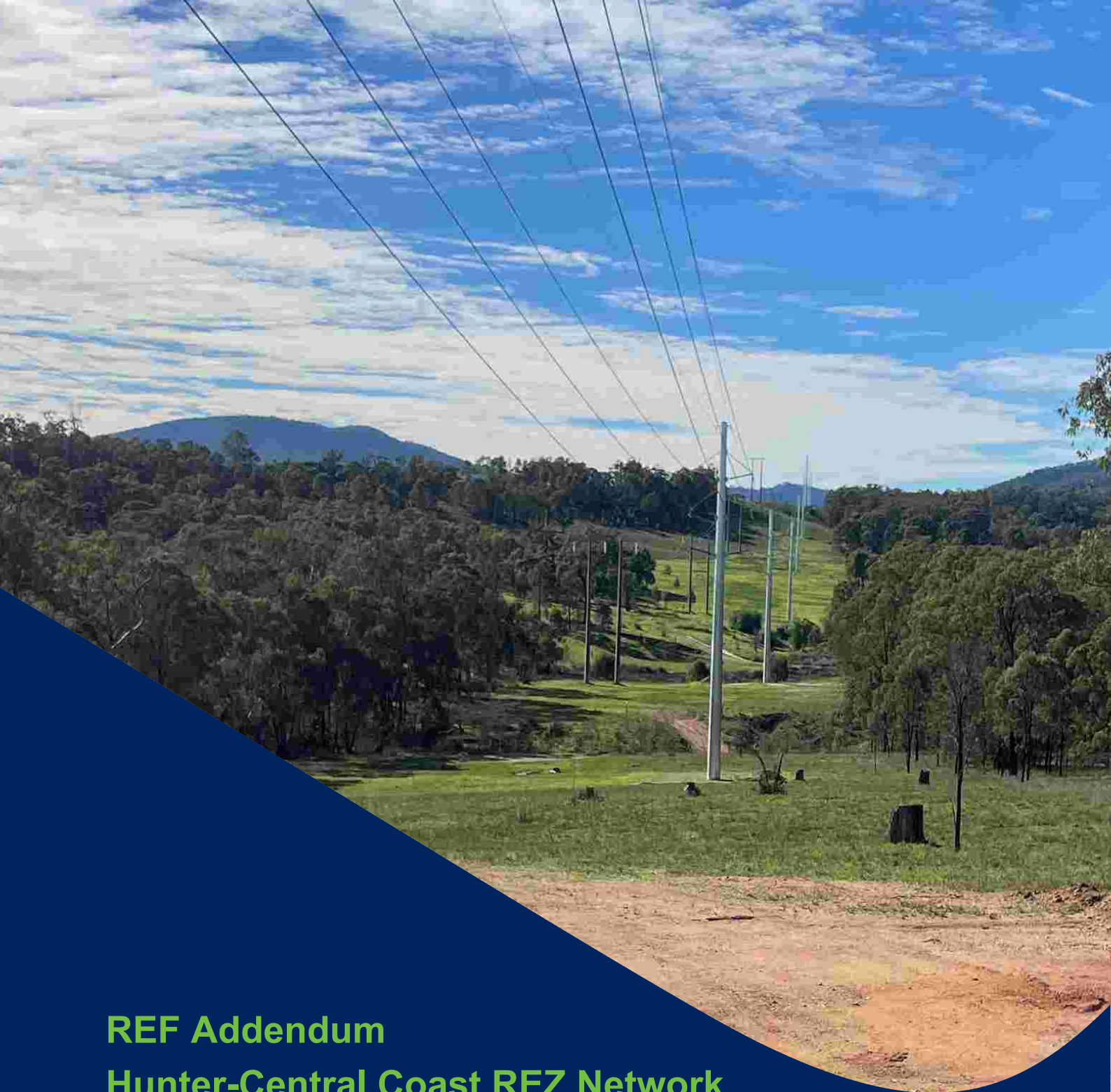




REF Addendum
Hunter-Central Coast REZ Network
Infrastructure upgrades
September 2026

Wired for good.™



Document control

Document status	DRAFT
Document type	REF
Approval Authority	James Hart
Release Authority	James Hart
Release date	
Security classification	Unclassified
Proposed activity	Construct, operate and maintain Hunter - Central Coast REZ Network Infrastructure upgrades
Document code	REF - 348
Network investment governance	NIG – 11641
Work breakdown structure	WBS – NC-01006
Proponent name	Ausgrid Operator Partnership, trading as Ausgrid
Proponent address	42 Honeysuckle Dr, Newcastle NSW 2300
REF Prepared by	Richard Dunnicliff
Title	Environment Officer
Qualifications	Bachelor of Science, Master of Environmental and Business Management

Version headline	Headline
Rev A	For review
Rev 1	Final

Contents

Document control.....	2
Contents	3
Executive summary	ii
1 Introduction	3
1.1 Background.....	3
1.2 Purpose of the addendum	4
1.3 The proposal	4
1.4 Related projects	5
1.5 Study area.....	5
2 Description of the proposed modifications.....	7
2.1 Hunter Expressway crossing – Branxton.....	7
2.2 ARTC crossing off Standen Drive, Belford	7
2.3 Pothana Lane, Belford	8
2.4 Golden Highway, Whittingham	8
2.5 Mitchell Line of Road - Singleton Military Area 1 (Dochra).....	9
2.6 Mitchell Line of Road – State of NSW Land	10
2.7 Mitchell Line of Road - Singleton Military Area 2.....	10
2.8 Mitchell Line of Road - Singleton Military Area 3 (Redgroves).....	11
2.9 Jerrys Plains Road - Mt Thorley	11
2.10 Liddell Coal, Ravensworth	13
2.11 Antiene STSS – Hebden.....	13
3 Consultation.....	14
3.1 Statutory consultation	14
3.2 Aboriginal community consultation	15
3.3 Landholder consultation.....	15
4 Investigation of alternatives for the proposal	15
5 Environmental legislation.....	16
5.1 Environmental Planning and Assessment Act 1979 (EP&A Act)	16
5.2 State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)	17
5.3 <i>State</i> Environmental Planning Policy (Planning Systems) 2021	17
5.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).....	17
5.5 Electricity Supply Act 1995 (ES Act).....	17
5.6 Protection of the Environment Operations Act 1997 (POEO Act)	17

5.7	Biodiversity Conservation Act 2016 (BC Act)	17
5.8	Other legislative requirements	18
5.9	Planning approvals process	18
6	Environmental assessment	22
6.1	Land use	22
6.1.1	Existing environment	22
6.1.2	Impact assessment	22
6.1.3	Environmental mitigation measures	22
6.2	Climate change	23
6.2.1	Existing environment	23
6.2.2	Impact assessment	23
6.2.3	Environmental mitigation measures	23
6.3	Electric and magnetic fields	23
6.3.1	Existing environment	23
6.3.2	Impact assessment	23
6.3.3	Environmental mitigation measures	23
6.4	Noise and vibration	24
6.4.1	Existing environment	24
6.4.2	Impact assessment	24
6.4.3	Environmental mitigation measures	24
6.5	Air quality	24
6.5.1	Existing environment	24
6.5.2	Impact assessment	24
6.5.3	Environmental mitigation measures	24
6.6	Water quality and hydrology	24
6.6.1	Existing environment	24
6.6.2	Impact assessment	24
6.6.3	Environmental mitigation measures	24
6.7	Geology and soil	25
6.7.1	Existing environment	25
6.7.2	Impact assessment	25
6.7.3	Environmental mitigation measures	25
6.8	Contamination	25
6.8.1	Existing environment	25
6.8.2	Impact assessment	25
6.8.3	Environmental mitigation measures	26
6.9	Waste	26
6.9.1	Existing environment	26
6.9.2	Impact assessment	26

6.9.3	Environmental mitigation measures.....	26
6.10	Flora and fauna.....	26
6.10.1	Existing environment	26
6.10.2	Impact assessment.....	27
6.10.3	Environmental mitigation measures.....	27
6.11	Bushfire.....	27
6.11.1	Existing environment	27
6.11.2	Impact assessment.....	27
6.11.3	Environmental mitigation measures.....	27
6.12	Aboriginal cultural heritage	27
6.12.1	Existing environment	27
6.12.2	Impact assessment.....	28
6.12.3	Environmental mitigation measures.....	28
6.13	Non-Aboriginal heritage	29
6.13.1	Existing environment	29
6.13.2	Impact assessment.....	29
6.13.3	Environmental mitigation measures.....	30
6.14	Visual and aesthetics.....	30
6.14.1	Existing environment	30
6.14.2	Impact assessment.....	31
6.14.3	Environmental mitigation measures.....	32
6.15	Traffic and access.....	32
6.15.1	Existing environment	32
6.15.2	Impact assessment.....	32
6.15.3	Environmental mitigation measures.....	33
6.16	Social and economic.....	33
6.16.1	Existing environment	33
6.16.2	Impact assessment.....	33
6.16.3	Environmental mitigation measures.....	33
6.17	Cumulative impact	33
6.17.1	Existing environment	33
6.17.2	Impact assessment.....	33
6.17.3	Environmental Mitigation measures.....	34
7	Consideration of environmental factors	34
7.1	Section 171 factors	34
7.2	Matters of national environmental significance.....	35
7.3	Ecologically sustainable development.....	35
7.3.1	Precautionary principle	35
7.3.2	Inter-generational equity	36

7.3.3	Biodiversity conservation	36
7.3.4	Improved valuation of resources.....	36
8	Summary of impacts	36
9	Environmental management.....	39
9.1	Construction environmental management.....	39
9.2	Implementation	39
10	Summary and conclusion	40
11	Certification	41
	APPENDIX A Drawings	42
	APPENDIX B WebGIS Reports	43
	APPENDIX C Consultation	44
	APPENDIX D Ecological Assessment Report.....	45
	APPENDIX E Aboriginal Heritage	46
	References	47

Tables

Table 7-1: Consideration of section 171 factors	5
Table 3-3: Statutory consultations	14
Table 5-1: Other key legislative requirements	19
Table 6-1: Non-Aboriginal heritage mitigation measures	22
Table 6-2: Aboriginal heritage mitigation measures	28
Table 6-3: Non-Aboriginal heritage items	29
Table 6-4: Non-Aboriginal heritage mitigation measures	30
Table 6-5: Landscape Character Zones	30
Table 6-6: Visual impacts	31
Table 6-7: Traffic and access mitigation measures	Error! Bookmark not defined.
Table 7-1: Consideration of section 171 factors	34
Table 7-2: Consideration of matters of NES.....	35
Table 8-1: Summary of impacts.....	36

Figures

Figure 1-1: Approved project	3
Figure 1-2: Aerial view of HCC REZ study area	6
Figure 2-1: Hunter Expressway crossing – Branxton	7

Figure 2-2: ARTC crossing off Standen Drive, Belford.....	8
Figure 2-3: Pothana Lane, Belford	8
Figure 2-4: Golden Highway, Whittingham.....	9
Figure 2-5: Mitchell Line of Road reconfiguration Dochra – SMA 1	9
Figure 2-6: Mitchell Line of Road - Singleton Military Area 1	10
Figure 2-7: Mitchell Line of Road - Singleton Military Area 2	10
Figure 2-8: Mitchell Line of Road - Singleton Military Area - Redgroves	11
Figure 2-9: Jerrys Plains Road - Mt Thorley.....	12
Figure 2-10: Glendell Mine, Ravensworth	13
Figure 2-11: Antiene STSS – Hebden	14

Executive summary

On 29 August 2025, Ausgrid approved a Review of Environmental Factors (REF) for the Hunter-Central Coast Renewable Energy Zone Network Infrastructure Upgrades Project. The approved project includes the construction of two new 132 kV Subtransmission Switching Stations at Sandy Creek and Antiene, rebuilding and augmentation of existing 66 kV and 132 kV powerlines between Kurri Kurri and Muswellbrook, upgrades to Kurri Subtransmission Substation and Rothbury Zone Substation, and associated telecommunications infrastructure. Construction commenced in January 2026.

During detailed design development, constructability assessments and ongoing landholder negotiations, a series of modifications to the approved powerline route were identified. These modifications are required to improve constructability, enhance safety outcomes, maintain network reliability, respond to landholder requirements, improve access arrangements and accommodate detailed design refinements. This REF Addendum assesses eleven route modifications located at Branxton, Belford, Whittingham, Singleton Military Area, Mount Thorley, Ravensworth and Hebden.

Ausgrid, as an Authorised Network Operator, is a prescribed Determining Authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and a Public Authority under the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). This REF Addendum has been prepared in accordance with section 5.5 of the EP&A Act and Clause 171(2) of the EP&A Regulation to assess the environmental impacts associated with the proposed route modifications.

Environmental assessment of the modifications considered land use, climate change, electric and magnetic fields, noise and vibration, air quality, water quality, soils, contamination, waste, flora and fauna, bushfire, Aboriginal cultural heritage, non-Aboriginal heritage, visual amenity, traffic and access, social and economic factors, and cumulative impacts. Specialist assessments were updated where necessary, including ecological and Aboriginal cultural heritage investigations. The assessment identified that the modifications would result in an incremental increase in impacts, including the clearing of up to 4 hectares of Central Hunter Grey Box-Ironbark Woodland and the removal of up to 11 additional significant trees. Additional visual impacts would occur at a limited number of locations; however, overall impacts remain minor and manageable through existing project controls and mitigation measures.

The assessment concludes that, with the implementation of the mitigation measures identified in this REF Addendum and the approved REF, the proposed route modifications are not likely to significantly affect the environment, threatened species, ecological communities or their habitats, and are not likely to have a significant impact on matters of National Environmental Significance. The modifications can be effectively managed through existing environmental management measures and will not alter the overall conclusions of the approved REF.

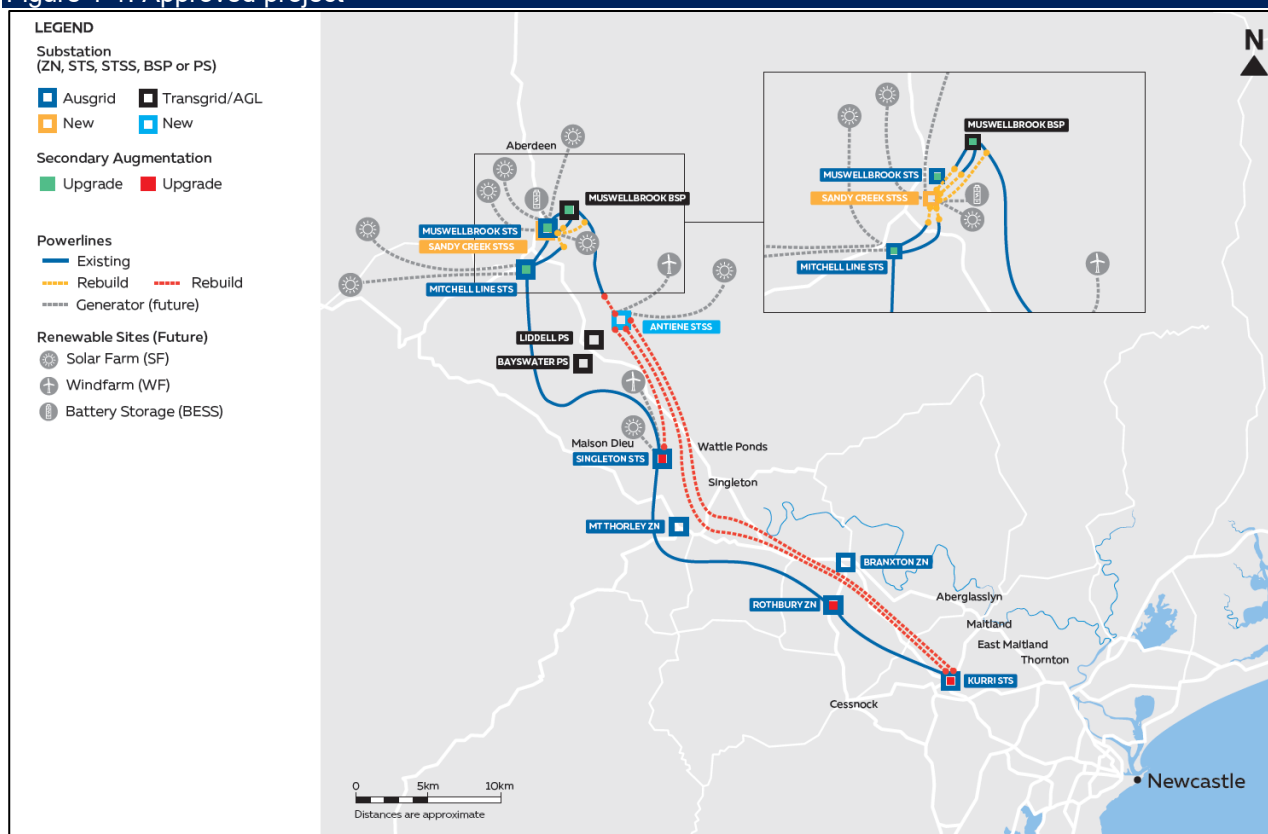
1 Introduction

1.1 Background

On 29 August 2025 Ausgrid approved a Review of Environmental Factors (original REF) for the Hunter-Central Coast Renewable Energy Zone (HCC REZ) Network Infrastructure upgrades project. The original REF included:

- new 132kV Subtransmission Switching Station (STSS)
- new Antiene 132kV Subtransmission Switching Station (STSS)
- rebuilding of 66kV and 132kV powerlines between Kurri Subtransmission Substation (STS) to the new Antiene STSS
- rebuilding of 132kV powerlines between new Sandy Creek STSS and Transgrid's Muswellbrook Bulk Supply Point (BSP)
- 132kV and 66kV network augmentations following existing feeder easements from Kurri STS to Lake Liddell.
- Kurri Subtransmission Station (STS) 132kV busbar extension
- Rothbury Zone Substation (ZS) inductor installation
- Muswellbrook fibre marshalling kiosk.

Figure 1-1: Approved project



Construction works commenced in January 2026. During detailed design development and landowner negotiations a series of modifications to the proposed powerline route have become necessary.

The purpose of this REF Addendum is to assess the potential environmental impacts of the proposed modifications and determine appropriate mitigation measures to reduce those impacts. The findings of this REF Addendum would be considered when determining whether the proposal is likely to:

- significantly affect the environment
- significantly affect threatened species, ecological communities or their habitats
- be carried out on land that is, or is part of a declared area of outstanding biodiversity value, or
- have a significant impact on matters of National Environmental Significance (NES), or a significant impact on the environment (for actions on Commonwealth land) or a significant impact on the environment on Commonwealth land (for actions outside Commonwealth land).

1.2 Purpose of the addendum

This addendum Review of Environmental Factors (REF) has been prepared by Ausgrid. For the purposes of these works, Ausgrid is the proponent and the determining authority under Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This addendum REF describes the proposed changes to the activity assessed in the REF - Hunter-Central Coast REZ Network Infrastructure upgrades August 2025 V1.0, approved by Head of Major Projects on 29/08/2025. It also describes and assesses the modifications and the associated potential environmental impacts.

For consistency and understanding, this addendum REF should be read in conjunction with the REF V1.0. The REF V1.0 contains detailed information relevant to the assessment of the proposal, including consultation undertaken before the addendum REF, construction processes and methodology, need, justification and options considered for the activity to construct, operate and maintain the Hunter-Central Coast Renewal Energy Zone network infrastructure upgrades (HCC REZ). It also assesses the potential impacts on the environment from the activity and identifies environmental safeguards to be implemented.

The findings of this addendum REF would be considered when assessing:

- whether the proposal is likely to have a significant impact on the environment and therefore the necessity for further environmental assessment as described under section 112 of the EP&A Act
- the significance of any impact on threatened species as defined by the NSW Biodiversity Conservation Act 1995 (BC Act), in Section 5A of the EP&A Act and the requirement for a Species Impact Statement (SIS)
- potential for the proposal to significantly impact a matter of national environmental significance (NES) or Commonwealth land and the need to make a referral to the Federal Minister for the environment in accordance with the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Ausgrid's determination of the proposal under Part 5 of the EP&A Act would be prepared separately to this REF addendum.

1.3 The proposal

Ausgrid is proposing to construct, operate and maintain the Hunter-Central Coast Renewal Energy Zone network infrastructure upgrades (HCC REZ) required to achieve the 1GW network transfer capacity. This REF Addendum assesses eleven proposed modifications to the approved route as follows:

1. Hunter Expressway crossing relocation, Branxton
2. ARTC crossing relocation off Standen Drive, Belford
3. New England Highway/Pothana Lane realignment, Belford
4. Golden Highway realignment, Whittingham
5. Mitchell Line of Road undergrounding of 66/11kV Dochra – Singleton Military Area (SMA) 1
6. Mitchell Line of Road realignment – State of NSW Land
7. Mitchell Line of Road realignment – SMA 2
8. Mitchell Line of Road realignment Redgroves – SMA 3

9. Jerrys Plains Road realignment, Mt Thorley
10. Liddell Coal realignment, Ravensworth
11. Antiene STSS connection reconfiguration, Hebden

1.4 Related projects

Ausgrid projects typically have related projects and flow on activities due to the interconnected nature of the network. These related projects would be subject to separate environmental impact assessments due to factors such as differences in funding, construction timeframes and design.

The following projects associated with the proposal have or will be assessed separately under the relevant provisions of the *EP&A Act*:

Table 7-1: Consideration of section 171 factors

Project	Approval
Early works distribution 11kV/400V network relocations	SERs
Upgrade of 132kV feeder protection relays at various substation in the Upper and Lower Hunter Networks	Exempt Development
Berowra to Somersby Optical Pilot Ground Wire (OPGW) and All-Dielectric Self-Supporting fibre (ADSS) replacement	Exempt development. CRAs/REF for works in NPWS.
Antiene STSS to Muswellbrook BSP underground fibre optic cable installation.	Low impact facility (Telecommunications Act)
Previous Addendums for access tracks/constructions pads/break and winch pads/minor route modifications etc.	SERs

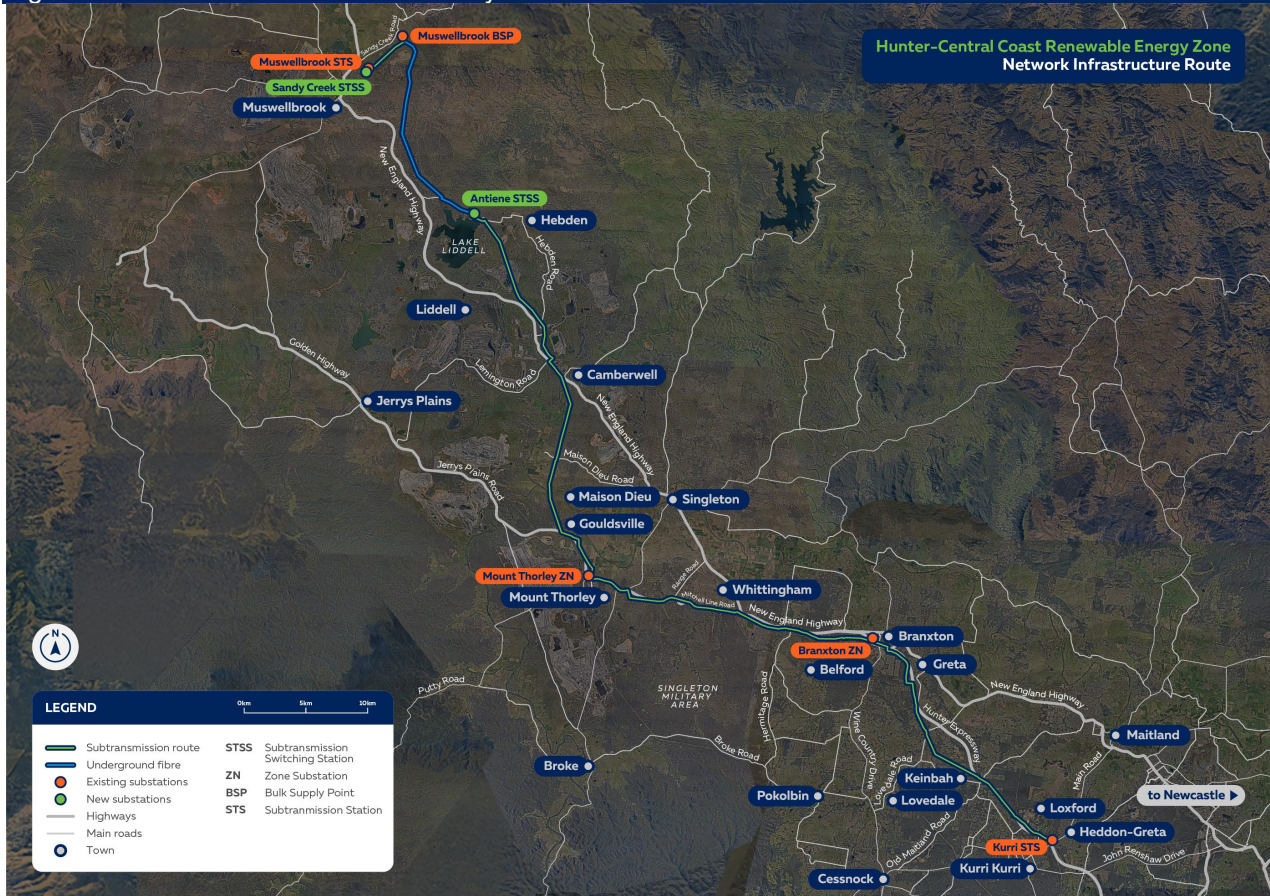
Known material cumulative impacts associated with these related projects are addressed in section 6.17.

1.5 Study area

The study area is the environment that could be directly or indirectly affected by the proposal. For the purpose of this Addendum REF, the study area is composed of 11 discreet locations including a buffer area.

Some potential impacts do not have clear physical boundaries. These are assessed on a broader scale and include land use, climate change, air quality, hydrology, waste disposal, fauna (including migratory birds), visual aesthetics, social and economic impacts. Figure 1-3 shows the study area for overall HCC REZ route.

Figure 1-2: Aerial view of HCC REZ study area



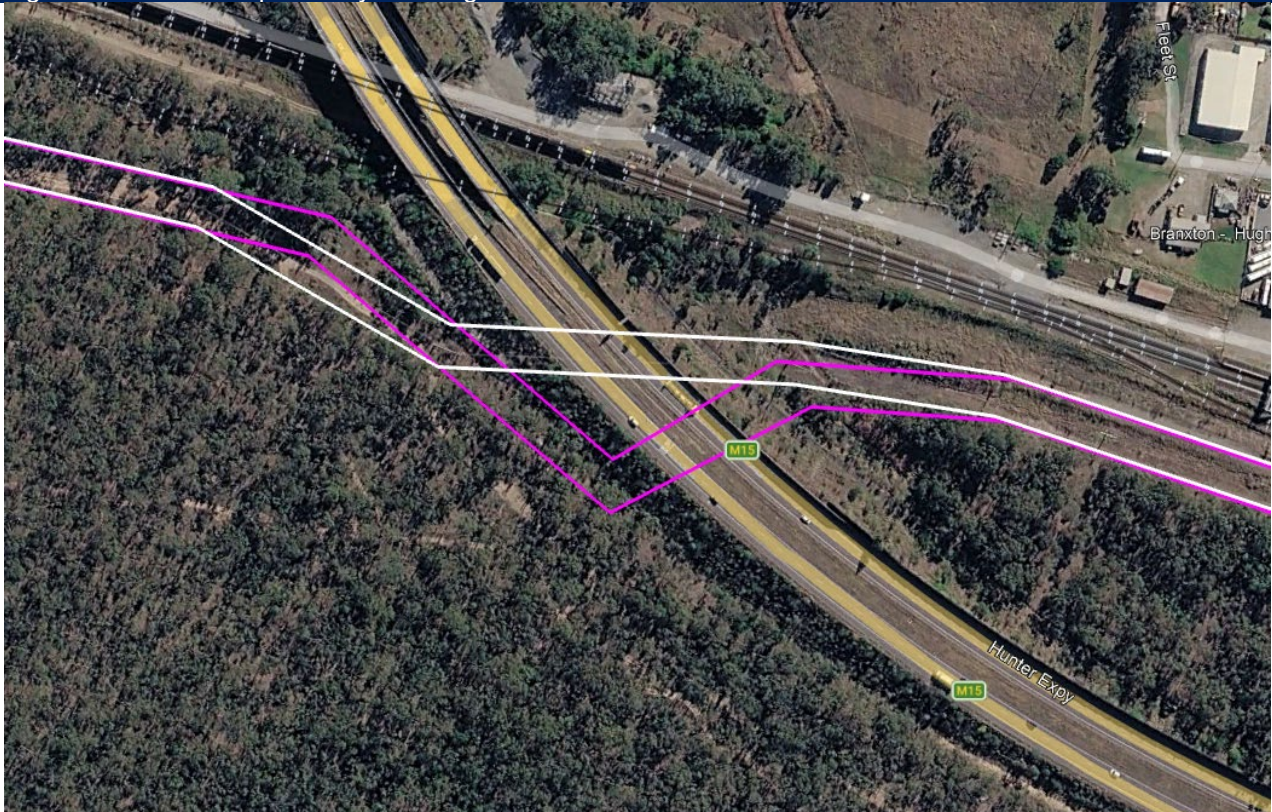
2 Description of the proposed modifications

Each of the eleven proposed modifications are outlined in the following sections. Further detail is provided in the preliminary design drawings found in Appendix A.

2.1 Hunter Expressway crossing – Branxton

The original route is shown in white in Figure 2.1 below. The modified route shows the line deviate further to the south to cross the Hunter Expressway before turning back to meet the original alignment (~500m). This modification addresses some significant constructability issues with the original route.

Figure 2-1: Hunter Expressway crossing – Branxton



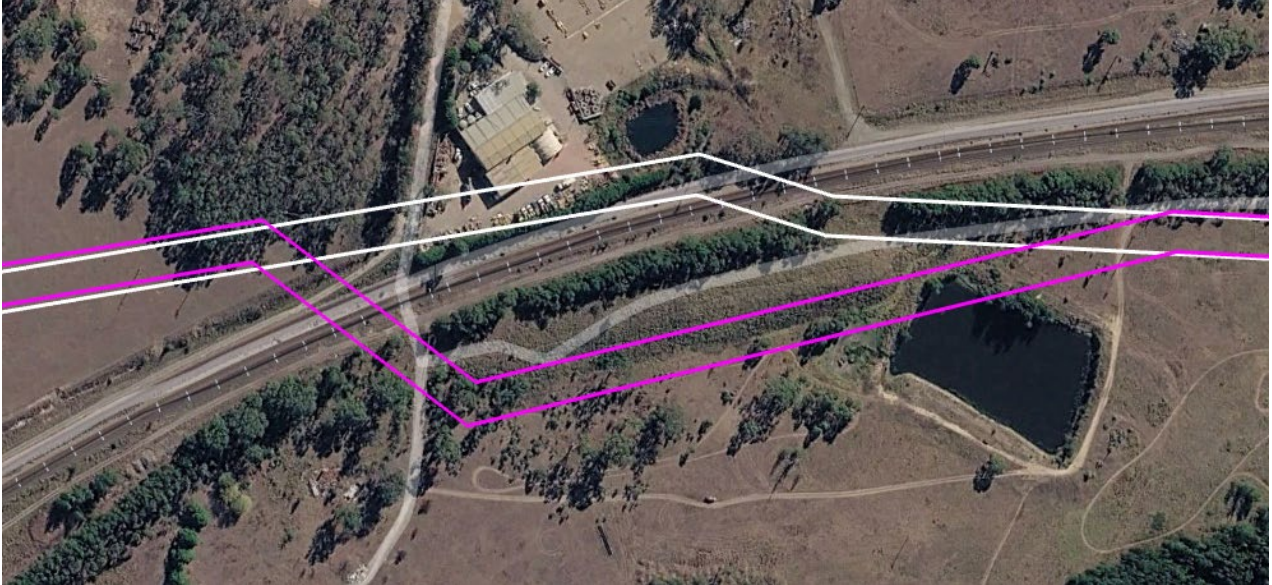
White = Original route

Pink = Proposed modification

2.2 ARTC crossing off Standen Drive, Belford

There is an existing building within the easement of the original route. The proposed route modification relocates the ARTC crossing approximately 200m west of the existing crossing thereby avoiding this interaction. In addition, the revised crossing also achieves compliant separation between new powerline structures and the railway corridor (ie pole height plus 1.8m from nearest rail). Compliance was not achievable on the original route due to the existing warehouse.

Figure 2-2: ARTC crossing off Standen Drive, Belford



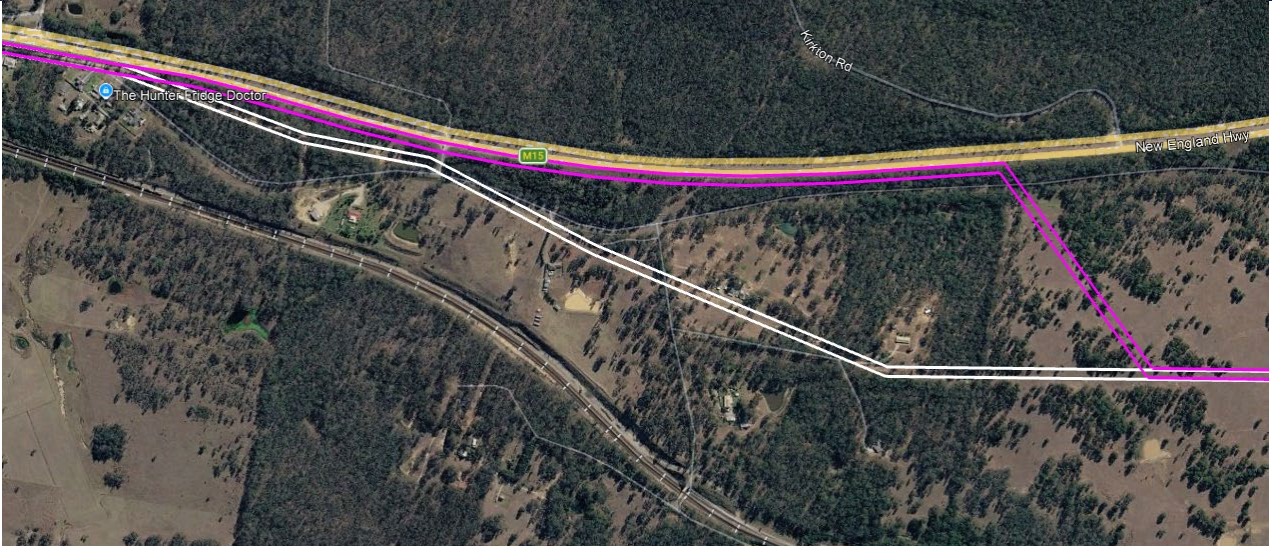
White = Original route

Pink = Proposed modification

2.3 Pothana Lane, Belford

The proposed modification diverts north through the Travelling Stock Route (TSR) for approximately 500m to the New England Highway and then heads west for approximately 1.9km before rejoining the original route.

Figure 2-3: Pothana Lane, Belford



White = Original route

Pink = Proposed modification

2.4 Golden Highway, Whittingham

The proposed modification diverts to the south of the original route for approximately 1km before rejoining in the original route. The modification was driven by the need to cross over existing 132kV FDR955, the interchange and avoid existing TfNSW laydowns. This has also considered maintaining structures to heights 32m above ground level rather than 36m and reducing the numbers of poles. Two structures on FDR955 also require replacement as part of this reconfiguration.

Figure 2-4: Golden Highway, Whittingham



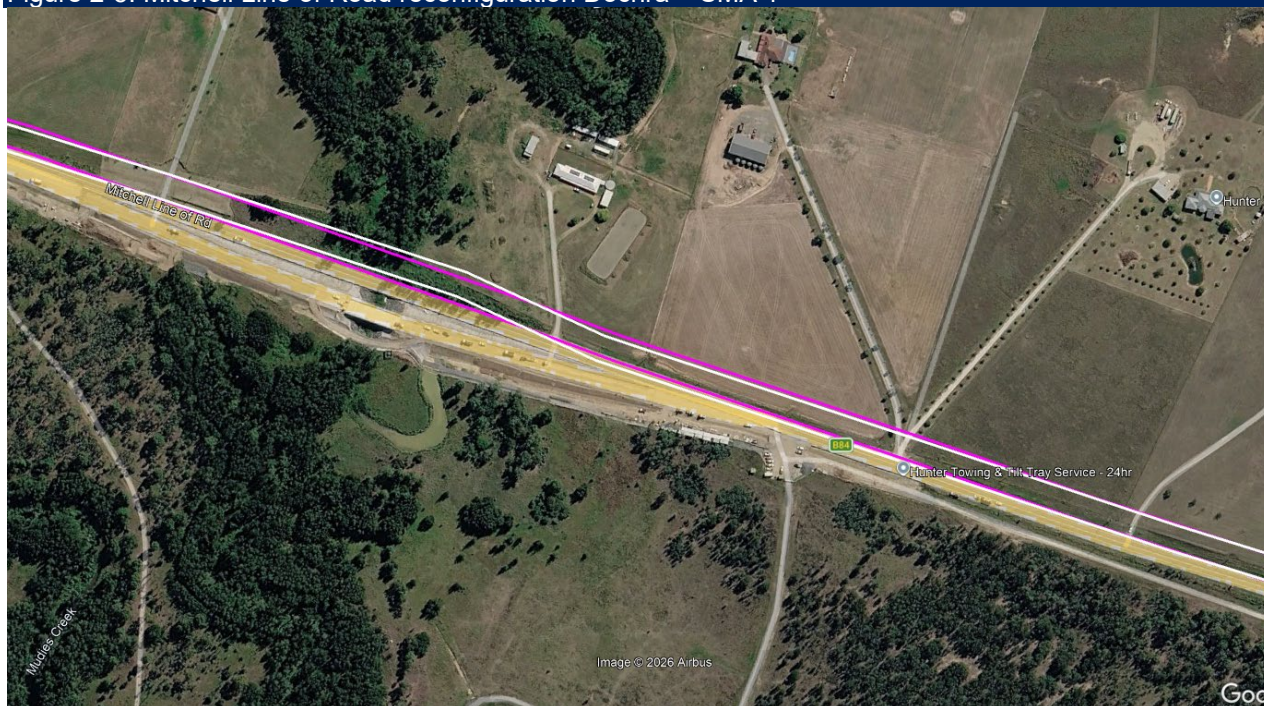
White = Original route

Pink = Proposed modification

2.5 Mitchell Line of Road - Singleton Military Area 1 (Dochra)

Relocation of existing 66kV and 11kV lines underground and lowering of the 132kV overhead. This modification was required to achieve the obstacle clearance requirements for the Dochra aerodrome take-off and landing trajectories within the SMA to the south. The final heights and configuration have been agreed with Defence.

Figure 2-5: Mitchell Line of Road reconfiguration Dochra – SMA 1



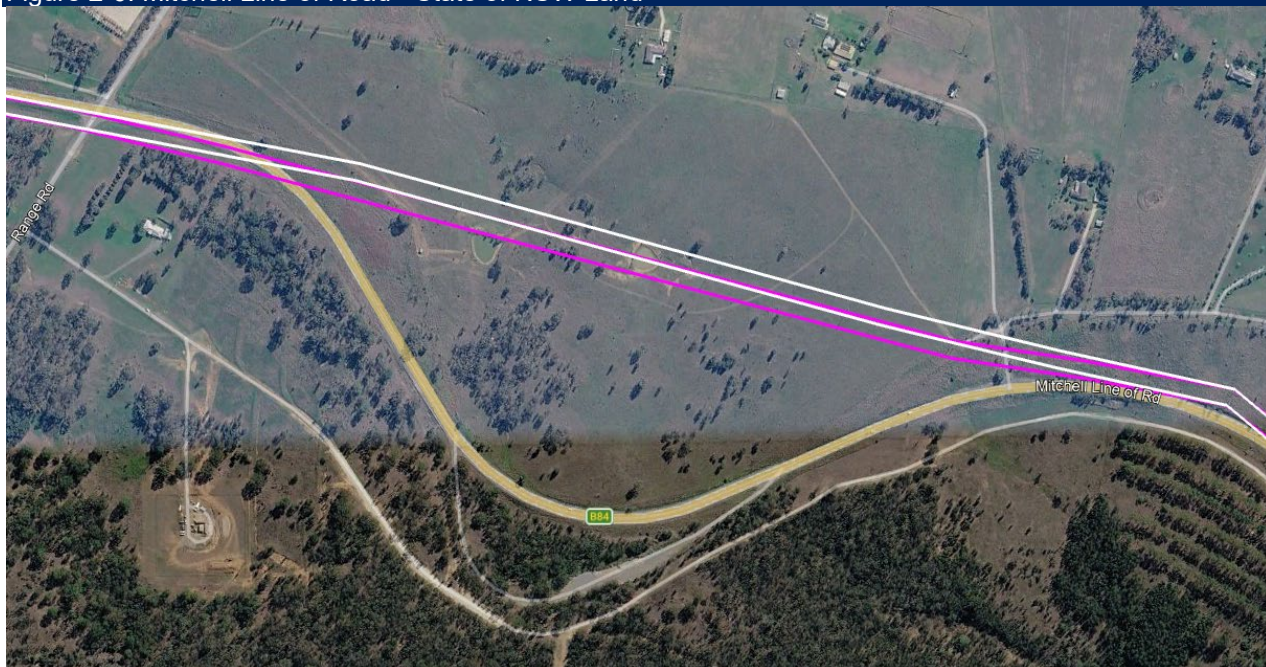
White = Original route

Pink = Proposed modification

2.6 Mitchell Line of Road – State of NSW Land

The proposed modification of approximately 1.3km diverts immediately to the south due to avoid the relocation of an 11kV circuit and finalising the detailed design.

Figure 2-6: Mitchell Line of Road - State of NSW Land



White = Original route

Pink = Proposed modification

2.7 Mitchell Line of Road - Singleton Military Area 2

The proposed modification of approximately 600m diverts to the south to stay on the southern side of Mitchell Line of Road and avoid two road crossings. This modification was driven by Defence preference for the route to stay on the southern side of the Mitchell Line of Road, removing the circuit from Defence land on the northern side.

Figure 2-7: Mitchell Line of Road - Singleton Military Area 2



White = Original route

Pink = Proposed modification

2.8 Mitchell Line of Road - Singleton Military Area 3 (Redgroves)

The proposed modification diverts to the north along Mitchell Line of Road for approximately 2km to move out of the existing easement in SMA. The modification moves the route out of the centre of both SMA and Gromor land and aligns the powerline with Mitchell Line of Road. It was driven by landowner negotiations with Defence, avoiding the need for additional easements in Defence land or in the adjacent land.

Figure 2-8: Mitchell Line of Road - Singleton Military Area 3 - Redgroves



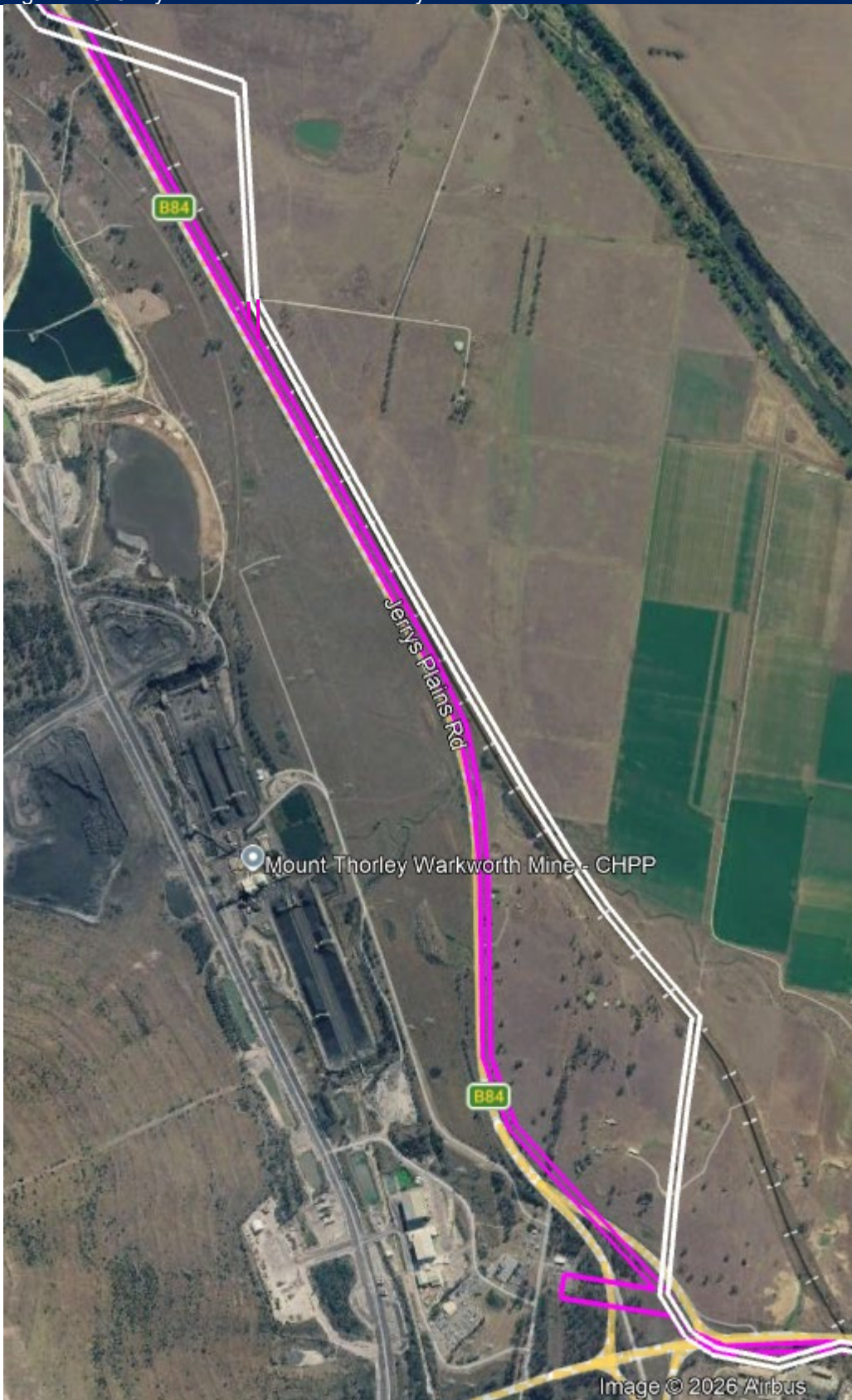
White = Original route

Pink = Proposed modification

2.9 Jerrys Plains Road - Mt Thorley

Relocation from existing Ausgrid powerline route to west to the Jerrys Plains Road for approximately 3.5km before rejoining the original route where it crosses the highway at Gouldsville. This option removes one railway line crossing and reduces impact on Yancoal buffer lands. Also included is a minor realignment on Putty Road.

Figure 2-9: Jerrys Plains Road - Mt Thorley



White = Original route

Pink = Proposed modification

2.10 Liddell Coal, Ravensworth

Minor realignment to immediately to east of existing easement for approximately 1 km due to inaccessibility of existing easement for construction and future maintenance works as a result of historical mining and rehabilitation activities.

Figure 2-10: Glendell Mine, Ravensworth



White = Original route

Pink = Proposed modification

2.11 Antiene STSS – Hebden

Minor realignment of southern connection to Antiene STSS due to detailed design and constructability issues. Addition of new northern connection approximately 1km. This modification was driven by local landcare group who had received government grants for planting trees along the foreshore of Lake Liddell. Ausgrid made a commitment to minimise the impact to those plantings by confining our alignments to existing easements on the northern and southern sides of the Great Northern Railway and Hebden Rd;

which ultimately will establish connections to Antiene STSS and the northern section of the existing 132kV Feeder 95U.

Figure 2-11: Antiene STSS – Hebden



White = Original route

Pink = Proposed modification

3 Consultation

3.1 Statutory consultation

Table 3-1: Statutory consultations

Stakeholder	Summary of engagement	Comment
Cessnock City Council	Notification 12 November 2024 – 40-day Council Notification Email response received acknowledging receipt. No issues raised	No additional notification provided as route modification is consistent with the original notification.

Stakeholder	Summary of engagement	Comment
Singleton Council	Original notification 5 November 2024 40-day Council Notification. Response received on 13 December 2024 Notification of proposed modifications submitted on 17 July 2026	Response received 10 August 2026. Comments were raised about Specific zoning and consent requirements, approved surrounding land uses, known environmental restrictions, threatened or endangered flora or fauna species, fire prone land, stormwater, Council infrastructure, locally rare or protected flora or fauna or critical habitat, wetlands or flood prone areas, land contamination, acid sulphate soils, soil instability or subsidence, heritage items or relics, including Aboriginal heritage, site access, traffic or parking restrictions, adjacent sensitive sites, potential community concerns and other nearby development proposals. These comments were considered in the preparations of this report.
Muswellbrook Shire Council	Notification 5 November 2024 40-day Council Notification Response received on 29 January 2025	No additional notification provided as route modification is consistent with the original notification.

Refer to APPENDIX B Consultation for a copy of the notice and subsequent correspondence with key stakeholders.

3.2 Aboriginal community consultation

Aboriginal community consultation has been undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010). A total of 25 Aboriginal people and organisations registered an interest in being consulted for the project. A project update was sent to all RAPs on 16 June 2026 and the draft Addendum Survey Report was sent for comment on 3 August 2026.

3.3 Landholder consultation

The project team has engaged with landholders to negotiate easements for project. In some cases, this has led to modifications of the proposed route. Landowner consultation and easement negotiations is ongoing. Consultation relating to construction issues is also ongoing as the works progress.

4 Investigation of alternatives for the proposal

No	Modificaiton	Discussion of alternatives.
1	Hunter Expressway crossing relocation, Branxton	Access and constructability issues led to the design modification. Significant civil works for access tracks and pads, would have been required on each side of the Hunter Expressway, including alteration of the drainage systems. Poles would have been significantly taller than those proposed (potentially up to 40m in height above ground level). The revised alignment allows a crossing at lower height while meeting TfNSW requirements, minimising civil works and avoiding introducing powerlines directly over existing TfNSW major road signage.
2	ARTC crossing relocation off Standen Drive, Belford	No alternatives considered. The proposed modification is the shortest route to avoid impacting the industrial property. The revised crossing also achieves compliant separation between new powerline structures and the railway corridor (ie pole height plus 1.8m from nearest rail). Compliance was not achievable on the original route due to the existing warehouse.

No	Modificaion	Discussion of alternatives.
3	New England Highway/Pothana Lane realignment, Belford	Five alternative options were considered for Pothana Lane. The chosen option has the least impact on individual landowners and aligns the powerline inside and existing infrastructure corridor.
4	Golden Highway realignment, Whittingham	The modification avoids crossings of two slip roads at the New England Highway and Golden Highway intersection – the revised southern alignment minimised pole heights and contains the powerline within the existing infrastructure corridor.
5	Mitchell Line of Road undergrounding of 66/11kV Dochra – SMA 1	Several options were considered to address Defence concerns regarding clearance for planes landing at the Dochra airbase including relocation of the line to southern side of Mitchell Line of Road. The chosen solution addresses Defence concerns, doesn't not impede take-off and landing trajectories of plane and doesn't encroach on Defence land.
6	Mitchell Line of Road realignment – State of NSW Land	The revised alignment avoids the relocation of existing 11kV circuits within the State of NSW land.
7	Mitchell Line of Road realignment – SMA 2	Ausgrid considered the original location on the northern side of Mitchell Line of Road, however, consultation with Defence led to moving the route to the southern road corridor and in Defence training areas.
8	Mitchell Line of Road realignment Redgroves – SMA 3	Ausgrid's original proposal was to use the existing easement joining a new easement on the western boundary of Redgroves. However, Defence negotiations resulted in a relocation to the existing road infrastructure corridor. Regarding the Putty Rd relocation, the combination of the Redgroves relocation and the consultation with Hunter Transmission Project (HTP) team, resulted in a relocation to directly adjacent to the southern side of Putty Rd.
9	Jerrys Plains Road realignment, Mt Thorley	The route was moved to reduce impact on mining buffer lands and provide separation from HTP route – positioning the new powerline within an existing infrastructure corridor. The western side of Jerrys Plain Road was discounted due to existing powerlines and constructability within active mine site.
10	Liddell Coal realignment, Ravensworth	Ausgrid's original proposal in the existing easement is inaccessible due to historical mining and rehabilitation activities. This modification is the shortest feasible relocation to avoid the inaccessible easement.
11	Antiene STSS connection reconfiguration, Hebden	The existing connection was narrowed and realigned to follow an existing easement, which avoided access and constructability issues closer to Lake Liddell shoreline and minimised impact to tree plantations installed by the local landcare team under government grants. This resulted in the need to move one new powerline connection into the existing easement on the northern side of the railway corridor.

5 Environmental legislation

5.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act is the primary legislation regulating land use planning in NSW. It provides the framework for the development of state and local planning instruments which, through their hierarchy, determine the statutory process for environmental impact assessment. Under Part 5 of the EP&A Act, activities require a determining authority to take into account all matters affecting or likely to affect the environment by the

proposed activity. The NSW Government has included Authorised Network Operators (ANOs) as prescribed determining authorities for the purposes of Division 5 of the Environment Planning and Assessment Act 1979 (EP&A Act) as per the definition of “public authority” under Schedule 1(4) of the Environment Planning and Assessment Regulation 2021 (EP&A Regulation).

5.2 State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)

Subject to certain exemptions, the T&I SEPP allows development for the purpose of an electricity transmission or distribution network to be carried out by or on behalf of an electricity supply authority or public authority without development consent on any land.

5.3 State Environmental Planning Policy (Planning Systems) 2021

The State Environmental Planning Policy (Planning Systems) 2021 (Planning SEPP) declares certain development to be State Significant Development (SSD) and State Significant Infrastructure (SSI), including Critical SSI. Applications for SSD and SSI must be accompanied by an Environmental Impact Statement (EIS). The proposal is not a type of development listed in the schedules of the Planning SEPP as being SSD or SSI. The proposal is not likely to significantly affect the environment (refer to section 6) and therefore does not require an EIS.

5.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act prescribes the Commonwealth’s role in environmental assessment, biodiversity conservation and the management of protected species, populations and communities and heritage items. The approval of the Commonwealth Minister for the Environment is required for the following controlled actions:

- an action that may have a significant impact on matters of national environmental significance (MNES)
- actions that are likely to have a significant impact on the environment of Commonwealth land
- actions taken on a Commonwealth land that are likely to have a significant impact on the environment anywhere.

The assessment of the proposal’s impact on matters of NES and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of national environmental significance. Accordingly, the proposal has not been referred to Commonwealth Department of Environment (see Section 6.10 and Appendix D).

5.5 Electricity Supply Act 1995 (ES Act)

The ES Act also requires that works (other than routine repairs or maintenance works) must not be undertaken without a minimum of 40 days consultation with relevant local councils. Any submission must be considered by Ausgrid. Consultation requirements under the ES Act are addressed in section 3.

5.6 Protection of the Environment Operations Act 1997 (POEO Act)

The POEO Act provides a framework for the licensing of certain activities and is administered by the Environment Protection Authority (EPA). Schedule 1 of the POEO Act lists activities that require an Environment Protection Licence to operate.

5.7 Biodiversity Conservation Act 2016 (BC Act)

If an activity potentially affects any flora or fauna species, population or ecological community listed by the BC Act, a test of significance is required. The test of significance, Section 7.3 of the BC Act, determines whether the Proposed Activity is likely to have a significant impact. It is applied as part of the Biodiversity Offsets Scheme entry requirements and for Part 5 activities under the EP&A Act. If the activity is likely to have a significant impact or will be carried out in a declared area of outstanding biodiversity value, a

proponent must either apply the Biodiversity Offsets Scheme (Division 4) or prepare a species impact statement (SIS) (Division 5).

5.8 Other legislative requirements

Additional pieces of environmental legislation that apply to Ausgrid's network area were considered in the preparation of this REF, including:

- *Aboriginal Land Rights Act 1983 (NSW)*
- *Biosecurity Act 2015 (NSW)*
- *Coal Mine Subsidence Compensation Act 2017 No 37*
- *Coastal Management Act 2016 (NSW)*
- *Contaminated Land Management Act 1997*
- *Crown Lands Act 2016 (NSW)*
- *Fisheries Management Act 1994 (NSW)*
- *Heritage Act 1977 (NSW)*
- *National Greenhouse and Energy Reporting Act 2007 (NSW)*
- *National Parks and Wildlife Act 1974 (NSW)*
- *Native Title Act 1993 (Commonwealth)*
- *Roads Act 1993 (NSW)*
- *Rural Fires Act 1997 (NSW)*
- *Water Act 1912 (NSW)*
- *Water Management Act 2000 (NSW)*

Refer to Table 5-1 for further details

5.9 Planning approvals process

Ausgrid as an Authorised Network Operator is a prescribed Determining Authority for the purposes of Division 5.1 of the EP&A Act and is defined as a "Public Authority" under Schedule 1(4) of the EP&A Regulation.

This prescription allows Ausgrid to be a Part 5 Determining Authority for Development for the purposes of an electricity transmission or distribution network. As a Determining Authority, Ausgrid can assess and self-determine Activities that are not likely to significantly affect the environment and are conducted by, or on our behalf, for the purpose of electricity transmission or distribution.

In addition, by virtue of Ausgrid's status as Public Authority under the T&I SEPP, certain activities would be subject to Part 2.3, Division 5 of the Transport & Infrastructure SEPP, amongst other things, which permits Ausgrid to undertake certain Development for the purpose of electricity transmission or distribution on any land without consent.

Ausgrid's access to the "without consent" provisions of the T&I SEPP and its role as a Determining Authority is accompanied by the duty to consider an activity's impact on the environment. Development under Division 5.1 is referred to as an Activity under the EP&A Act. While Division 5.1 Activities do not require development consent under Part 4, consideration of an Activity's environmental impact is required by section 5.5 of the EP&A Act. This is accompanied by section 5.7, which requires an Environmental Impact Statement (EIS) to be prepared if an Activity is likely to significantly affect the environment.

This REF forms an assessment for the purposes of section 5.5 of the EP&A Act and section 171 of the EP&A Regulation.

Specific licences, permits, approvals and notifications required for the construction, maintenance and operation of the proposal are outlined in Table 5-1 below.

Table 5-1: Other key legislative requirements

Legislation	Authority	Requirement	Comment	Responsibility
<i>Biodiversity Conservation Act 2016</i>	NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW)	Approval: under s.7.8 a Species Impact Statement or Biodiversity Development Assessment Report is required for activities likely to significantly affect threatened species or ecological communities, or their habitats. BCT Approval: For works in Glencore – Ravensworth - (09_0176) Hillcrest Offset Area.	Ecology Assessment determined no significant impact. See Section 6.10 and Appendix D.	Ausgrid / Contractor
<i>Biosecurity Act 2015</i>	NSW Department of Primary Industries (DPI)	General: Control of priority weeds on land it occupies to which a weed control order applies, to the extent necessary to prevent the weeds from spreading to adjoining land.	Weed management is addressed in section 6.10.	Ausgrid / Contractor
<i>Coal Mine Subsidence Compensation Act 2017 No 37</i>	Subsidence Advisory NSW	Approval: under s.22, to alter or erect improvements, or to subdivide land, within a mine subsidence district	Approvals for the powerline route will be sought in stages as the detailed design is completed.	Ausgrid
<i>Contaminated Land Management Act 1997</i>	NSW Environment Protection Authority (EPA)	Notification: under s. 60, by a person whose activities have contaminated land or a landowner whose land has been contaminated is required to notify EPA when they become aware of the contamination.	Ausgrid to address the requirements of s60 of the CLM Act if unexpected contamination is uncovered during construction works.	Ausgrid / Contractor
<i>Crown Land Management Act 2016</i>	Crown Lands	Approval: under s. 2.18, by the Minister to grant a 'relevant interest' (i.e. lease, licence, permit, easement or right of way) over a Crown Reserve for new works.	Ausgrid will complete a compulsory acquisition process for the proposed Antiene STSS site.	Ausgrid
<i>Electricity Supply Act 1995</i>	Local Council	Notification: under s.45, of 40 days' notice for the proposed electricity works.	Consultation has been undertaken with Cessnock City Council, Singleton Shire Council and Muswellbrook Shire Council (see section 3.3 and Appendix C).	Ausgrid

Legislation	Authority	Requirement	Comment	Responsibility
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW)	Approval: under Part 3, for an action that may have a significant impact on matters of national environmental significance (NES) requires Minister consent. Approval: under s. 27A, by the Minister for an action on Commonwealth that has, will have or is likely to have a significant impact on the environment. Approval: under s. 47, by the Minister for an action outside Commonwealth land that has, will or is likely to have a significant impact on the environment on Commonwealth land.	Ecology Assessment determined no significant impact (see section 6.10 and Appendix D).	Ausgrid
<i>Environmental Planning and Assessment Regulation 2021</i>	Ausgrid	Consideration: under cl. 171, of the factors to take into account concerning the impact on an activity on the environment.	This REF has considered factors under cl. 171 in section 7.1.	Ausgrid
<i>Heritage Act 1977</i>	NSW DCCEEW	Approval: under s. 60, to impact items listed on the State Heritage Register	NA. No SHR items to be affected.	NA
		Permit: under s. 140, for activities with potential to excavate or disturb a relic.	NA. No relics to be affected.	NA
<i>National Greenhouse and Energy Reporting Act 2007</i>	Clean Energy Regulator (Commonwealth)	Reporting: under s. 19 a registered corporation is required to report information on energy production, energy consumption and the amount of greenhouse gas (GHG) emissions for the facilities under their operational control on an annual basis by 31 October following the financial year for which they are reporting.	Reporting will be undertaken by 31 October each year.	Ausgrid/Contractor
<i>National Parks and Wildlife Act 1974</i>	NPWS	Approval: under s. 90, to harm or desecrate Aboriginal objects and Aboriginal places.	AHIP to be obtained prior to commencement of works.	Ausgrid
<i>Protection of the Environment Operations Act 1999</i>	EPA	General: under s. 120, no 'dirty water' discharge into a stormwater drain.	Water management is addressed in section 6.6.	Ausgrid/Contractor

Legislation	Authority	Requirement	Comment	Responsibility
<i>Roads Act 1993</i>	TfNSW	Approval: under s. 138, for road work on a Classified Road.	S138 consent required prior to commencement of works.	Ausgrid
<i>Rural Fires Act 1997</i>	NSW Rural Fire Service	Consideration: under s. 63, public authorities must take all practicable steps to prevent the occurrence and minimise the spread of bush fires on or from land vested in or under its control or management.	Bush fire is addressed in section 6.11.	Ausgrid/Contractor
<i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>	Local Council	s2.10-2.14 Notification (21 days) - substantial impact on council related infrastructure and local heritage or works in flood liable land that will change flood patterns other than to a minor extent.	Notice was given concurrently with the ES Act notification.	Ausgrid
<i>Mine Subsidence Compensation Act 1961</i>	SANSW	s2.15 Notification (21 days) for development on land in a mine subsidence district	Notifications are ongoing as detailed designs are completed.	Ausgrid
<i>Water Act 1912</i>	Environment and Heritage	Permit: under s. 113, to extract groundwater via any type of bore, well or excavation.	The need for a permit would be evaluated as part of preparation of the CEMP.	Ausgrid/Contractor

6 Environmental assessment

This section describes the existing environment of the study area and assesses the potential impacts of the proposal during construction and operation. This section also outlines the specific mitigation measures necessary to manage and control environmental impacts which consist of:

- controls detailed in Ausgrid's NS174C Environmental Handbook for Construction and Maintenance, July 2025¹
- specific mitigation measures described in this REF (to be implemented during the construction and operation phases of the proposal)

Where there is an inconsistency, the proposal specific mitigation measures in this REF would prevail.

6.1 Land use

6.1.1 Existing environment

Land use varies along the HCC REZ route with a agriculture and mining being the most common land uses along with infrastructure (roads and rail), bushland and a winery. Table 6.1 provides the specific land zoning at each of the proposed modifications.

Table 6-1: Non-Aboriginal heritage mitigation measures

No	Modification	Zoning
1	Hunter Expressway crossing relocation, Branxton	SP2
2	ARTC crossing relocation off Standen Drive, Belford	SP2/RU1
3	New England Highway/Pothana Lane realignment, Belford	SP2/RU1
4	Golden Highway realignment, Whittingham	SP2/RU1
5	Mitchell Line of Road undergrounding of 66/11kV Dochra –SMA 1	RU1
6	Mitchell Line of Road realignment – State of NSW Land	RU1
7	Mitchell Line of Road realignment – SMA 2	SP2
8	Mitchell Line of Road realignment SMA 3 Redgroves	SP2/RU1
9	Jerrys Plains Road realignment, Mt Thorley	SP2/RU1
10	Liddell Coal realignment, Ravensworth	RU1
11	Antiene STSS connection reconfiguration, Hebden	SP2/RU1/RE1

6.1.2 Impact assessment

The proposal modifications are generally consistent with the current surrounding land use. The proposal is also generally consistent with the objectives of the applicable environmental planning instruments and is permissible without consent.

Short term impacts on the surrounding land use during the construction phase of the proposal would include increased traffic intensity, noise and visual impacts.

Once constructed, the proposal would not restrict access to bushland, recreational space, agricultural land, commercial or industrial development, residential development or the water supply catchment. The proposal would have the benefit of facilitating both existing and future surrounding land uses in the region by providing a reliable and sustainable supply from the electricity network.

The proposal modifications would not have a significant impact on existing land uses.

6.1.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.2 Climate change

6.2.1 Existing environment

Climate change describes both changed average climatic conditions, such as increased temperature and lower average rainfall, as well as changes in the patterns of extreme events, including increased frequency and intensity of storms.

Greenhouse gas (GHG) emissions are defined by the GHG Protocol and international standards as scope 1 (direct emissions), scope 2 (indirect emissions from the consumption of purchased energy) and scope 3 (other indirect emissions).

The proposal is not located in low-lying areas near coastal locations.

6.2.2 Impact assessment

The route modifications would result in an incremental increase in vegetation removal. This additional impact has been addressed in Section 6.10 below and Appendix D. No other potential climate related impacts were identified above that assessed in the original REF.

6.2.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.3 Electric and magnetic fields

6.3.1 Existing environment

Electric and magnetic fields (EMF) are part of the natural environment and are present in the atmosphere and static magnetic fields are created by the Earth's core. EMF is also produced wherever electricity or electrical equipment is in use. Powerlines, electrical wiring, household appliances and electrical equipment all produce EMF. Power-frequency EMF (also known as extremely low frequency or ELF EMF) have a frequency of 50 hertz (Hz).

Electric fields are related to the voltage (volts) and magnetic fields are related to the current (amps).

Both electric and magnetic fields are strongest close to their source, and their strength diminishes rapidly as we move away from the source. While electric fields are shielded by most objects, including trees, buildings and human skin, this is not the case for magnetic fields.

As part of the Health Portfolio, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Federal Government agency charged with the responsibility for protecting the health and safety of people, and the environment, from EMF. In terms of exposure within the home, ARPANSA advise that:

"Magnetic fields within homes can vary at different locations and also over time. The actual strength of the field at a given location depends upon the number and kinds of sources and their distance from the location of measurement. Typical values measured in areas away from electrical appliances are of the order of 0.1 - 2 mG [milligauss]."

6.3.2 Impact assessment

Aurecon was engaged to provide specialist assessment for the HCC REZ project. The full report is provided in APPENDIX C of the original REF. The proposed modifications do not change the results of the original assessment and as such no further investigations have been undertaken. The predicted maximum magnetic fields for the proposed transmission lines are less than 7.6% of the ICNIRP Guideline Reference Level directly under the transmission lines and less than 1.9% at the easement edges.

The calculated maximum electric field values are less than 30% of the ICNIRP Guideline Reference Level directly under the powerlines and less than 5% at the easement edges.

6.3.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.4 Noise and vibration

Day Design Consulting Acoustical Engineers was engaged to provide specialist assessment for the HCC REZ project. The full report is provided in APPENDIX D of the original REF.

6.4.1 Existing environment

The existing noise environment varies along the route and is influenced by factors such as proximity to (road and rail infrastructure, mining activities, other industrial activities and defence.

6.4.2 Impact assessment

The assessment included a construction Noise and Vibration Management Plan for the proposed powerline works. The proposed modifications do not change the results of the original assessment and as such no further investigations have been undertaken

6.4.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.5 Air quality

6.5.1 Existing environment

The existing (background) air quality environment is highly influenced by the rural and industrial activities occurring in the vicinity of the proposal. Influences of existing air quality include emissions from existing coal mining operations and transportation.

6.5.2 Impact assessment

Direct potential impacts from the proposal to the local air quality would be limited to dust and emissions from vehicles, plant and equipment generated during the construction and to a lesser extent the operational phases.

6.5.3 Environmental mitigation measures

No new air quality mitigation measures are proposed.

6.6 Water quality and hydrology

6.6.1 Existing environment

The proposal crosses several waterways including the Hunter River. Direct impacts to waterways will be avoided for all new construction works as the overhead component will span waterways.

In some cases, existing access tracks cross waterways, these crossings may require upgrades to enable safe construction access including regrading or shaping of approaches and repair of the crossing bed.

6.6.2 Impact assessment

During and after wet weather, dewatering may be required to allow work to continue.

Temporary stockpiling of material would be required at all sites including pole sites along the powerline route also creating potential for erosion and sedimentation of waterways.

The construction works would involve vegetation removal along the powerline route. This vegetation removal would result in areas of exposed soil material that would be prone to erosion in a rainfall event.

Water quality in the study area may be affected by spills of hydraulic oil and fuels from equipment or vehicles. Quantities of these products would be kept to a minimum and would be stored in a suitably bunded and covered area. Adequate storage and refuelling controls would be installed to mitigate impacts. Plant and equipment would also be maintained to minimise the potential for leakages.

6.6.3 Environmental mitigation measures

No new hydrology and water quality mitigation measures are proposed.

6.7 Geology and soil

6.7.1 Existing environment

A review of the geotechnical assessment of the approved REF identified the following details for the proposed modifications.

No	Modification	Geology Code	Geological Name	Soil Landscapae Group
1	Hunter Expressway crossing relocation, Branxton	Pmtb	Branxton Formation	Branxton
2	ARTC crossing relocation off Standen Drive, Belford	Pmtm	Mulbring Siltstone	Rothbury
3	New England Highway/Pothana Lane realignment, Belford	Pmtm / Pmtu	Mulbring Siltstone (near Muree Siltstone)	Rothbury
4	Golden Highway realignment, Whittingham	Pmtm	Mulbring Siltstone	Rothbury
5	Mitchell Line of Road undergrounding of 66/11kV Dochra –SMA 1	Pmtm	Mulbring Siltstone	Hunter
6	Mitchell Line of Road realignment – State of NSW Land	Pmtm	Mulbring Siltstone	Rothbury
7	Mitchell Line of Road realignment – SMA 2	Pmtm	Mulbring Siltstone	Branxton
8	Mitchell Line of Road realignment SMA 3 Redgroves	Pmtm / Pmtu	Mulbring Siltstone (near Muree Siltstone)	Rothbury
9	Jerrys Plains Road realignment, Mt Thorley	Pwts and Pwv / Q_av	Saltwater Creek Formation and Vane Subgroup (near Alluvial valley deposits)	Branxton / Hunter
10	Liddell Coal realignment, Ravensworth	Pwv	Vane Subgroup	Liddell
11	Antiene STSS connection reconfiguration, Hebden	Pwts	Saltwater Creek Formation	Roxburgh

All the above soil landscape groups have a high erosion hazard.

6.7.2 Impact assessment

The construction of the proposal would cause some minor soil instability. Failure to adequately manage excavations and disturbed areas could result in erosion and sedimentation impacts to surrounding lands and watercourses. Erosion and sedimentation would be managed in accordance with the original REF.

6.7.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.8 Contamination

6.8.1 Existing environment

A desktop assessment of the route showed the existing environment is a mixture of rural, bushland and mining areas. None of the proposed modifications are listed on council or the EPA's contaminated land register.

6.8.2 Impact assessment

If unexpected contamination is identified during construction, the works would cease, access restricted and the Ausgrid EMR contacted to determine the nature and extent of the contamination.

6.8.3 Environmental mitigation measures

No additional mitigation measures are proposed.

6.9 Waste

6.9.1 Existing environment

The existing powerlines are maintained on a regular basis and intermittently generates small amounts of waste including bioguard bandages, cross arms, insulators, green waste and timber poles. These wastes are taken to the local depot for recycling or disposal.

6.9.2 Impact assessment

The proposal may generate various types of waste, some of which would be reused or recycled while others would require disposal. Most waste would be generated during the construction phase. Waste likely to require disposal includes:

- excavated earth material
- waste oils, liquids and fuels from maintenance of construction plant and equipment
- wastes from site compounds (including sewage waste, putrescible waste etc)
- building waste (packaging material, scrap metal, plastic wrapping, cardboard)
- natural timber, treated timber, concrete and steel poles
- aluminium, steel and copper conductors and down leads
- glass, porcelain and polymer insulators
- metal switches, links and fuses
- excess building materials that can't be reused
- vegetation from clearing activities
- cable off-cuts
- timber cable drums
- timber pallets
- redundant poles
- other general construction waste.

All waste would be re-used where possible, otherwise managed in accordance with the NSW Waste Classification Guidelines.

Where possible excess spoil generated would be beneficially reused onsite to minimise offsite disposal. Any unsuitable or excess soil that cannot be beneficially reused onsite would be classified in accordance with the NSW Waste Classification Guidelines and subsequently disposed to a facility that can legally accept the waste

Any soil suspected of being contaminated would be stored separately in a lined stockpile or skip bin, classified and then disposed to an appropriately licensed waste facility.

6.9.3 Environmental mitigation measures

No new waste mitigation measures are proposed.

6.10 Flora and fauna

Wildthing Environmental Consultants was engaged to provide an updated Ecological Assessment Report to cover the proposed modifications. The full report is provided in APPENDIX D of this Addendum REF. A summary of the report findings is included below.

6.10.1 Existing environment

The existing flora and fauna environment of the proposed route consists of cleared land, scattered vegetation, open/closed bushland, native vegetation, and riparian vegetation.

Seven TECs listed under the BC Act were identified within the REZ or in close proximity:

- Kurri Sand Swamp Woodland in the Sydney Basin bioregion
- Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast bioregions
- Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast bioregions
- Central Hunter Ironbark – Spotted Gum – Grey Box Forest in the NSW North Coast and Sydney Basin bioregions
- Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin bioregions
- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grasslands

A total of 56 significant (larger trees and/or those containing hollows) trees were recorded along the proposed REZ route. The vegetation and landforms present along the REZ offer a variety of habitats for native fauna species. The broad habitat types included Open Forest, Woodland Grassland and Aquatic.

6.10.2 Impact assessment

The proposal will result in the following additional impacts:

- up to 4ha Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin bioregions
- 11 significant (larger trees).

The report in Appendix D has been undertaken in accordance with the requirements of the *Environmental Planning and Assessment Amendment Act 2017 (EP&A Act 2017)*, the *Biodiversity Conservation Act 2016 (BC Act 2016)* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999)*. It provides the test of significance for EECs and threatened species likely to occur in the study area.

In conclusion, the proposed REZ Project will result in an incremental reduction/modification of habitat, however taking into consideration the mitigation measures the proposal is unlikely to have a significant impact on any addressed threatened species, endangered population or threatened ecological community.

6.10.3 Environmental mitigation measures

No new flora and fauna mitigation measures are proposed.

6.11 Bushfire

6.11.1 Existing environment

Most of the HCC REZ route is mapped as Bushfire Prone Land.

6.11.2 Impact assessment

The proposed powerlines have been designed to comply with Ausgrid's Tree Safety Management Plan² and ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets³ which would limit the potential for and impact of a bushfire event. The aims and objective of the NSW Rural Fire Service (RFS) publication Planning for Bush Fire Protection were considered in the proposed powerline design.

6.11.3 Environmental mitigation measures

No new bushfire mitigation measures are proposed.

6.12 Aboriginal cultural heritage

APEX Archaeology was engaged to provide specialist assessment for the proposed modifications. The full report is provided in APPENDIX E of this Addendum REF. A summary of the report findings is included below.

6.12.1 Existing environment

The study area is within the central lowlands of the Hunter Valley and follows a meandering corridor that extends from Kurri Kurri, approximately 30 km northeast of the city of Newcastle, to Muswellbrook in the northwest. It is approximately 120m wide and covers a distance of approximately 105km.

A review of the AHIMs database has identified three sites as being within or in close proximity to the current areas of additional assessment.

37-6-2062 KR57 Artefact Scatter; 37-6-2063 KR58 Artefact Scatter; 37-3-1201 DR-OS1 Artefact Scatter.

6.12.2 Impact assessment

A site survey was undertaken over six days from 16 February 2026 to 10 June 2026 by Apex Archaeology in conjunction with the RAPs for the study area as part of the assessment under the Code of Practice and ACHCRs.

The survey was conducted on foot for the purposes of discovering Aboriginal objects within the study area, including areas considered to have potential for subsurface objects to be present. The survey was undertaken in accordance with the sampling strategy prepared for the project. One new site was identified during the survey (MushroomC-AS-01 - Artefact scatter - Open Site). No areas of potential archaeological sensitivity were identified.

AHIMS site 37-6-2062 is located in close proximity to the Mt Thorley study area but is outside of the proposed works area and can be avoided by the proposed works. As such, no further mitigation is necessary for this site.

AHIMS site #37-6-2063 has been impacted under a previous AHIP and is no longer valid. As such the proposed works will not impact on this site.

MushroomC-AS-01 – (AHIMS # pending) can be avoided by the proposed works. Avoidance can be achieved using alternative access tracks and ensuring pole placement in that area avoids the location of this site. No ground disturbing works should occur in the vicinity of this site.

AHIMS site 37-3-1201 cannot be avoided by the proposed alignment changes within the Hebden locality, and as such this site will require an amendment to AHIP 5498 to allow for surface collection to occur.

The proposal is not likely to significantly affect the environment in relation to Aboriginal heritage for reasons including:

- the design has been modified to avoid known aboriginal sites and identified areas of sensitivity where practical
- an Aboriginal Heritage Impact Permit will be obtained for impacts to sites that cannot be avoided and to cover unexpected finds within the project footprint
- the Aboriginal Cultural Heritage Assessment (ACHAR) and AHIP will be developed in consultation with Registered Aboriginal Parties in accordance with the ADD Guideline.

6.12.3 Environmental mitigation measures

Aboriginal heritage mitigation measures for the proposal are summarised in Table 6-26.

Table 6-2: Aboriginal heritage mitigation measures

Mitigation measures	Implementation of mitigation measures		
	Design	Construction	Operation
Apply for a variation to the existing Aboriginal Heritage Impact Permit (AHIP) #5498 to permit impact to AHIMS site #37-3-1201. The variation should include permission to undertake surface collection of any artefacts on the ground surface within the proposed impact area, with the items reburied on site. If the surface artefacts cannot be relocated, the AHIP should permit unmitigated impact to the site location.	✓	✓	
MushroomC-AS-01, must be identified and barricaded to prevent impact during construction.		✓	

Mitigation measures	Implementation of mitigation measures		
	Design	Construction	Operation
The Aboriginal Cultural Heritage Management Plan (ACHMP) should be updated to include the additional survey undertaken and the recommendations made should be implemented during construction works.	✓	✓	✓
One digital copy of the Addendum ACHA report should be forwarded to Heritage NSW to support the required AHIP application for the project, along with required supporting documentation. One digital copy of the Addendum ACHA should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS). One copy of the Addendum ACHA report should be forwarded to each of the registered Aboriginal stakeholders for the project.	✓		

6.13 Non-Aboriginal heritage

6.13.1 Existing environment

A desktop assessment was conducted using the Australian Heritage Database⁴, NSW State Heritage Inventory and the relevant council Local Environmental Plans. The results of these searches were that there are four heritage listed item in the study area for the proposed route modifications.

Table 6-3: Non-Aboriginal heritage items

Location	Heritage listing	Details	Distance from the edge of the route	Assessment required?
Branxton	Collieries of the South Maitland Coalfields/Greta Coal Measures	The nearest colliery was the Ayrfield No3 colliery located near the new Huntlee Development.	~1km	No
Mt Thorley	Brick Farm House	Brick farmhouse and farm complex	10m	Yes
Liddell	Fairview	Late 19th/early 20th century weatherboard cottage with slab kitchen extension and various out-buildings.	No longer present.	No
Liddell	Hillcrest	Early 20th century weatherboard cottage with numerous outbuildings.	220m	No

6.13.2 Impact assessment

AECOM Australia Pty Ltd (AECOM) was commissioned by Ausgrid to provide a Statement of Heritage Impact for the construction of powerlines at 288 Jerrys Plains Road at Mount Thorley. The property is listed as Brick Farm House in Schedule 5 of the Singleton Local Environmental Plan (LEP) 2013 as an item of local heritage significance. The purpose of the investigation was to assess the impact on the heritage significance of the Brick Farm House from the proposed works.

The proposed powerlines and power pole installation would have a minor and acceptable impact on the identified heritage significance of the Brick Farm House. It was assessed that:

- The proposed works would not impact on the site's ability to demonstrate the development of settlement in the Hunter Valley and the spread of agricultural practices throughout NSW. These values are evidenced in the building and its agricultural setting.

- The association with prominent figure Eliza Glass is retained.
- Archaeological subsurface deposits (within the house and at its rear) which have the potential to reveal information about the history and occupants of the Farm House is retained and not impacted.
- The landmark character of the Brick Farm House, its prominent position on a rise beside the Golden Highway (Jerrys Plains Road) will be impacted adversely by the location of at least a dozen power poles within and directly adjacent to the heritage curtilage. The powerlines proposed to run on the eastern side of Jerrys Plains Road would have a continual visual impact on the landmark features of the site. It is to be noted that there is some level of existing visual impact from the powerlines and power poles on the western side of Jerrys Plains Road. These impacts are assessed to be minor in nature, as the proposed works are for infrastructure and not for obtrusive built elements that would completely impede significant views from the north of Jerrys Plains Road. The proposed power poles and powerlines would still permit views to the Brick Farm House, so that its setting can still be appreciated.

6.13.3 Environmental mitigation measures

Non-Aboriginal heritage mitigation measures for the proposal are summarised in Table 6-28 below.

Table 6-4: Non-Aboriginal heritage mitigation measures

Mitigation measures	Implementation of mitigation measures		
	Design	Construction	Operation
If unexpected non-Aboriginal heritage/archaeological items are uncovered during construction, the work within the vicinity of the find should cease immediately. The site management shall be immediately notified to co-ordinate a response, which may include direction to seek appropriate advice from a suitably qualified and experienced Heritage Advisor.		✓	
Vibration levels from construction plant and equipment should be assessed for potential impacts to the heritage item prior to commencing works. Mitigation measures should be put in place to avoid physical impacts.		✓	
A condition survey of the Brick Farm House should be undertaken at the beginning and end of the works to ensure no damage has occurred to structures. Any damage to buildings should be avoided. If any repairs are necessary they should be undertaken under the guidance of a Heritage Architect.		✓	
As part of the site induction, a heritage induction should be provided to workers prior to construction, informing them of the location of known heritage items and guidelines to follow if unexpected heritage items or deposits are located during construction.		✓	

6.14 Visual and aesthetics

DeWitt Consulting was engaged to provide a Landscape Character and Visual Impact Assessment (LCVIA) for the overall HCC REZ project. The full report is provided in APPENDIX J of the original REF.

6.14.1 Existing environment

Two Landscape Character Zones (LCZs) were identified in the surrounding landscape of the proposed modifications:

Table 6-5: Landscape Character Zones

No	Modification	LCZ
1	Hunter Expressway crossing relocation, Branxton	urban/rural fringe

No	Modification	LCZ
2	ARTC crossing relocation off Standen Drive, Belford	urban/rural fringe
3	New England Highway/Pothana Lane realignment, Belford	urban/rural fringe
4	Golden Highway realignment, Whittingham	urban/rural fringe
5	Mitchell Line of Road undergrounding of 66/11kV Dochra –SMA 1	rural/mining
6	Mitchell Line of Road realignment – State of NSW Land	rural/mining
7	Mitchell Line of Road realignment – SMA 2	rural/mining
8	Mitchell Line of Road realignment SMA 3 Redgroves	rural/mining
9	Jerrys Plains Road realignment, Mt Thorley	rural/mining
10	Liddell Coal realignment, Ravensworth	rural/mining
11	Antiene STSS connection reconfiguration, Hebden	rural/mining

The proposed modifications largely span across land zoned as RU1 Primary Production, RU2 Rural Landscape, and SP2 Infrastructure. The baseline landscape value scores **low** using the literature-based criteria for preferred characteristics of rural landscapes.

6.14.2 Impact assessment

Construction - The various construction phases of the proposal would have a visual impact on local views due to the presence of plant and equipment, exposed soil and removal of vegetation. The impact would vary throughout construction, with the earthworks stage likely to be most visually prominent. As construction impacts would be short term and the adjoining stakeholders would be consulted about the works, the overall impact during construction is not expected to be significant. Disturbed areas would be reinstated as soon as practicable to further ameliorate short term visual impact.

Operation - Table 6-6 considers the visual impact of each modification.

Table 6-6: Visual impacts

No	Modification	Impact
1	Hunter Expressway crossing relocation, Branxton	Net positive impact compared to existing approval poles are lower and less visible from Hunter Expressway
2	ARTC crossing relocation off Standen Drive, Belford	No net impact compared to existing approval. Crossing location moves slightly but otherwise similar visual impact.
3	New England Highway/Pothana Lane realignment, Belford	Positive impact to rural properties being avoided. Minor negative impact to NE Highway road users due to vegetation removal and new poles visible for 1.9km. Minor negative impact to TSR. Net minor impact.
4	Golden Highway realignment, Whittingham	No net impact compared to existing approval.
5	Mitchell Line of Road undergrounding of 66/11kV Dochra –SMA 1	Net neutral impact compared to approved project. Less overhead powerlines but more poles to reduce the height of the line.
6	Mitchell Line of Road realignment – State of NSW Land	No net impact compared to existing approval.
7	Mitchell Line of Road realignment – SMA 2	No net impact compared to existing approval.
8	Mitchell Line of Road realignment – SMA 3 – Redgroves	Minor negative impact to Golden Highway road users due to vegetation removal

No	Modification	Impact
9	Jerrys Plains Road realignment, Mt Thorley	Positive impact to rural properties where existing poles being removed. Minor negative impact to NE Highway road users (existing powerlines and mining infrastructure dominate existing views).
10	Liddell Coal realignment, Ravensworth	No net impact compared to existing approval.
11	Antiene STSS connection reconfiguration, Hebden	No net impact compared to existing approval.

Long term visual impact on local views would occur through new steel power poles around 30m high and powerlines erected within existing easements replacing existing powerlines. The impact would be limited due to several factors including topography, large rural allotments, existing infrastructure, screening vegetation and limited numbers of people exposed to the visual impact.

Once constructed, the proposal would not restrict access to recreational space, commercial or industrial development, residential development or water supply catchment. The proposal would require minimal maintenance, reducing the need for plant and equipment to access the site. Maintenance work would form part of Ausgrid's existing maintenance program.

6.14.3 Environmental mitigation measures

No new contamination mitigation measures are proposed.

6.15 Traffic and access

6.15.1 Existing environment

The proposal would generally be within an existing powerline corridor that would be accessed from public roads. There are three TfNSW Classified roads that intersect with the proposed modifications. They are:

- Hunter Expressway
- New England Highway
- Golden Highway.

Other local and regional roads that intersect with the route include:

- Putty Road, Mt Thorley
- Hebden Road, Hebden

Transport in the region is heavily reliant on the road network for private vehicle usage and heavy haulage including transport of mining machinery. Any impacts on the road network in the region are quickly amplified with the high volumes of traffic which use the road network daily.

The proposed modifications also interact with several rail lines including:

- Main Northern Railway– Branxton
- Main Northern Railway– Standen Drive, Belford
- Main Northern Railway– Mitchell Line of Road – Whittingham
- Main Northern Railway– Hebden

6.15.2 Impact assessment

The proposal involves works within the Hunter Expressway, the Golden Highway (which comprises Mitchell Line Rd, Putty Rd and Jerrys Plains Rd) and the New England Highway, which are all State Classified roads. Ausgrid has consulted with the TfNSW Golden Highway upgrade team, the TfNSW Muddies Creek upgrade team, and TfNSW Port to REZ team - as well as Road Access North. All necessary ROLs and approvals would be gained from the relevant roads authority prior to construction.

Traffic volumes created by the project would remain unchanged from the original REF. Traffic impacts would remain relatively unchanged at Hunter Expressway crossing, Branxton; Standen Drive, Belford; Mitchell Line of Road, Whittingham; Mitchell Line of Road, SMA; Singleton STS, Maison Dieu; Glendell Mine, Ravensworth, and Antiene STSS, Muswellbrook.

Additional impacts including lane closures would be required for the realignment at New England Highway, Belford, Jerrys Plains Road, Mt Thorley.

Measures would be employed to minimise traffic disruption. The construction works will be managed by experienced traffic control crews. Any disruption, however, cannot be fully avoided, but can be minimised through timing the work to avoid peak traffic flows.

Generally, Ausgrid's intention is to construct new powerlines such that the power poles would comply with TfNSW requirements. Being the power poles being located outside clear zones as required under Austroads guideline 2010 and wires having appropriate clearance for OSOM loads above roadways. Where poles cannot be installed outside of clear zones, appropriate mitigation measures will be installed by Ausgrid around powerline structures.

S138 concurrence has been obtained for Hunter Expressway crossing, Branxton; New England Highway, Belford; Mitchell Line of Road, Whittingham. S138s are still to be obtained for the SMA, Putty Road and Jerrys Plains Road.

6.15.3 Environmental mitigation measures

No new Traffic and access mitigation measures are proposed.

6.16 Social and economic

6.16.1 Existing environment

The proposal is located within the Cessnock, Singleton and Muswellbrook Shire LGAs. Land use within the area is characterised by industrial, agricultural, mining, defence, bushland and transport corridors.

In relation to the economic benefits of the project, the project represents a direct capital investment of approximately \$0.6 billion in the state of NSW which is further increased through the multiplier effect when considering indirect employment and other flow-on economic benefits.

There is a recreation centre adjacent to the proposed Antiene STSS site. The closest residential area to the proposed Sandy Creek STSS is 430m. The powerlines easements run through residential areas, as well as mining, industrial and agricultural areas.

6.16.2 Impact assessment

Social and economic impacts are not likely to change as a result of the minor route modifications.

6.16.3 Environmental mitigation measures

No new Social and economic mitigation measures are proposed.

6.17 Cumulative impact

6.17.1 Existing environment

Cumulative impacts may be experienced due to the interaction of elements within the proposal, or with other existing or proposed developments within the locality. Where possible, the cumulative impact associated with the proposal has been incorporated into the assessments within this Addendum REF.

No additional Ausgrid or external projects were identified.

6.17.2 Impact assessment

The potential impact due to the interaction of elements within the proposal, or with other existing or proposed developments within the locality includes:

- Removal of up to and additional 4ha Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin bioregions

- Removal of up to 11 additional significant trees.
- Minor additional visual impact at New England Highway, Belford; Mitchell Line of Road, SMA; and Jerrys Plans Road, Mt Thorley.

6.17.3 Environmental Mitigation measures

No new cumulative mitigation measures are proposed.

7 Consideration of environmental factors

7.1 Section 171 factors

In accordance with section 171 of the EP&A Regulation, the following factors were considered for the proposal.

Table 7-1: Consideration of section 171 factors

Section 171 factors	Key REF sections giving consideration to the factors
Impact on a community	3 Stakeholder and community consultation, 6.1 Land use, 6.3 Electric and magnetic fields, 6.4 Noise and vibration, 6.14 Visual and aesthetics, 6.15 Traffic and access, 6.16 Social and economic.
Transformation of a locality	6 Environmental assessment
Impact on the ecosystem of the locality	6.10 Flora and fauna and 6.11 Bush fire
Reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	6 Environmental assessment
Effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations	6 Environmental assessment
Impact on the habitat of protected fauna	6.10 Flora and fauna
Endangering any species of animal, plant or other form of life, whether living on land, in water or in the air	6.10 Flora and fauna
Long-term effects on the environment	6 Environmental assessment
Degradation of the quality of the environment	6 Environmental assessment
Risk to the safety of the environment	6.2 Climate change, 6.3 Electric and magnetic fields, 6.4 Noise and vibration, 6.8 Contamination, 6.9 Waste
Reduction in the range of beneficial uses of the environment	6.1 Land use
Pollution of the environment	6.4 Noise and vibration, 6.6 Water quality and hydrology, 6.8 Contamination, 6.9 Waste
Environmental problems associated with the disposal of waste	6.9 Waste
Increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	2 Description of the proposal and 7.2 Matters of national environmental significance
Cumulative environmental effect with other existing or likely future activities	6.17 Cumulative impact

Section 171 factors	Key REF sections giving consideration to the factors
Impact on coastal processes and coastal hazards, including those under projected climate change conditions	6.2 Climate change and 6.6 Water quality and hydrology

7.2 Matters of national environmental significance

In accordance with the EPBC Act, the following matters of NES were considered for the proposal⁵.

Table 7-2: Consideration of matters of NES

Matters of NES	Comment	Likely impact
World Heritage Properties	No world heritage properties would be potentially affected by the proposal	Nil
National Heritage Places	No national heritage places would be potentially affected by the proposal	Nil
Wetlands of International Importance	No wetlands of international importance would be potentially affected by the proposal	Nil
Commonwealth listed Threatened Species and Ecological Communities	Three threatened species, no populations and three ecological communities listed within Commonwealth (or State) legislation would be potentially affected by the proposal	Minor
Commonwealth listed migratory species	Eleven migratory species would be potentially affected by the proposal	Minor
Nuclear action	The proposal would not involve any nuclear action nor would it require any nuclear action to be undertaken	Nil
Commonwealth marine areas	No Commonwealth marine areas would be potentially affected by the proposal	Nil
Great Barrier Reef Marine Park	The Great Barrier Reef Marine Park would not be affected by the proposal as it is not located within Ausgrid's network area	Nil
Water resource, in relation to coal seam gas development and large coal mining development	The proposal would not involve any coal seam gas development or large coal mining development	Nil

7.3 Ecologically sustainable development

The proposal has been assessed against the following four principles of ecologically sustainable development (ESD) as listed in the *Protection of the Environment Administration Act 1991 (NSW)*.

7.3.1 Precautionary principle

The precautionary principles (s. 6 (2) (a)) states that: *'If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'*.

When the precautionary principle applies, measures taken must be proportionate to the level of threat. In assessing the level of threat and determining a proportional response, Ausgrid is guided by the relevant regulators and health authorities who are charged with the responsibility for providing such advice.

A range of specialist environmental investigations including ecology, Aboriginal heritage, noise, visual, traffic and EMF have been undertaken during the preparation of this REF to ensure that the potential environmental impacts are understood with a degree of certainty. The design for the proposal has evolved to avoid environmental impacts where practical and mitigation measures have been recommended to minimise adverse impacts to within acceptable levels.

The proposal is therefore considered to be consistent with the precautionary principle.

7.3.2 Inter-generational equity

The principle of inter-generational equity (s. 6 (2) (b)) states that: *'The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.'*

A key environmental benefit of the proposal is that it would enable greater renewable integration by providing storage, energy firming and improving system strength. As such the proposal would help reduce GHG emissions that would otherwise be generated from conventional thermal power plants. The reduction in GHG emissions would have a positive impact on climate change and help facilitate the transition to a more diversified energy mix where renewable energy plays a larger part in providing electricity in line with NSW government policies and strategies.

The proposal is consistent with the principle of inter-generational equity.

7.3.3 Biodiversity conservation

The principle of biological diversity and ecological integrity (s. 6 (2) (c)) states that: *'Conservation of biological diversity and ecological integrity should be a fundamental consideration.'*

A flora and fauna assessment was undertaken to give due consideration to the proposal's potential impact on the biological diversity and ecological integrity of the study area. (Refer to section 6.10 and Appendix D).

The assessment concluded that the proposed REZ Project will result in an incremental reduction/modification of habitat, however taking into consideration the mitigation measures the proposal is unlikely to have a significant impact on any addressed threatened species, endangered population or threatened ecological community.

7.3.4 Improved valuation of resources

The principle of improved valuation of environmental resources (s. 6 (2) (d)) states that: *'Environmental factors should be included in the valuation of assets and services.'*

This principle explains that those who generate pollution and waste should bear the cost of containment, avoidance and abatement; the users of goods and services should pay prices based on the full life cycle of costs; and environmental goals should be pursued in the most cost-effective way.

All costs associated with the containment, avoidance and abatement of pollution have been factored into the design of this proposal and Ausgrid's operations generally.

The proposal is consistent with the principle of improved valuation of environmental resources.

8 Summary of impacts

A summary of the individual impacts for the proposal is presented below Table 8-1.

Table 8-1: Summary of impacts

Issue	Comment	Likely significant impact
Land use	Apart from some short-term construction impacts, the proposal would not restrict access and is consistent with current land uses. The proposal would facilitate existing and future surrounding land uses by providing a reliable and sustainable supply from the electricity network.	No

Issue	Comment	Likely significant impact
Climate change	The proposal has taken into account predicted climate change impacts. The proposal will facilitate NSW's transition to clean energy and, as such, the proposal is facilitating a positive impact on the environment.	No
Electric and magnetic fields	EMF levels will be well within the ICNIRP 2010 Public Reference Levels and there are no further ways to reduce exposure consistent with prudent avoidance (i.e. very low cost and without unduly compromising other issues).	No
Noise and vibration	The proposed modifications will be managed in accordance with the construction noise management plan.	No
Air quality	Impacts to air quality would be predominantly associated with construction activities. Mitigation measures would be implemented in accordance with the original REF.	No
Hydrology	The proposal may involve discharges of accumulated water however, potential impacts would be appropriately managed with the specific construction controls.	No
Geology and soil	Potential impacts would be predominantly associated with construction activities and sediment control. Potential impacts would be appropriately managed with a proposal specific ESCP.	No
Contamination	No part of the proposal is listed on council or the EPA's contaminated land register.	No
Waste	Waste generated by the proposal would be classified, handled, transported, stored, tracked and disposed in accordance with relevant guidelines, procedures and existing licences.	No
Flora and fauna	A number of threatened species, and ecological communities would be potentially affected by the proposal. However, impacts are considered incremental and a Specialist Assessment concluded that the proposal is unlikely to have a significant impact on any addressed threatened species, endangered population or threatened ecological community.	No
Bushfire	The proposal is within bushfire prone land and would comply with all relevant standards (including Ausgrid's NS187 and TG 107). Potential impacts would be appropriately managed with the specific construction controls and setbacks to vegetation.	No
Aboriginal heritage	The proposal has been modified to avoid known aboriginal sites and identified areas of sensitivity where possible. An Aboriginal Heritage Impact Permit will be obtained for impacts to sites that cannot be avoided and to cover unexpected finds within the project footprint. The Aboriginal Cultural Heritage Assessment (ACHAR) and AHIP will be developed in consultation with Registered Aboriginal Parties in accordance with the ADD Guideline.	No
Non-Aboriginal heritage	Impacts would be minor and acceptable and would not result in significant impacts to heritage values.	No

Issue	Comment	Likely significant impact
Visual and aesthetics	The proposed powerlines would generally be constructed along Ausgrid's existing 66kV and 132kV powerline corridors. All reasonable ways to further reduce visual impacts have been considered. A specialist assessment concluded that the effect of the proposed works on the landscape and its character is determined to be of moderate-low significance overall. The modification are not considered likely to change that conclusion.	No
Traffic and access	Works on a classified road would comply with the relevant TfNSW approval and road occupancy licence (ROL) requirements. Affected residences and businesses would be consulted about the schedule of work.	No
Social and economic	The proposed modifications would have minimal additional impacts.	No
Cumulative impact	Cumulative impacts from other projects/proposals within the area would be effectively managed with the specific construction controls. No additional cumulative impacts have been identified.	No

Several potential environmental impacts from the proposal have been avoided or reduced during the design development and options assessment. The residual impacts will comply with relevant standards and legislative requirements and can be effectively managed with existing procedures including the controls in NS174C Environmental Handbook for Construction and Maintenance, July 2025.

A key driver for this proposal is to facilitate NSW's transition to clean energy and, as such, the proposal is facilitating a positive impact on the environment.

On this basis, it is concluded that the proposal and adopted mitigation measures will result in an overall environmental impact that is minor and neither extensive nor complex and is not likely to significantly affect the environment.

9 Environmental management

9.1 Construction environmental management

A construction environmental management plan (CEMP) outlines the environmental objectives of a proposal, the environmental construction mitigation measures to be implemented, the timing of implementation, responsibilities for implementation and management, and a review process to determine the effectiveness of the strategies.

The construction contractors would be responsible for revising their CEMP/s to address the route modifications assessed in this REF.

9.2 Implementation

On approval of this REF the original project will include the modifications. The construction contractors would be responsible for implementing the controls, in the REF and Addendum, during construction.

10 Summary and conclusion

The Hunter-Central Coast REZ Project Addendum REF assesses the potential impacts of the proposal to construct, operate and maintain the proposal modifications as described in Section 2 and Appendix A.

Ausgrid as an Authorised Network Operator is a prescribed Determining Authority for the purposes of Division 5.1 of the EP&A Act and is defined as a “Public Authority” under Schedule 1 of the EP&A Regulation.

This prescription allows Ausgrid to be a Part 5 Determining Authority for Development for the purposes of an electricity transmission or distribution network. As a Determining Authority, Ausgrid can assess and self-determine activities that are not likely to significantly affect the environment and are conducted by, or on our behalf, for the purpose of electricity transmission or distribution.

This Addendum REF forms that Part 5 assessment and was undertaken in accordance with Division 5.1 of the EP&A Act and Clause 171 of and the EP&A Regulation.

Based on this REF, it is concluded that the proposal:

- is not likely to significantly affect the environment
- is not likely to significantly affect threatened species, ecological communities or their habitats
- will not be carried out on land that is, or is part of a declared area of outstanding biodiversity value
- is not likely to have a significant impact on matters of NES, or a significant impact on the environment (for actions on Commonwealth land) or a significant impact on the environment on Commonwealth land (for actions outside Commonwealth land).

11 Certification

Addendum REF preparer:

I certify that I have prepared the contents of this Addendum REF and, to the best of my knowledge, it examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed activities outlined in the section 1.3 and 2. This addendum REF fulfils the requirements of Section 5.5 of the EP&A Act and Clause 171 of the EP&A Regulation, which sets out environmental factors to be considered in making the assessment.

Signature: 
Name: **Richard Dunnicliff**
Title: **Environmental Officer**
Company: **Ausgrid**
Date: 17/09/2026

Addendum REF reviewer:

I certify that I have reviewed the contents of this REF and, to the best of my knowledge, it examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed activities outlined in the section 1.3 and 2. This addendum REF fulfils the requirements of Section 5.5 of the EP&A Act and Clause 171 of the EP&A Regulation, which sets out environmental factors to be considered in making the assessment

Signature: 
Name: **James Hart**
Title: **Manager Environmental Services**
Company: **Ausgrid**
Date: 17/09/2026

Project manager acceptance:

I accept the description of the proposal outlined in section 1.3 and 2 as true and accurate and I commit to the implementation of the mitigation measures outlined in section 6.

Signature: 
Name: **Matthew Faferko**
Title: **Project Manager HCC REZ**
Company: **Ausgrid**
Date: 18/9/2026

APPENDIX A Drawings

APPENDIX B WebGIS Reports

APPENDIX C Consultation

APPENDIX D Ecological Assessment Report

APPENDIX E Aboriginal Heritage

References

-
- ¹ Ausgrid, NS174C Environmental Handbook for Construction and Maintenance, July 2025
 - ² Ausgrid, Tree Safety Management Plan, September 2023
 - ³ ISSC3, Guide for the Management of Vegetation in the Vicinity of Electricity Assets, November 2016
 - ⁴ Commonwealth Department of Environment, *Australian Heritage Database*, Canberra, viewed date month 2011, <www.environment.gov.au/cgi-bin/ahdb/search.pl>
 - ⁵ Commonwealth Department of Environment, *Protected Matters Search*