbine on Stage 2 (based on scoping stage layout) is approximately 5.2km
- If and when stage 2 proceeds, the layout will be refined



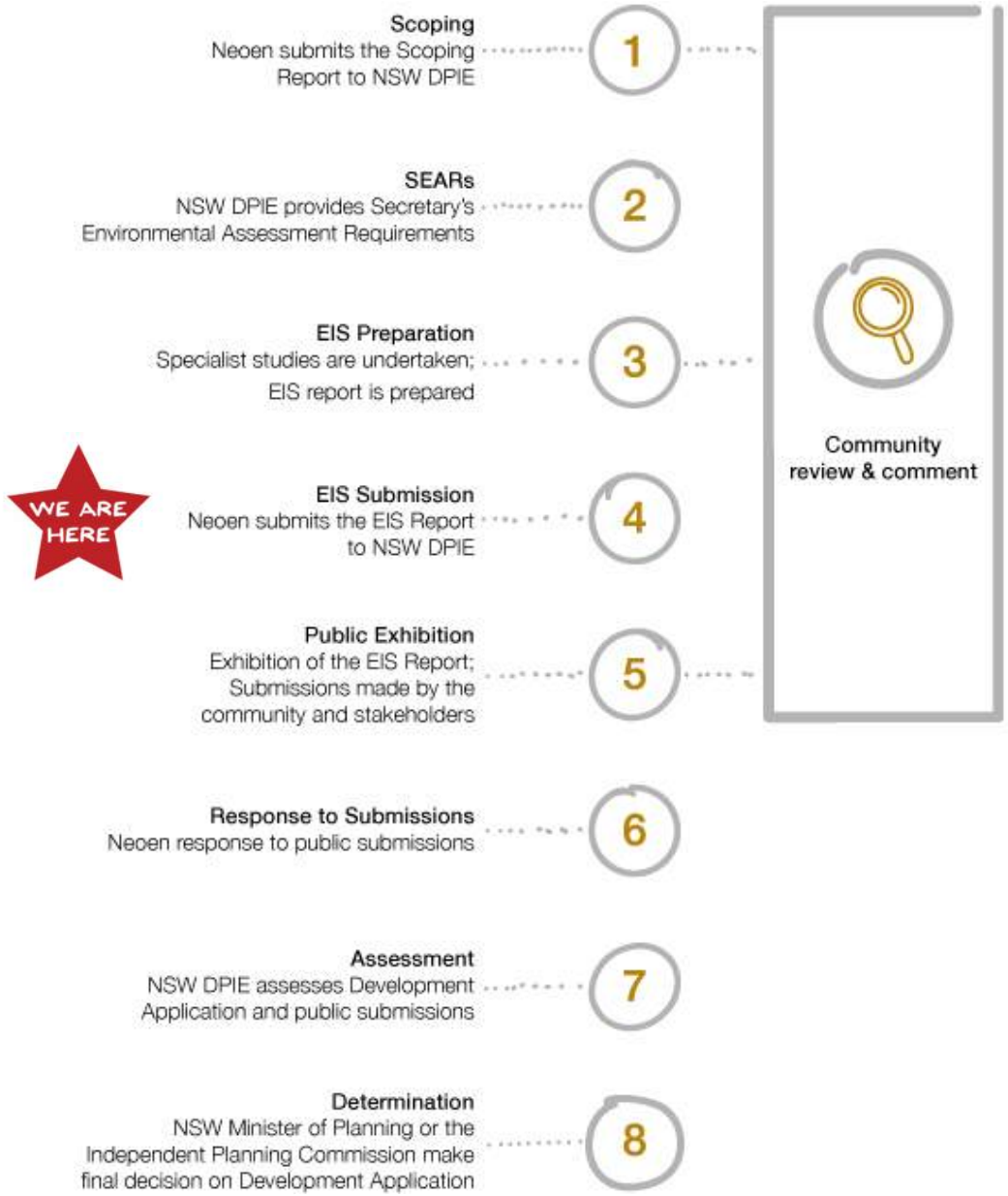
Refined map
Stage 1 only

- Distance of Kentucky village to closest wind turbine on Stage 1 is approximately 10.5km
- Distance of Kentucky South closest wind turbine on Stage 1 is approximately 11km



Next Steps

- Community will be notified once Stage 1 is on public exhibition through a newsletter
- Community can make a public submission for/against the project
- Following the public exhibition, Neoen and subject matter experts will respond to submissions received
- DPIE will undertake its assessment of the EIS
- Depending on the number of submissions received against the project, it may be referred to the NSW Independent Planning Commission
- Neoen estimates that the process may take approximately 12-18 months from DA submission, with approval anticipated Q1/Q2 2023
- Community consultation will be ongoing throughout the assessments phase



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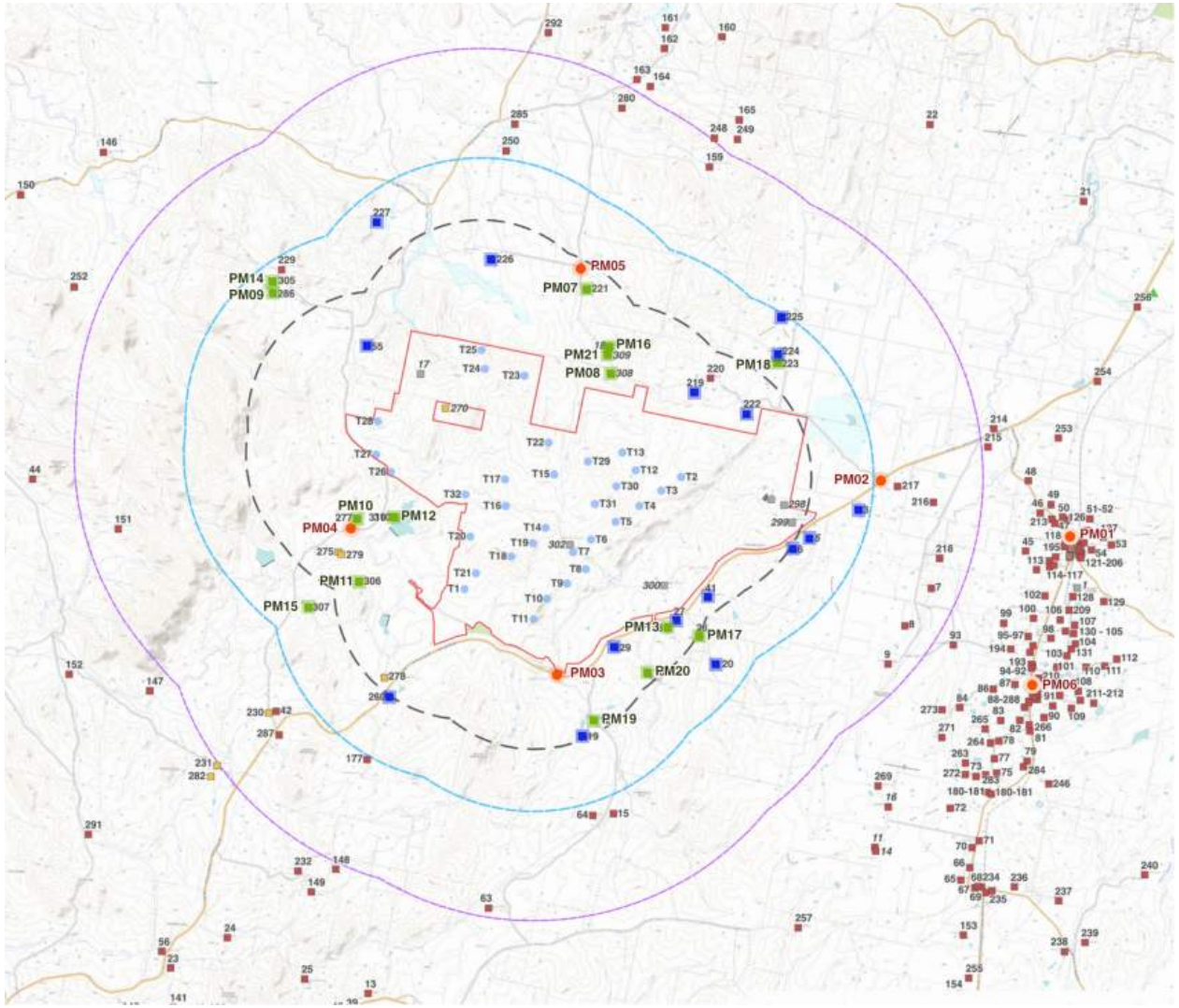
Detailed Assessment Findings - Visual

Status

- Moir Landscape Architecture (Moir) undertook the visual assessment for Stg1
- Field work (photographic surveys) undertaken by Moir in August and October 2021

Consultation with the Community

- Panoramas created from 6 public locations and added to project website
- Photomontages prepared from:
  - 6 public locations
  - 15 private locations (within 5.1km from Project)
- Wireframes created from 15 private locations



LEGEND:

- Project Boundary
- Proposed 250m Turbine Location
- Associated Dwelling (Host Landowner)
- Associated Landowner Dwelling
- Non-associated Dwelling
- Photomontage from Public Location *(Refer to Appendix C)*
- Photomontage from Private Location *(Refer to Appendix C)*
- Wire Frame Diagram from Private Location *(Refer to Appendix D)*
- 3,450 m from turbine (Black Line of Visual Magnitude)
- 5,100 m from turbine (Blue Line of Visual Magnitude)
- 8,000 m from turbine

Results - Visual

RESULTS

- 23 dwellings within 3,450m (‘black line’) and 14 dwellings between 3,450m and 5,100m (‘blue line’)
- Of these dwellings, Neoen has reached agreement with 3 landholders or 10 dwellings (referred to as associated dwellings)
- 27 non-associated dwellings within 5,100m
- Limited opportunity to view wind turbines from the non-associated dwellings
- 20 non-associated dwellings = negligible or low impact
- 7 non-associated dwellings = moderate impact
- 0 non-associated dwellings = high impact
- For dwellings with a high or moderate impact, vegetation screening is proposed to mitigate impacts
- With mitigation implemented, the Project complies with the performance objectives of the Visual Assessment Bulletin

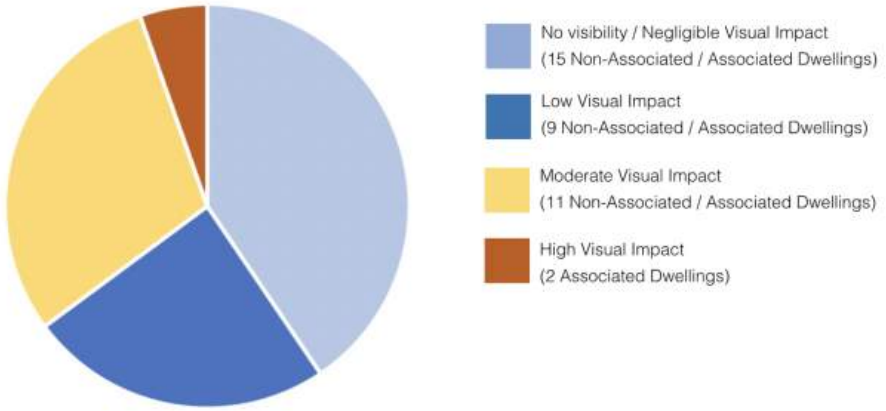


Figure A. Breakdown of Visual Impact Ratings for all dwellings within 5,100 m (without mitigation)

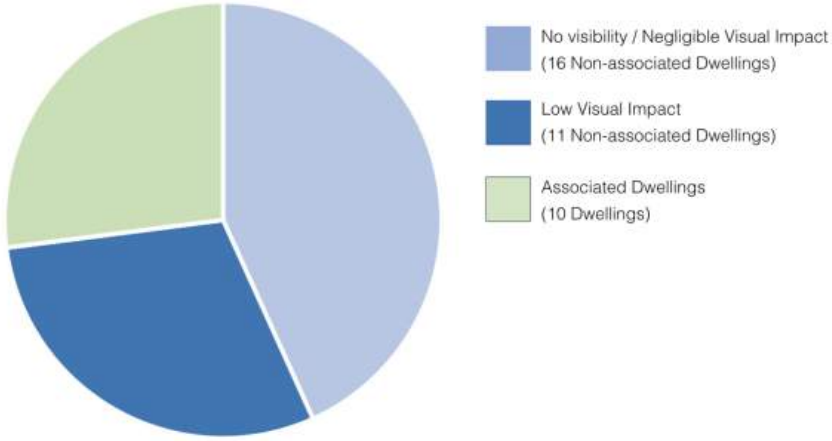
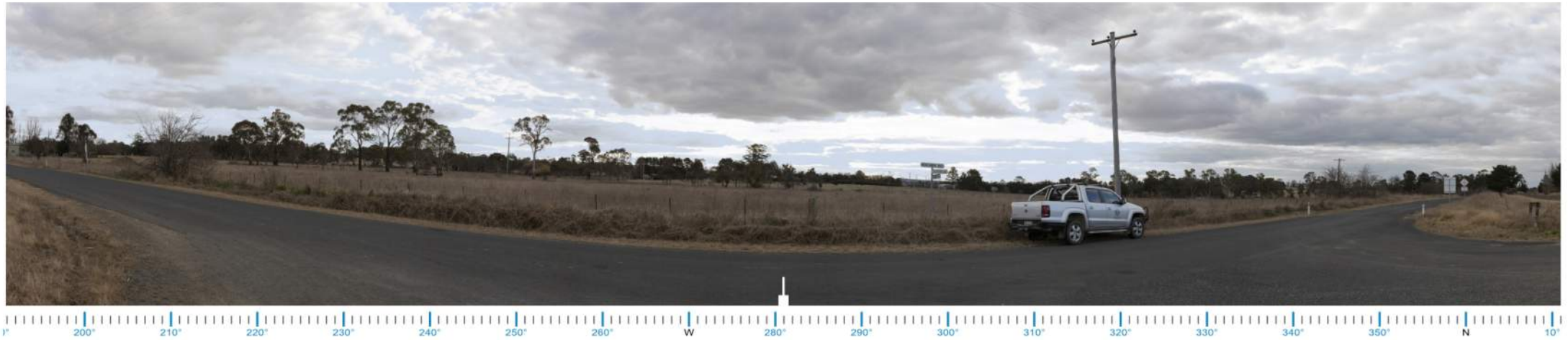


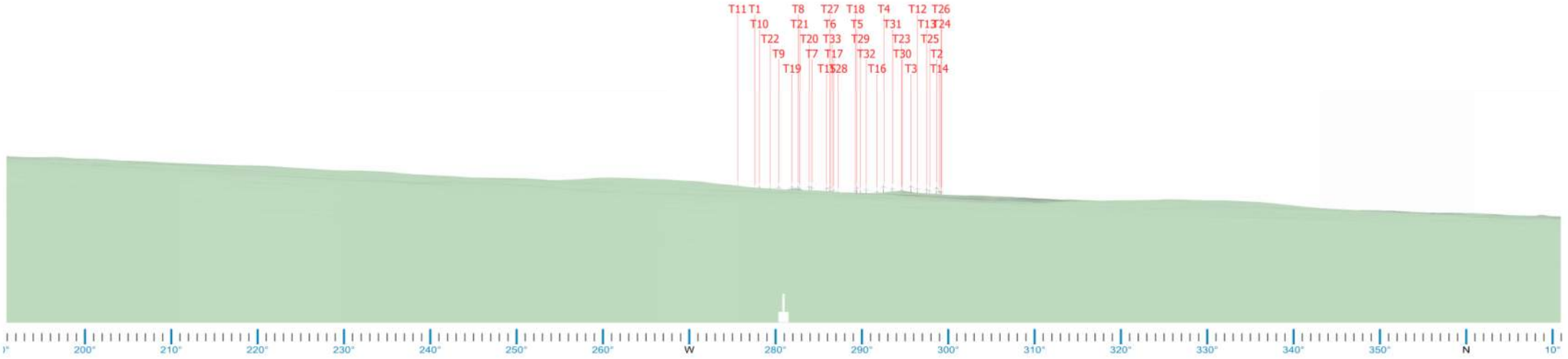
Figure B. Breakdown of anticipated Visual Impact Ratings (with mitigation measures implemented) for all dwellings within 5,100 m

Photomontage 06: Noalimba Avenue, Kentucky South

Refer to cropped 60° image - Photomontage 06a



Proposed View - 180 degree field of view



Proposed Wireframe View - 180 degree field of view

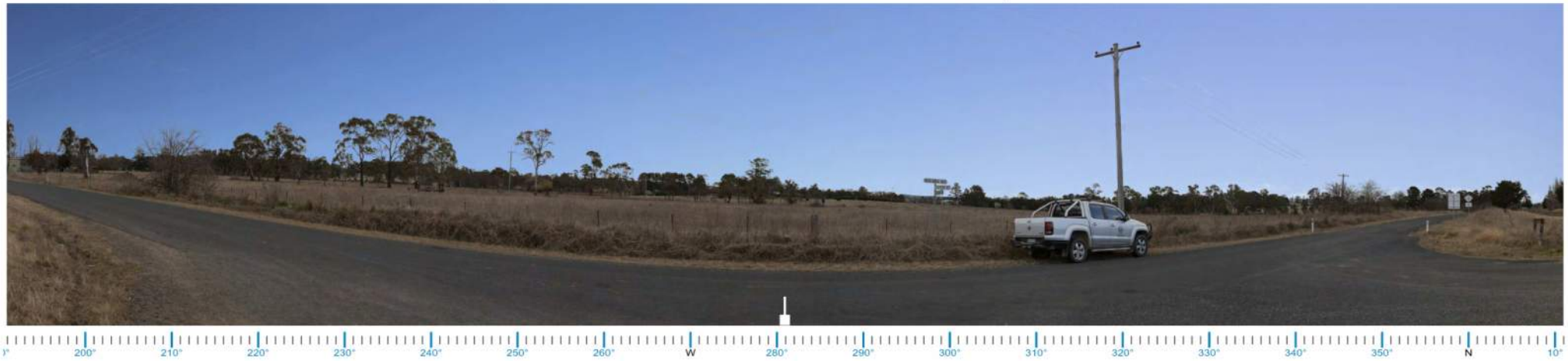
Photomontage 06a: Noalimba Avenue, Kentucky South

Proposed View - 60 degree field of view

Photomontage 06: Noalimba Avenue, Kentucky South

Proposed View - 180 degree field of view

Refer to cropped 60° image 06b



Proposed Modified Sky View - 180 degree field of view

Photomontage 06b: Noalimba Avenue, Kentucky South

Proposed Modified Sky View - 60 degree field of view

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Detailed Assessment Findings - Noise

Noise Assessment Overview

- Sonus undertook the visual assessment for Stg1
- Monitoring undertaken near 4 dwellings that within close proximity to the project
- Sound meters were installed for approx. 6 weeks together with weather loggers at 2 locations
- Noise Assessment Bulletin requires the predicted noise level to not exceed 35 decibels or the background noise + 5dB
- Peer review completed by SLR Consulting Australia

Results

- WTG operational noise: meets baseline criteria of 35dB at all non-associated dwellings in near proximity to the Project
- Substation noise: predicted below 35dB at the closest non-associated dwellings (15dB)
- Construction noise during standard hours: temporary exceedance of 45dB at 6 non-associated dwellings, however this is significantly <75dB and relates to linear construction noise (i.e. road construction)
- Vibration effects not predicted at non-associated dwellings

- Any required blasting can be designed to meet relevant air-blast overpressure and ground vibration criteria
- Noise as a result of additional vehicle movements predicted to achieve noise criteria
- Neoen to develop a CEMP and OEMP

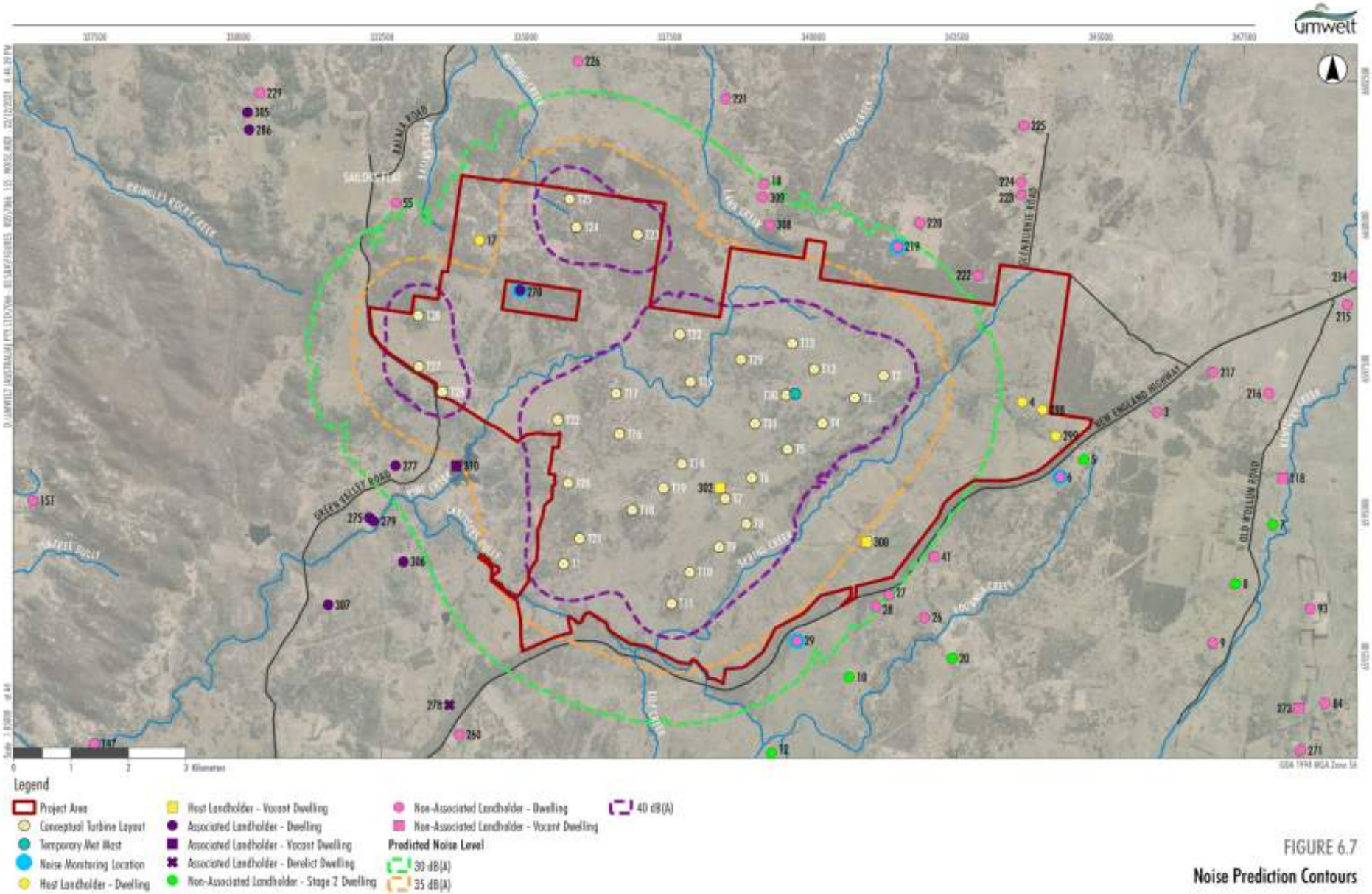

FIGURE 6.7

Noise Prediction Contours

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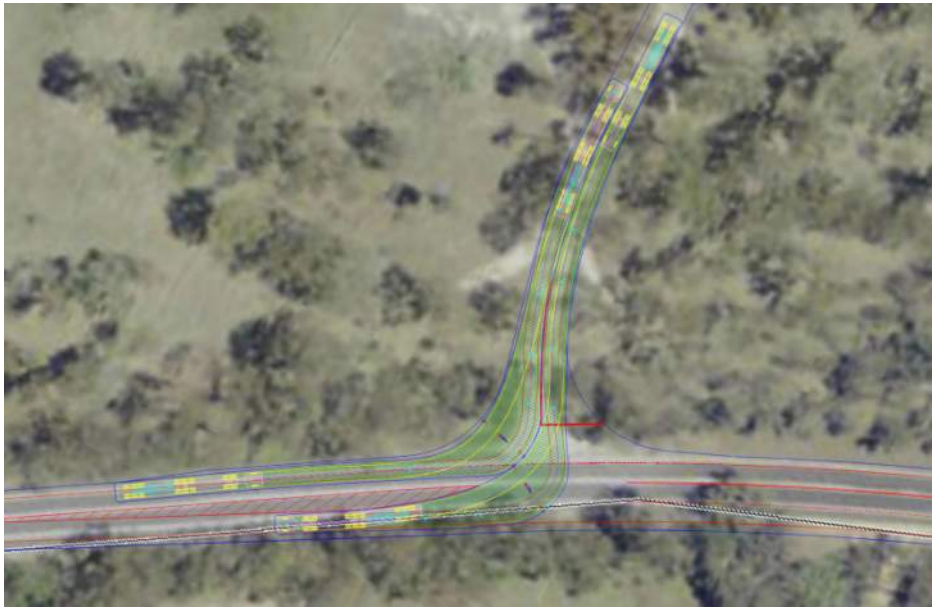
Detailed Assessment Findings - Traffic

Traffic Assessment Overview

- Assessment undertaken by Access Traffic and route assessment by Rex Andrews
- Traffic route from Port of Newcastle via New England Hwy
- One access point to Project from New England Hwy, no need to use smaller local roads

Results – Traffic Assessment

- Project will have minimal impact on the traffic operation on surrounding network
- New intersection: addition of basic left turn and short channelized right turn treatment at access point
- Minimal impact to New England Hwy during all phases of the project => increases in daily traffic volumes <5% and within operating capacity of the highway
- Heavy vehicle movements during construction expected to result in minor (10%) increase in pavement loadings on New England Hwy => not expected to reduce design life of existing road pavement



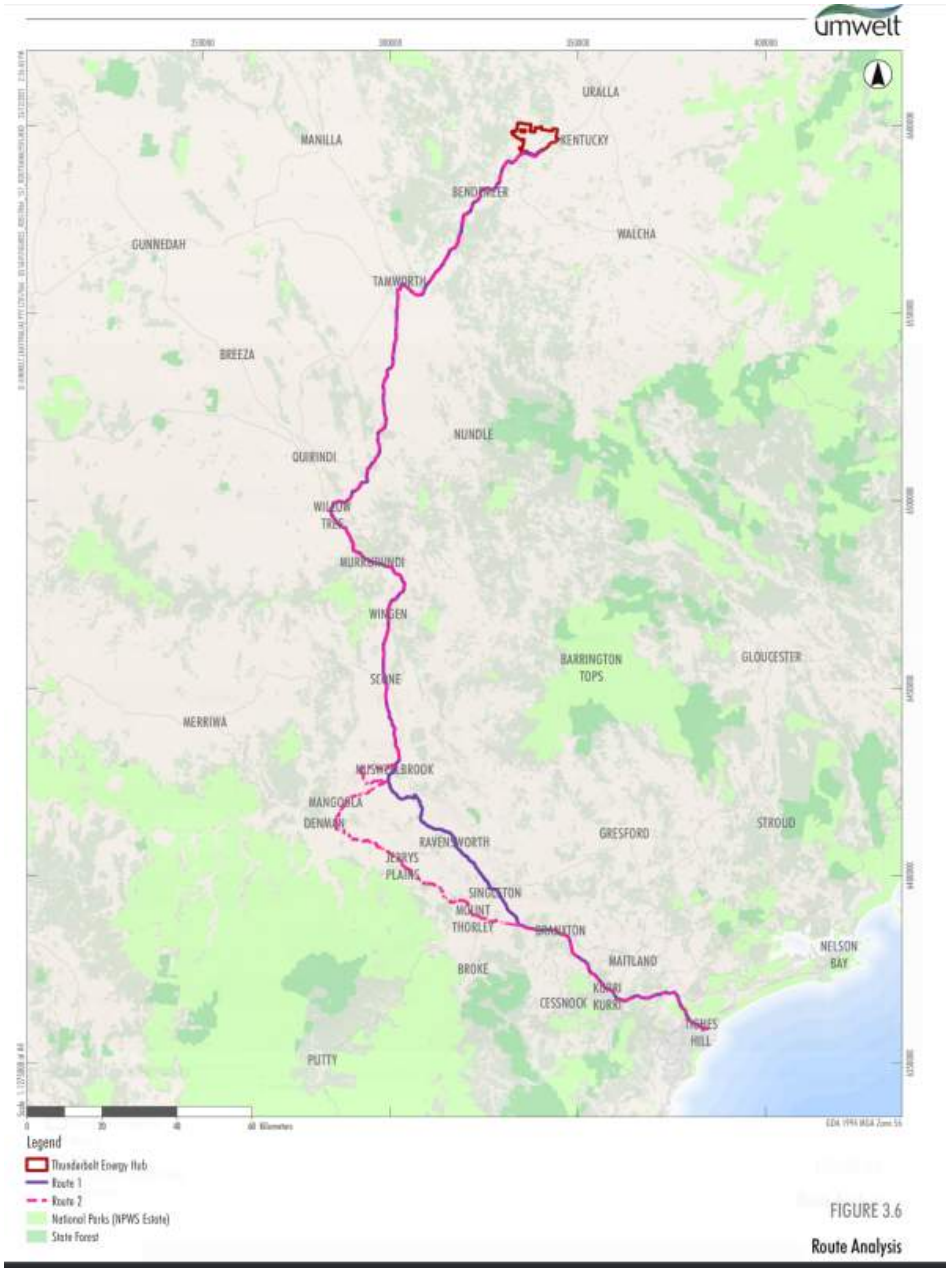
UMW0121-003 | Thunderbolt Wind Farm Project

Indicative Project Peak Daily Heavy Vehicle Movement Schedule

ID	TASK	DURATION	MONTH																	
			Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
			Q1 2024			Q2 2024			Q3 2024			Q4 2024			Q1 2025			Q2 2025		
A	Mobilisation & Site Establishment	1 M	64																	
B	Internal Access & Road Upgrades	8 M		54	54	54	54	54	54	54	54									
C	Site Infrastructure Areas	8 M			18	18	18	18	18	18	18	18								
D	Cabling (Underground & Overhead)	7 M				4	4	4	4	4	4	4								
E	Turbine Foundations	5 M			18	18	18	18	18											
F	Turbine Transportation	6 M								6	6	6	6	6	6					
G	Turbine Erection	9 M									10	10	10	10	10	10	10	10	10	
H	Finalisation / Commissioning / Demobilisation	6 M													14	14	14	14	14	14
W	Site Water	18 M	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
			74	64	100	104	104	104	104	92	102	48	26	26	40	34	34	34	34	24

RESULTS – ROUTE ASSESSMENT

- Route from Newcastle Port to site
- All wind turbine components will be within the road reserved (not crossing private properties)
- 2 routes proposed: route 1 to transport blades and loads under 5.2m height; route 2 to transport towers and loads over 5.2m in height
- Some treatments required along the route => further analysis once timing of construction is know (a number of wind farm projects in the region are proposing a similar route; however construction timing is unknown)
- Detailed design to be undertaken when turbine manufacturer and components are confirmed



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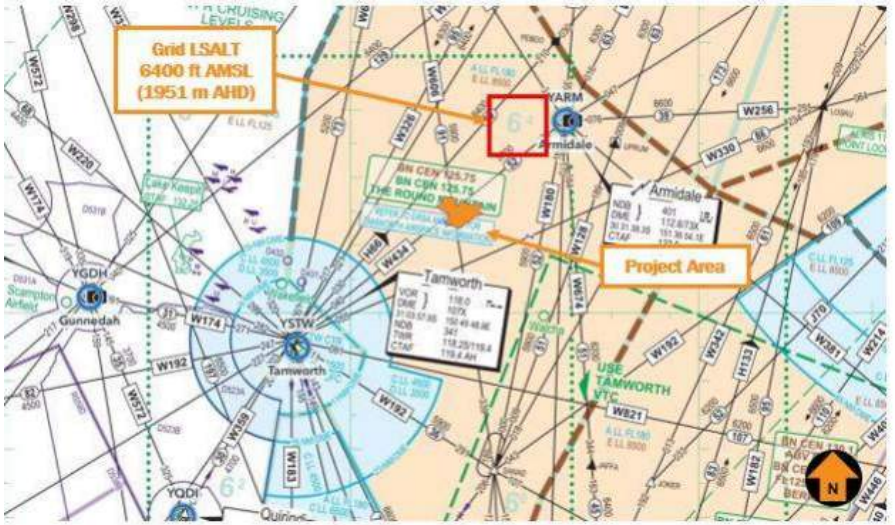
Detailed Assessment Findings - Aviation

Aviation Assessment Overview

- Aviation Projects undertook the aviation assessment for Stg1
- Assessment involved desktop studies and consultation with relevant stakeholders

Results

- Project will not impact operation of Tamworth and Armidale airports
- Will not impact nearby designated air routes or the grid lowest safe altitude (LSALT)
- Will not impact on prescribed airspace (within un-controlled airspace)
- Outside of clearance zones associated with aviation navigation aids and communication facilities
- May create wake turbulence affecting aircraft operations at three nearby private aircraft landing areas (one a host landholder). Neoen has engaged with these landholders
- Relevant operation requirements for aerial fire-fighting to be addressed in the Bushfire Emergency Management Plan in consultation with RFS (prepared during detailed design)
- RFS advised that regarding aerial firefighting, wind turbines will be treated like any other potential hazard to aircraft operations
- A safety risk assessment was undertaken and obstacle lighting is not required on wind turbines



Air route	Waypoint pair	Route LSALT	MOC	Impact on airspace design	Potential solution	Impact on aircraft ops
W434	YSTW-YARM	5700 ft AMSL	4700 ft AMSL	Nil	N/A	N/A
W606	SANAD – YIVL	5900 ft AMSL	4900 ft AMSL	Nil	N/A	N/A
W330	YSTW – LOSKU	6600 ft AMSL	5600 ft AMSL	Nil	N/A	N/A
W180	YARM – SANAD	5900 ft AMSL	4900 ft AMSL	Nil	N/A	N/A
H66	YSTW – PEBDO	6400 ft AMSL	5400 ft AMSL	Nil	N/A	N/A
W326	YSTW – YGLI	6300 ft AMSL	5300 ft AMSL	Nil	N/A	N/A
W169	YSTW - HUUGO	6400 ft AMSL	5400 ft AMSL	Nil	N/A	N/A
Y23	YSTW - OLRIP	N/A High Air Route	N/A High Air Route	Nil	N/A	N/A

Note: MOC is the height above which obstacles would impact on LSALTs or air routes.

The Project will not an impact on the grid LSALT or route LSALT.

Consultation

Aviation Projects undertook the following consultation:

- Aerial Application Association of Australia
- Airservices Australia
- Armidale Regional Council (aerodrome operator)
- Department of Defence
- Royal Flying Doctor Service
- NSW Rural Fire Service
- Tamworth Regional Council (aerodrome operator)
- Landholders (x3) who may be impacted by wake turbulence at nearby private aircraft landing areas

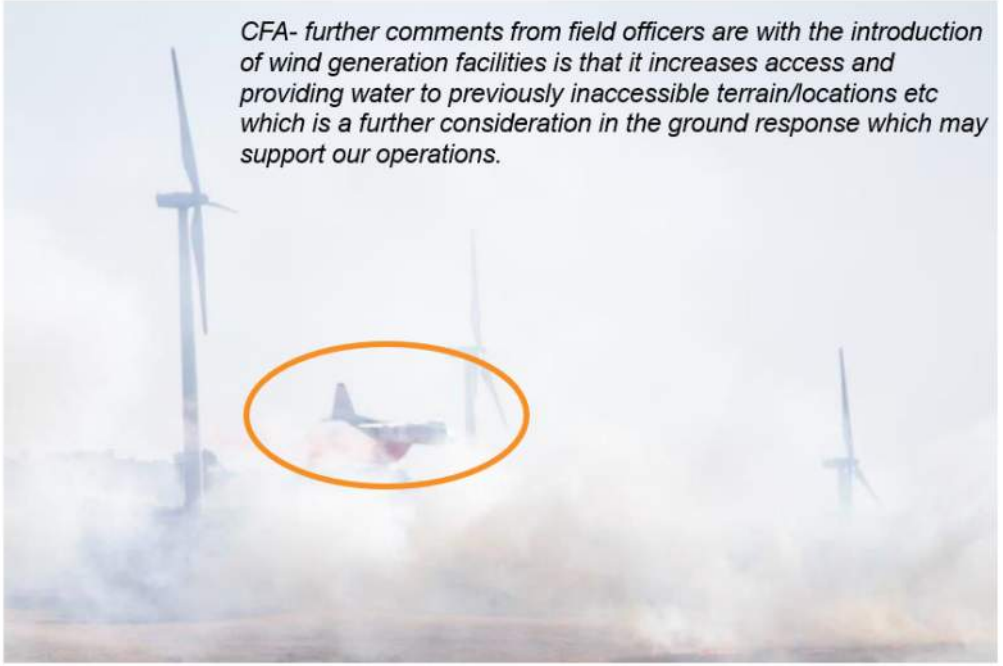
Wind Farms and Bushfire Operations

From Aviation Project's presentation to the community in Sep-21:

- The Australasian Fire and Emergency Services Council (AFAC) has developed a national position on wind farms.
- Development and operations in relation to bushfire prevention, preparedness, response and recovery, set out in the document titled Wind Farms and Bushfire Operations, version 3.0, dated 25 October 2018.

The developer or operator should ensure that:

- *liaison with the relevant fire and land management agencies is ongoing and effective*
- *access is available to the wind farm site by emergency services response for on-ground firefighting operations*
- *wind turbines are shut down immediately during emergency operations – where possible, blades should be stopped in the 'Y' or 'rabbit ear' position, as this positioning allows for the maximum airspace for aircraft to manoeuvre underneath the blades and removes one of the blades as a potential obstacle.*
- *Aerial personnel should assess risks posed by aerial obstacles, wake turbulence and moving blades in accordance with routine procedures.*



Source: Country Fire Authority (VIC) – C130 Fire Bomber

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Detailed Assessment Findings - Biodiversity

Biodiversity Assessment Overview

- Umwelt undertook the biodiversity assessment for Stg1
- Assessment involved several seasonal on-site surveys between early 2020 and early 2022
- Biodiversity impacts assessed in accordance with the NSW Biodiversity Assessment Method (BAM)

Results

- The conceptual layout was designed to avoid, minimize and mitigate biodiversity impacts and to maximise the use of existing disturbed areas
- Assessment represents worst-case conservative estimates and opportunities to reduce impacts will be investigated during detailed design
- Critically endangered ecological communities (White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland) have been avoided where practicable => impact limited to 8.56 ha of moderate to good condition vegetation and 5.66 ha of heavily grazed Derived Native Grassland
- Impacts to aquatic habitat will be minor in the Project Area (impact limited to crossing over tributaries)
- impact of wind turbines considered for 15 aerial fauna species; 13 bird and 2 bat species
- 4 are considered high risk (swift parrot, regent honeyeater, white-throated needletail and large bentwing-bat), 11 moderate risk
- Of the 4 high risk species, 2 have a high risk rating of collision and 2 a moderate rating

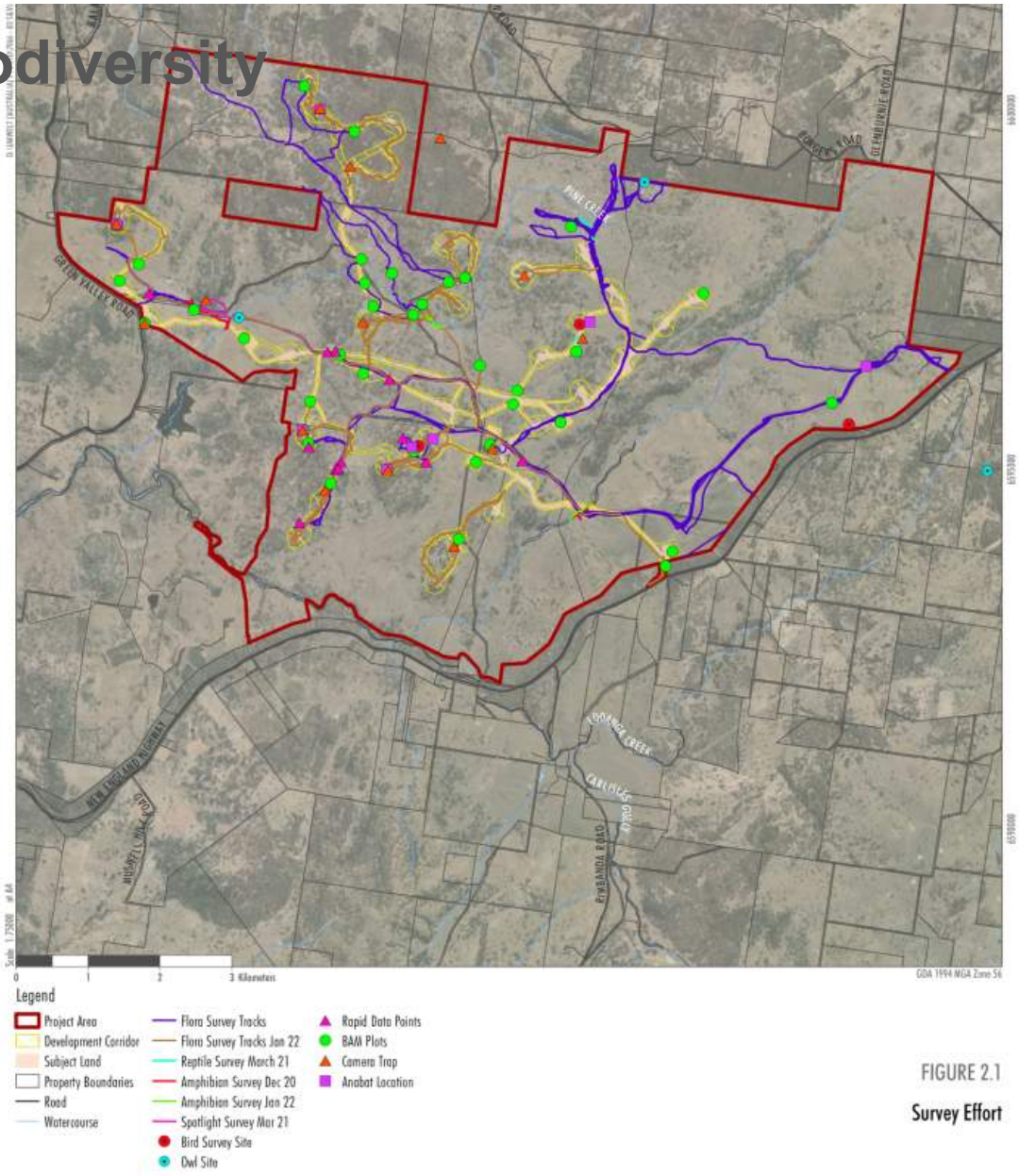


FIGURE 2.1
Survey Effort

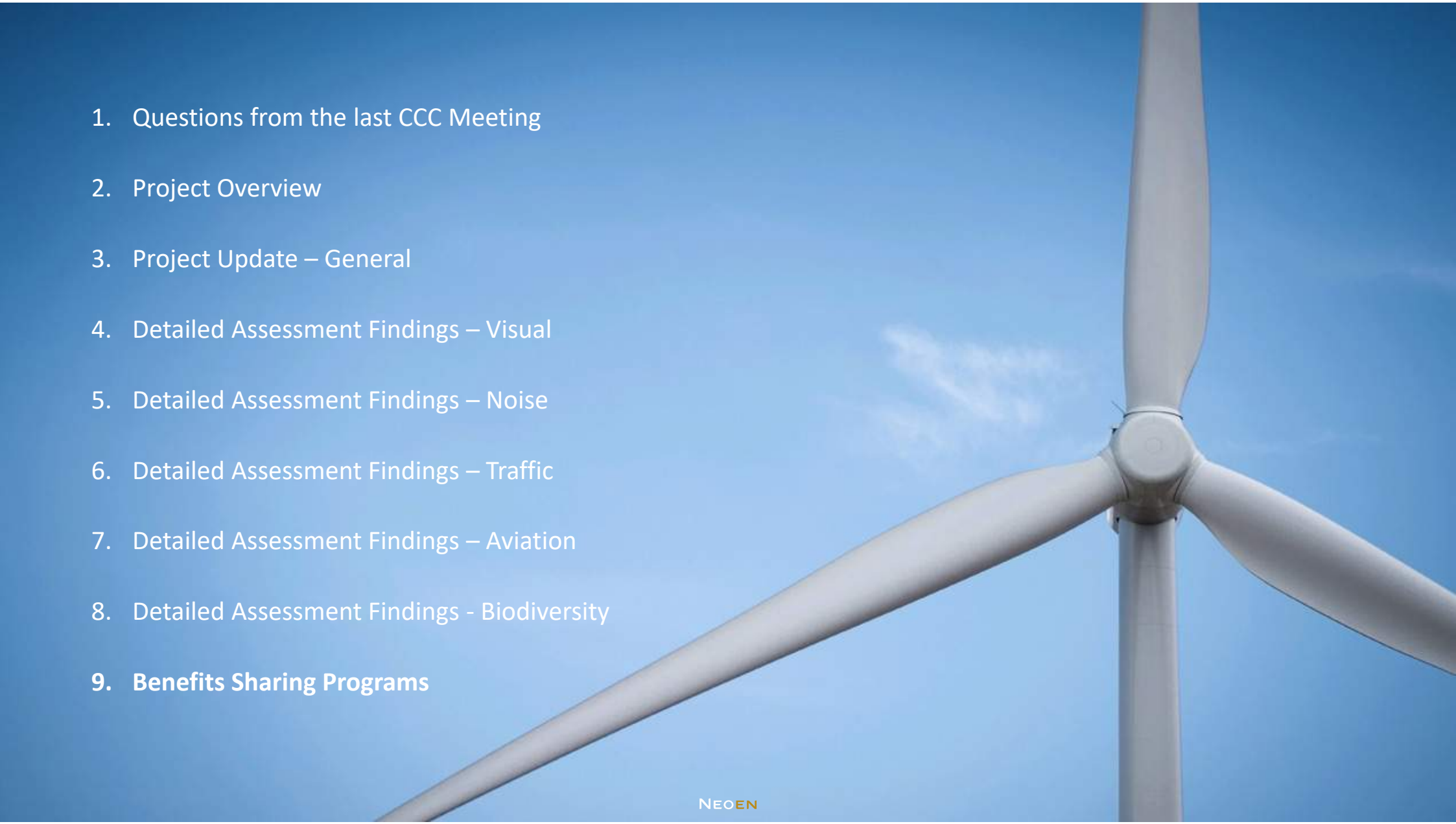
Detailed Assessment Findings - Biodiversity

- Impact associated with removal of native vegetation and the threatened Blue Grass and koala habitat will be offset by Neoen in accordance with the BAM
- Total disturbance area of the project is 215 ha. Within this area, the area of native vegetation impacted is as per the table
- Neoen has committed to the implementation of a biodiversity offset strategy and a Bird and Bat Adaptive Management Plan
- Already cleared and/or disturbed vegetation were preferred to be utilised
- The design has evolved in response to 2-years of surveys, always following the avoid, minimise, offset approach.
- Design was guided by Umwelt's site survey results

Table 5.1 Direct Impacts on Biodiversity Features

Species	Area within the Subject Land (ha)
Plant Community Type	
VZ1: 501 Bendemeer White Gum - Silvertop Stringybark - Rough-barked Apple +/- Moonbi Apple Box grassy open forest of the southern New England Tableland Bioregion moderate good condition	51.42
VZ2: 501 Bendemeer White Gum - Silvertop Stringybark - Rough-barked Apple +/- Moonbi Apple Box grassy open forest of the southern New England Tableland Bioregion derived native grassland condition	72.23
VZ3: 501 Bendemeer White Gum - Silvertop Stringybark - Rough-barked Apple +/- Moonbi Apple Box grassy open forest of the southern New England Tableland Bioregion exotic condition	50.30
VZ4: 510 Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion moderate good condition	5.39
VZ5: 510 Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion Derived Native Grassland	4.58
VZ6: 510 Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion Derived Native Grassland - Moderate	1.55
VZ7: 542 Stringybark - Rough-barked Apple - cypress pine shrubby open forest of the eastern Nandewar Bioregion and western New England Tableland Bioregion moderate good condition	4.12
VZ8: 559 Youman's Stringybark - Mountain Gum open forest of the western New England Tableland Bioregion moderate good condition	18.14
VZ9: Sedgeland fens wetland of impeded drainage of the Nandewar Bioregion and New England Tableland Bioregion moderate condition	3.21
VZ10: 510 Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion – Planted Vegetation	0.56

Species	Area within the Subject Land (ha)
Species Habitat	
Bluegrass (*Dichanthium setosum*)	68.96
Koala (*Phascolarctos cinereus*)	79.56



1. Questions from the last CCC Meeting
2. Project Overview
3. Project Update – General
4. Detailed Assessment Findings – Visual
5. Detailed Assessment Findings – Noise
6. Detailed Assessment Findings – Traffic
7. Detailed Assessment Findings – Aviation
8. Detailed Assessment Findings - Biodiversity
9. **Benefits Sharing Programs**

Neighbour Benefits

EXAMPLE NEIGHBOUR PAYMENT

In this example, there are 2 wind turbines proposed within 2-2.5km from a neighbour's dwelling, 4 turbines between 2.5-3km and 1 turbine within 3-3.5km.

Their annual neighbour benefits payment would be: **$15,000 each year**

($3,000 x 2) + ($2,000 x 4) + ($1,000 x 1)

Community Benefits ANY CHANGES FOR THIS SLIDE?

Community Benefit Fund
The funds would be allocated to local community projects through a competitive annual grants process. The fund could be administered either by Council or a local organization.

Possibility to invest in the project
Would you like the opportunity to invest some of your money in this project and make an annual return?

Support of local art and tourism
Are there any local arts or tourism ideas that you would like to see or support?

Solar and battery storage for households

Tell us your ideas
To submit your ideas, please fill out our online survey:

www.surveymonkey.com/r/neoenthunderbolt

Economic benefits – Stage 1

$150M ECONOMIC BOOST

FOR THE REGION*
DURING PROJECT LIFE

$373 MILLION

CAPITAL
INVESTMENT
VALUE

190

JOBS CREATED
DURING
CONSTRUCTION

5-10

JOBS CREATED
DURING
OPERATION

*Includes Armidale, Tamworth, Uralla and Walcha Regional Council Areas

NEOEN