EnergyCo

Amendment Report

Hunter Transmission Project

February 2026

The Energy Corporation of NSW (EnergyCo) is part of the Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Official

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We would like to respectfully acknowledge the Wonnarua, Awabakal and Darkinjung people as the Traditional Custodians of the land on which we deliver our project to the community. We pay our respects to Elders past, present and emerging and to all Aboriginal people of these communities.

We acknowledge the work that Aboriginal people have done to maintain land and water and will show respect through thoughtful and collaborative approaches to engage with the Aboriginal community to ensure local priorities and values inform and influence decision making.

We reflect on the continuing impact of government policies and practices and recognise our responsibility to work together, with and for Aboriginal and Torres Strait Islander peoples, families and communities towards improved economic, social and cultural outcomes.

Published by Energy Corporation of New South Wales (EnergyCo). EnergyCo is the NSW Government statutory authority responsible for delivering the Hunter Transmission Project (HTP) as a critical part of transitioning to a cleaner future under the NSW Electricity Infrastructure Roadmap. You can read more about EnergyCo on our website: energyco.nsw.gov.au

Document title: Environmental impact statement: Hunter Transmission Project

First published: February 2026

Cover image: Existing 500 kV line, Martinsville Road, Martinsville.

More information: energyco.nsw.gov.au/htp

Copyright and disclaimer: ©Energy Corporation of NSW (EnergyCo) 2024. Information contained in this publication is based on knowledge and understanding at the time of writing and is subject to change. For more information, please visit energy.nsw.gov.au/copyright

Executive summary

Background

The Energy Corporation of NSW (EnergyCo) is proposing the construction and operation of the Hunter Transmission Project, which includes a new overhead 500 kilovolt (kV) transmission line of around 110 kilometres connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring in the Hunter region of New South Wales (NSW). The Hunter Transmission Project is located in the Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie local government areas.

An environmental impact statement was prepared to support EnergyCo's application for approval of the Hunter Transmission Project in accordance with the requirements of Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979*.

A Submissions Report has been prepared to identify and respond to feedback received during the public exhibition of the environmental impact statement and will be submitted to the Department of Planning Housing and Infrastructure concurrently with this Amendment Report.

EnergyCo is proposing a number of amendments and refinements to the Hunter Transmission Project in response to community, government and stakeholder engagement, consideration of submissions received during environmental impact statement exhibition, and ongoing development of the design and construction methodology for the Hunter Transmission Project.

This Amendment Report describes and assesses the potential environmental impacts that may occur as a result of the proposed amendments and refinements and identifies how those impacts would be managed and mitigated.

Approval process and environmental impact statement

The project was declared to be critical State significant infrastructure under section 5.13 of the Environment Planning and Assessment Act 1979 in July 2022 by the NSW Minister for Planning and Public Spaces. The project is listed in Schedule 5, Section 30 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and is subject to assessment and approval by the NSW Minister for Planning and Public Spaces in accordance with Part 5, Division 5.2 of the *Environment Planning and Assessment Act 1979*.

An environmental impact statement was prepared to support EnergyCo's application for approval of the Hunter Transmission Project (the exhibited project) in accordance with the requirements of Part 5, Division 5.2 of the *Environment Planning and Assessment Act 1979*. It addressed the requirements of Division 5, Part 8 of the *Environmental Planning and Assessment Regulation 2021* and the Secretary's environmental assessment requirements (SEARs) for the Hunter Transmission Project issued on 12 August 2024. The environmental impact statement was placed on public exhibition by

the Department of Planning, Housing and Infrastructure for 28 days between 27 August 2025 to 24 September 2025.

A referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was also submitted (EPBC 2024/09874) to the Australian Department of Climate Change, Energy, the Environment and Water, as a delegate for the Australian Minister for the Environment and Water. A request to vary the proposal to take an action for the project was subsequently issued to the Australian Department of Climate Change, Energy, the Environment and Water on 31 October 2024 under Section 156 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* including changes to the alignment of the Hunter Transmission Project corridor, refinements to the proposed works for upgrades to existing transmission lines and towers, and a revised description of project construction activities and facilities.

The Australian Department of Climate Change, Energy, the Environment and Water determined the Hunter Transmission Project to be a controlled action on 5 February 2025 and that it would be assessed in accordance with the NSW Assessment Bilateral Agreement under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. As such, the Hunter Transmission Project also requires approval from the Australian Minister for the Environment and Water under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

During the public exhibition period, government agencies, stakeholders and the community had the opportunity to make a written submission to Department of Planning, Housing and Infrastructure for consideration in its assessment of the Hunter Transmission Project. Consultation activities were conducted during this time to:

- involve stakeholders and the broader community in the environmental impact statement exhibition activities
- encourage parties to engage with the information contained in the environmental impact statement
- provide guidance on the submissions process.
- A Submissions Report has been prepared to respond to the submissions received as part of the environmental impact statement exhibition.

In accordance with Clause 179(2) of the Environment Planning and Assessment Regulation 2021, an application may, with the approval of the Planning Secretary, be amended at any time before the application is approved. The proposed amendments and refinements do not change the permissibility of the Hunter Transmission Project or its declaration as critical State significant infrastructure. The assessment and approval requirements under the *Environment Planning and Assessment Act 1979*, including preconditions and mandatory considerations, are described in *Chapter 5 (Statutory context)* of the environmental impact statement.

Description of amendments and refinements

The proposed amendments and refinements to the Hunter Transmission Project have been described and assessed in this Amendment Report. Amendments to the Hunter Transmission Project include:

- changes to 500 kV transmission line infrastructure, including:
  - realignment of the transmission line at Mount Thorley
  - realignment of the transmission line at Gouldsville
  - localised easement widening for conductor swing
- changes to substation infrastructure at Eraring
- changes to intersections, access roads and access tracks, including:
  - changes to access track locations
  - minor adjustments to the project impact area for intersection upgrades
  - adjustments to the proposed access routes for construction
- changes to construction methods and facilities, including:
  - reconfiguration of the Wollombi Road construction support site
  - changes to the location of laydown areas within State forests
  - reconfiguration of the Flick Road emergency helicopter landing area
  - removal of a stringing site within Olney State Forest
  - changes to construction plant and equipment types and locations of use.

Refinements to the Hunter Transmission Project include:

- changes at Bayswater substation
- changes to the disturbance area within Olney State Forest.

The proposed amendments to the Hunter Transmission Project as described in the environmental impact statement are collectively referred to in this report as the 'amended project'.

Purpose of this report

This Amendment Report has been prepared for the purposes of clause 179(3) of the Environment Planning and Assessment Regulation 2021, having regard to the *State Significant Infrastructure Guidelines: preparing an amendment report* (DPE 2022).

The purpose of this Amendment Report is to describe the proposed amendments and refinements to the Hunter Transmission Project since the exhibition of the environmental impact statement and assess the potential impacts of the amended project. This report considers whether the proposed amendments and refinements would result in any changes to the potential environmental impacts described by and assessed in the environmental impact statement, and whether any changes to the mitigation measures are required as a result.

This report has been informed by additional environmental impact assessments. These additional assessments were undertaken for issues where the amended design could result in potential changes to previously identified environmental impacts. The additional studies include biodiversity, Aboriginal heritage, landscape character and visual amenity, traffic and transport, social, historic heritage, noise and vibration, surface water, groundwater and flooding.

This report is to be read in conjunction with the Submissions Report, where issues raised in submissions received in response to the exhibition of the environmental impact statement are addressed.

Since the Hunter Transmission Project is considered a controlled action, this Amendment Report will also be provided to Australian Department of Climate Change, Energy, the Environment and Water as part of the package of information for the assessment and determination of the Hunter Transmission Project.

Assessment of potential impacts

The assessment of potential environmental impacts of the amended project has considered potential impacts and changes as a result of:

- amendments and refinements to the Hunter Transmission Project, as described in *Chapter 3 (Description of amendments and refinements)* and *Appendix A (Updated project description)* of this amendment report
- feedback received during exhibition of the environmental impact statement

Biodiversity

EnergyCo and the NSW Department of Climate Change, Energy, the Environment and Water – Conservation Programs, Heritage and Regulation Group adopted a partnered approach to the development of the revised Biodiversity Development Assessment Report for the amended project. This approach was carried out to maximise avoidance and minimisation of biodiversity impacts and to resolve complex technical issues identified in Conservation Programs, Heritage and Regulation Group's review of the exhibited Biodiversity Development Assessment Report during exhibition of the environmental impact statement for the project.

As part of this process, EnergyCo and Conservation Programs, Heritage and Regulation Group participated in several workshops to review and agree:

- survey effort and methods
- candidate species
- land categorisation
- partial impact assumptions
- species polygons
- risks of serious and irreversible impacts.

This collaborative process has resulted in several minor changes to the assessment approach in the revised Biodiversity Development Assessment Report compared to the exhibited Biodiversity Development Assessment Report.

Construction

Native vegetation

Construction of the amended project would result in potential direct impacts to around 945.24 hectares of native vegetation that aligns with 38 plant community types. Around 734.88 hectares would be completely cleared (and 210.36 hectares would be partially cleared). Where partial clearing occurs, understory species would be retained and only vegetation with mature growth heights of more than two metres would be removed. This has resulted in an increase in the amount of derived native grassland vegetation that would be avoided from 54 hectares for the exhibited project to around 76.32 hectares for the amended project.

Threatened vegetation

Consistent with the exhibited project, construction of the amended project would result in direct impacts to seven threatened ecological communities listed under the Biodiversity Conservation Act 2016 and three threatened ecological communities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. The overall direct impacts to threatened ecological communities listed under the Biodiversity Conservation Act is around 228.23 hectares (compared to 207 hectares for the exhibited project), with impacts to around 165.92 hectares of thinned, poor or planted native vegetation (compared to 142 hectares for the exhibited project).

A total of 32 scattered trees (compared to 25 for the exhibited project), some of which are hollow bearing, were recorded within the amended disturbance area and would be impacted by the amended project.

Threatened flora

Consistent with the exhibited project, the amended project has the potential for residual direct impacts on 38 threatened flora species. Of these, 13 species were recorded during field surveys and 25 species were conservatively assumed present based on suitable habitat within the amended disturbance area where targeted surveys were not sufficient to exclude the species. The threatened flora species comprised:

- 24 species listed under the *Biodiversity Conservation Act 2016* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (7 recorded during survey, 17 assumed present), compared to 22 species for the exhibited project.
- 12 species listed under the *Biodiversity Conservation Act 2016* only (five recorded during survey, seven assumed present), compared to 14 species for the exhibited project.
- two species listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* only (one recorded during survey, one assumed present)., consistent with the EIS.

Threatened fauna

Consistent with the exhibited project, the amended project has the potential for residual direct impacts on 28 threatened fauna species. Of these, 26 species were recorded during field surveys and two species were conservatively assumed to be present based on suitable habitat within the amended disturbance area. All 28 recorded and assumed threatened fauna species are listed under the *Biodiversity Conservation Act 2016*, with 15 species also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Serious and irreversible impacts

Fourteen serious and irreversible impact (SAII) entities (an impact likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct) are either known to occur (one threatened ecological community, four threatened flora species andsix threatened fauna species) or assumed to occur (three threatened flora species) in the amended disturbance area based on the presence of suitable habitat. In addition, based on consultation with Conservation Programs, Heritage and Regulation Group a further two threatened fauna species were assessed against SAII criteria, consistent with the exhibited project. The majority of the impacted SAII entities are associated with the forested plateau section of the amended project where extensive contiguous habitats exist. A total of 16 entities were assessed against SAII criteria, consistent with the exhibited project.

Section 9.1 of the revised Biodiversity Development Assessment Report provides a detailed assessment for SAII on biodiversity values to assist the determining authority to evaluate the nature of an impact on a potential entity at risk of a SAII, including the relevant SAII principle/s that apply to each entity subject to assessment. Avoiding and minimising impacts on SAII entities has been prioritised during development of the amended project and will continue to be a focus of micro-siting during detailed design and implementation of management measures during construction.

Aquatic ecology

Of the 19 named watercourses and 55 unnamed watercourses that contain mapped key fish habitat (KFH) (compared to 16 and 48, respectively for the exhibited project), four were determined to contain mapped habitat for the Southern Purple Spotted Gudgeon (*Mogurnda adspersa*), which is listed as endangered under the *Fisheries Management Act 1994*, consistent with the EIS. The *Fisheries Management Act 1994* listed endangered Hunter River population of Darling River Hardyhead (*Craterocephalus amniculus*) was also considered on a precautionary basis. The likelihood of occurrence assessment completed for threatened fish species under the *Fisheries Management Act 1994* determined that the Southern Purple Spotted Gudgeon had a 'high' likelihood of occurrence, while the Darling River Hardyhead had a 'moderate' likelihood of occurrence

The proposed mitigation and management measures to manage impacts to fish habitat are likely to prevent any direct or indirect impacts to these watercourses and their habitats through restriction of direct impacts to the watercourses which contain mapped species habitat.

Indirect impacts

Indirect impacts identified in the revised Biodiversity Development Assessment Report for the amended project are generally the same as those identified in the exhibited Biodiversity Development Assessment Report, except for an additional consideration of increased risk of public access related impacts such as illegal dumping, firewood collection and sediment and erosion issues caused by illegal use of vehicles as part of the revised Biodiversity Development Assessment Report.

Prescribed impacts

Prescribed biodiversity impacts are those that may affect biodiversity values in addition to, or instead of, impacts from vegetation clearing and loss of habitat. Prescribed impacts that may occur during construction are consistent with those identified in the EIS and include potential impacts to:

- karst, caves, crevices, cliffs and other geological features of significance, or rocks
- human made structures,
- non-native vegetation
- waterbodies, water quality and hydrological processes
- vehicle strike
- conservation areas and nature reserves

Commonwealth Environment Protection and Biodiversity Conservation Act 1999 listed threatened species and ecological communities

Ten Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* listed threatened ecological communities are known or predicted to occur within 10 kilometres of the amended project impact area. Of these, three threatened ecological communities were recorded within the amended disturbance area and would be potentially impacted by the amended project.

Seventy-five threatened flora species and 70 threatened fauna species listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* are known or likely to occur within the amended disturbance area or surrounding locality (10-kilometre buffer area). Of these, eight flora species and 19 fauna and/or migratory species were recorded within the amended disturbance area. An additional 18 flora species and eight fauna and/or migratory species were determined to have a moderate to high likelihood of occurrence within the amended disturbance area.

Under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 where a project is likely to have a significant residual impact on a listed threatened species and/or community, the impacts must be compensated. Based on the assessment of significance, the amended project would result in significant residual impacts to two threatened ecological community and 35 threatened species.

Operation

Consistent with the exhibited project, potential direct impacts on native vegetation and threatened species habitat during operation of the amended project would occur through ongoing vegetation management to ensure vegetation clearance requirements and asset protection zones are maintained. Potential direct impacts on native vegetation, threatened ecological communities and threatened species habitat during operation have been included in the clearing estimates for the amended project

Some indirect impacts associated with construction of the amended project (consistent with the exhibited project) may also occur during operation, including:

- reduced viability of adjacent habitat due to edge effects, as the presence of new habitat edges is maintained during operation
- reduced viability of adjacent habitat due to light spill from substations and occasional noise, vibration or dust from maintenance activities
- transport of weeds, pests, and pathogens as a result of ongoing access and maintenance activities
- loss of breeding habitats due to ongoing vegetation maintenance may result in impacts nests, dreys or burrows
- trampling of threatened flora species during periodic maintenance activities
- increased risk of fire linked to vegetation maintenance and infrastructure faults.

The revised Biodiversity Development Assessment Report has also identified an increased risk of public access related impacts such as illegal dumping, firewood collection and sediment and erosion issues caused by illegal use of vehicles during operation as a potential indirect impact.

In addition to these, operation of the amended project (consistent with the exhibited project) may result in risk of fauna collision with power lines and potential effects from electromagnetic fields (EMF). Species most at risk include large, high-flying birds such as raptors, cockatoos and waterbirds, as well as microbat species such as the Large-eared Pied Bat and Eastern Cave Bat. While there is some risk it is not likely to be substantial.

Prescribed impacts primarily occur during construction of the amended project but may persist to a lesser extent during operation.

Biodiversity offsets

The potential direct impacts of the amended project on native vegetation, threatened ecological communities and threatened species would generate a total of credits, including: 21,119 ecosystem credits (compared to 17,109 for the exhibited project) and 279,750 species credits (20,723 flora and 259,027 fauna) (compared to 209,996 species credits (29,671 flora and 180,325 fauna) for the exhibited project). In addition, 26 ecosystem credits are required for impacts to scattered trees (compared to 22 for the exhibited project).

The revised Biodiversity Development Assessment Report presents adjusted methodologies to account for indirect impacts related to bird strike and EMF and prescribed impacts related to habitat connectivity. This means that the additional species offsets as outlined in the exhibited Biodiversity Development Assessment Report are no longer proposed.

EnergyCo intends to enter into a Strategic Offset Delivery Agreement with the Secretary of the NSW Department of Climate Change, Energy, Environment and Water for the Hunter Transmission Project. Under this agreement, responsibility for delivering biodiversity offsets will be transferred to the Department with commensurate funding. Biodiversity offsets secured under the Strategic Offset Delivery Agreement will constitute either the retirement of like-for-like credits or conservation actions that are targeted at impacted entities.

Residual impacts to biodiversity values will be minimised through the application of mitigation and management measures and the implementation of a biodiversity management plan (BMP)

Aboriginal heritage

Additional field investigations of previously uninspected areas and amended project impact areas were undertaken over four weeks by archaeologists and seven registered Aboriginal parties. The additional field surveys resulted in an 82.5 per cent survey coverage of the amended construction impact area by linear pedestrian transects, an increase in survey coverage compared to 72 per cent for the exhibited project.

The additional archaeological field survey completed since exhibition of the environmental impact statement identified 13 additional Aboriginal objects, sites and places within the amended project impact area. An additional 20 discrete sites were identified during test excavations, with the highest densities of artefacts encountered within locations on the banks of Wollombi Brook.

Feedback received from Heritage NSW on the exhibited ACHA during exhibition of the environmental impact statement has resulted in changes to how the archaeological assemblage of the project impact area has been determined, with the most significant change being the separation of the sites identified in the environmental impact statement as forming part of a broader background scatter into individual items so that each identified site is presented, assessed and managed separately.

Following the changes to how the archaeological assemblage of the project impact area is determined, alongside the findings of additional field investigations, the archaeological assemblage of the amended project impact area consists of 452 Aboriginal objects, sites and places, including:

- 303 Aboriginal objects, sites and places within the amended project impact area
- 146 Aboriginal objects, sites and places outside of, but within 55 metres of the amended project impact area (being the distance at which potential impacts from vibration may occur)
- three rockshelters located outside the amended project impact area, but which may be impacted/ disturbed through the implementation of the cultural values mitigation strategy (included as mitigation measures AH07) which proposes Aboriginal led research that may include investigation and recovery of cultural materials

Overall, when considering the significance of all Aboriginal objects, sites and places within the archaeological assemblage of the amended project:

- twenty-three Aboriginal objects, sites and places considered of high significance are located within the amended project impact area. These are dominated by rockshelters, grinding grooves, stone arrangements and cultural places. This also includes some of the cultural deposits encountered through the test excavations

- eighty-one moderate significant Aboriginal objects, sites and places are documented within the amended project impact area, which include a range of stone artefact materials as well as other site types with potentially limited research potential and/or that were in poor condition
- the remaining 199 Aboriginal objects, sites and places within the amended project area were considered of low significance, and are dominated by surface isolated or low-density stone artefacts.

The project design and construction methodology would continue to be refined to avoid or reduce impacts to Aboriginal sites, as described in the environmental impact statement. This would include investigating further micro-siting of project infrastructure and construction activities to avoid or minimise impacts to sites of high significance, such as rockshelters, grinding grooves, stone arrangements and cultural places.

Construction of the Hunter Transmission Project is expected to result in the following impacts to Aboriginal heritage:

- completely or partially impact 217 Aboriginal objects, sites and places located within the disturbance area. This includes five rockshelters of moderate significance, five cultural sites (primarily resource and gathering), two culturally modified trees, two grinding grooves, 29 surface and sub surface stone artefact sites of moderate to high density, and 174 low density artefact scatters and isolated finds
- potentially indirectly impact 12 Aboriginal objects, sites and places located outside the amended project impact area but within 55 metres, for example due to construction vibration
- partially impact three rockshelters located outside the amended project impact area (more than 55 metres) as a result of Aboriginal led research conducted as part of the proposed cultural values mitigation strategy (even though there would be no loss of heritage value from these activities) (refer to mitigation measure AH07).

Impacts to Aboriginal objects, sites and places during operation of the amended project would be consistent with those outlined in *section 9.4* of the environmental impact statement.

Landscape and visual

Construction

Consistent with the environmental impact statement, during the construction phase of the amended project there would be temporary changes to the landscape character and visual amenity of the study area, which would impact residents, tourists and road users.

There would be an increase in the extent of visual impacts to public viewpoints during construction of the amended project compared to the exhibited project. Additional visual impacts would occur at two public viewpoints on Wollombi Road, west of Millfield during the daytime and night-time. These impacts would be as a result of the inclusion of the temporary worker accommodation at the Wollombi Road construction support site.

The inclusion of the temporary worker accommodation at the Wollombi Road construction support site would result in an increase in built form / structures at this location, which would slightly increase the impact as identified in the exhibited environmental impact statement. The views,

however, would be temporary and brief while residents are in transit along Wollombi Road driving past the construction support site. The lighting at this construction support site during night-time use may be visible from the nearest dwellings, however, they would be relatively distant, temporary and would not substantially change the existing night time view.

Impacts to the landscape character areas during construction as assessed in the environmental impact statement would generally remain unchanged as a result of the amended project. One change in the environmental impact statement assessed impacts would occur within landscape character zone 11 (Narrow rural valley) which would experience an increase in the magnitude of impact during the daytime from moderate to high from the introduction of temporary worker accommodation at the Wollombi Road construction support site. External lighting for 24/7 operation of the Wollombi Road construction support site would increase the night time landscape character impact of landscape character zone 11 from negligible to high.

Operation

There would be no change to daytime visual impacts from public viewpoints during operation of the amended project when compared to impacts identified in the environmental impact statement for the exhibited project.

Operation of the amended project would result in potential changes to the visual impacts of private property views in the vicinity of the realignment of the transmission line at Mount Thorley and Gouldsville. The Landscape character and visual impact assessment addendum included an updated private viewpoint assessment for these amendments. This assessment used the steps outlined in the *Transmission Guideline, Technical Supplement for Landscape Character and Visual Assessment* (DPHI 2024) (the *Technical Supplement*).

A detailed visual impact assessment was completed for four sensitive receivers to assess the potential changes to visual impacts from the realignment of the transmission line at Mount Thorley (ID251, ID277, ID2920 and ID3525). The amended project would not result in changes to the potential visual impact ratings of these sensitive receivers when compared to the environmental impact statement (ID251, ID277 and ID2920).

Since exhibition of the environmental impact statement, an additional secondary dwelling was identified (ID3525) that may be visually impacted by the amended project. This dwelling was subject to a detailed visual impact assessment, which identified that this dwelling would experience low potential for visual impacts from the amended project.

A detailed visual impact assessment was completed for two sensitive receivers to assess the potential changes to visual impacts from the realignment of the transmission line at Gouldsville. The potential impacts to one sensitive receiver (ID2928) would remain unchanged compared to the exhibited environmental impact statement and would experience a moderate potential for visual impacts. Sensitive receiver ID2929 would experience a low potential for visual impacts as a result of the amended project, compared to no potential for visual impacts for the exhibited project.

Traffic and transport

Adjustments to the traffic and transport assessment methodology have been made in response to feedback during exhibition of the environmental impact statement from Transport for NSW and local councils. The traffic and transport assessment was also updated to incorporate the amendments and refinements to the Hunter Transmission Project, including some adjustments to light vehicle movements, construction access routes and tracks and to improve clarity on the project definition.

An updated road capacity (mid-block) assessment was undertaken to assess the potential impacts of construction traffic on road network performance during peak construction (expected to be in 2028). The assessment applied an updated assessment methodology, and concluded that although three roads would operate below a level of service B under some circumstances during peak construction, the road network would continue to perform at acceptable levels of service. Construction traffic would not result in any roads along the project construction access routes for the Hunter Transmission Project operating at an unacceptable level of service (i.e. level of service E or level of service F).

An updated intersection performance assessment applying an updated assessment methodology was undertaken. This assessment identified two additional intersections that are forecast to perform at an unsatisfactory level of service in the peak construction year (2028) without construction traffic (eight intersections in total during construction of the amended project). With construction of the Hunter Transmission Project, four additional intersections would operate at an unacceptable level of service.

The assessment has also included additional consideration has also been given to potential traffic cumulative impacts on the New England Highway or the Golden Highway as a result of proposed renewable energy projects within renewable energy zones or elsewhere in NSW in response to feedback received from Transport for NSW on the environmental impact statement.

Prohibitions to some construction traffic movements may be introduced and / or some construction traffic would be prohibited from using intersections that currently perform at an unacceptable level of service during the assessed peak hour, and variable message signs may also be used to communicate potential network delays to other road users. The exception is at:

- Wine Country Drive / Broke Road intersection, where light vehicles would be encouraged to use the other assessed construction access routes to access sections of the Hunter Transmission Project corridor
- Mandalong Road / Freemans Drive / Wyee Road intersection, where alternative access routes to/from the Freemans Drive construction support site have been included for construction traffic that can avoid this intersection

Revised turn warrant and swept path assessments were carried out at existing intersections to assess the intersection's ability to safely accommodate the required turning movements for construction vehicles. Based on this assessment, a number of intersections would require upgrades or widening to meet the relevant standards for safe turning movements. Safety would be improved at these intersections by providing additional turning lanes as well as acceleration and deceleration lanes, where required, or providing for the swept path of the largest expected construction vehicles. The suitability of intersections based on sight distances was also assessed, with revisions to the criteria applied to the analysis. As a result of this assessment, additional advance warning signs, temporary reduced speed limits and/or trimming of vegetation would be implemented as required at a number of intersections to improve driver sight distances.

Impacts to property access described in the environmental impact statement are largely applicable to the amended project. Road upgrades are proposed along Oakley Lane, Pokolbin Mountains Road, Mf1 Road, Mount Baker Road, Mount View Road and Hayes Road. Upgrades would typically comprise localised widening in addition to passing bays to accommodate a 19 metre articulated vehicle. Traffic controllers would be present at passing bays along these roads to ensure the roads are only operating under one-way conditions to prevent mid-block passing. Additional mitigation measures have been included to manage property access impacts for residents and businesses along these roads

Impacts of the Hunter Transmission Project from stringing of the transmission lines across roads, on road condition, public transport, active transport and the rail network as a result of construction of the amended project would be consistent with the impacts described in the environmental impact statement. The delivery of oversize and overmass components during construction of the amended project would require consistent approvals and arrangements as those described in the environmental impact statement.

Land use and property

Amendments and refinements to the Hunter Transmission Project have resulted in minor adjustments to the mapped land use and land tenure of the amended project impact area compared to the exhibited project impact area and construction impact area.

A search of the National Native Title Tribunal on 18 December 2025 identified no known native title claims under the *Native Title Act 1993* (Commonwealth). Changes at Eraring substation as part of the amended project have resulted in an increased footprint that intersects with a registered Indigenous Land Use Agreement (NIA2000/001). Consultation would be carried out with the relevant parties to this agreement during detailed design.

The amendments and refinements to the exhibited project would result in a 1.2 per cent increase to the size of the construction impact area (an increase of around 28 hectares). There have also been some adjustments to the number of properties and overall area requiring acquisition or leasing. The property impacts of the amended project would be consistent with those outlined in *section 12.3.2* of the environmental impact statement.

Changes to the final operational easement to account for conductor swing during periods of high wind would increase the operational impact area by about nine per cent to 1371 hectares (compared to 1261 hectares for the exhibited operation impact area).

Construction or operational impacts on agricultural land, State forests, land used for mining and exploration, Commonwealth land, conservation land, Crown land and infrastructure and utilities would be consistent with the exhibited project, apart from minor adjustments to identified impacts to reflect the amended project impact area.

Agriculture

Potential agricultural impacts from construction and operation of the amended project are expected to be consistent with the impacts identified in the environmental impact statement with regards to loss of agricultural land, impacts to agricultural productivity, agricultural operations and to land and soil capability.

Social

Since the exhibition of the environmental impact statement, Department of Planning, Housing and Infrastructure released the revised *Social Impact Assessment Guideline for State Significant Projects* (revised SIA Guideline) (DPHI 2025). The revised SIA Guidelines includes a revised significance matrix has been incorporated into the assessment of potential social impacts. The DPHI Guideline introduces a new 'negligible' rating for unlikely or minimal impacts. This has been incorporated into the social impact assessment addendum. Additional targeted stakeholder engagement has also been undertaken in relation to the amended project since exhibition of the environmental impact statement., , Engagement has been undertaken to address the submissions received on the exhibited project, and to assess a range of subject areas relevant to the SIA addendum.

The existing social environment of the Hunter Transmission Project as described in the environmental impact statement remains applicable to the amended project. Additional vulnerable groups and communities that may be affected by the Hunter Transmission Project amendments include Millfield Public School (students, staff, parents and guardians / visitors), low-income families, Aboriginal community members and individuals with health conditions.

The amended project would not result in changes to the significance ratings assigned to social benefits during construction compared to the exhibited project.

The amended project would result in changes to social impact significance ratings during construction compared to those outlined in the environmental impact statement both as a result of the Hunter Transmission Project amendments and as a result of the revised significance matrix in the revised SIA Guideline.

Overall, the amendments and refinements to the Hunter Transmission Project do not materially change the significance of social impacts identified in the environmental impact statement, although some warrant different or additional mitigation measures.

Key changes to the potential social impact assessment of the amended project during construction include:

- the likelihood of the unmitigated impacts (from likely to almost certain) occurring with regards to way of life due to the reconfiguration of construction support sites and temporary worker accommodation. The inclusion of temporary worker accommodation at the Wollombi Roads construction support site, together with the realignment of the transmission line at Mount Thorley and Gouldsville
- change in potential impacts to community, accessibility, and health and well being from the reconfiguration of temporary worker accommodation (Wollombi Road construction support site) with corresponding changes to mitigation measures
- changes in potential accessibility impacts with the revised mitigation measures included in the revised traffic and transport impact assessment (Appendix H)

There would be a reduction in the operational social impact ratings for the Hunter Transmission Project, due to the changes in the assessment methodology within the revised SIA guidelines, compared to those identified in the environmental impact statement for the exhibited project.

Historic heritage

The amended project would impact up to nine listed items of historic heritage significance, compared to 11 identified in the environmental impact statement. There are also reduced impacts to two items as a result of additional research in the project impact area undertaken in response to an environmental impact statement submission from Heritage NSW and reported in the historic heritage impact assessment addendum (*Appendix J (Historic heritage impact assessment addendum)*).

The amendments and refinements to the project would change the assessed impacts to listed historic heritage items that were identified as potentially impacted in the environmental impact statement as follows:

- increased direct (none to minor) and indirect impacts to Brick farm house (minor to moderate)
- increased direct and indirect temporary impacts to Eraring Power Station (minor to moderate).

In response to feedback received during exhibition of the environmental impact statement from Heritage NSW, NSW National Parks and Wildlife Services and Forestry Corporation of NSW, a predictive model was developed to identify and assess the potential impacts of the project on unlisted items with historic heritage potential (a potential heritage significance study). Development of the predictive model and supporting additional research into the project impact area resulted in reduced impacts to three items identified as potentially impacted by the project in the environmental impact statement:

- Blacksmith's shop and forge - Vere township (moderate to minor direct impacts)
- Unidentified site - Vere township (minor to no direct and indirect impacts)
- Loder Family Sawmill (minor to no direct impacts).

The potential heritage significance study for the amended project impact area identified 33 ‘activity areas’ considered to have moderate to high potential heritage significance.

These activity areas were formally assessed for their heritage significance, resulting in 31 activity areas considered to hold, or possibly hold, heritage significance at a local level. An assessment of impacts from the amended project on the newly identified activity areas and their associated features confirmed the following key impacts from construction of the amended project:

- indirect (visual, vibration) impacts:
  - minor impacts to two historical heritage activity areas
  - moderate impacts to one historical heritage activity area
  - major impacts to one historical heritage activity area
- direct (physical) impacts:
  - minor impacts to three historical heritage activity areas
  - major impacts to seven historical heritage activity areas.

Mitigation measures to avoid, minimise and manage any potential impacts to newly identified sites assessed to hold or possibly hold heritage significance would be implemented through the historic heritage management plan for construction of the project.

In response to feedback received during exhibition of the environmental impact statement from NSW National Parks and Wildlife Services and Forestry Corporation of NSW, potential impacts to the Oakley Estate and Wishing Well were revisited, giving consideration to the NSW Heritage Criteria.

Oakley Estate was found to hold local heritage significance when assessed against the current New South Wales heritage criteria, which is a reduction from the evaluation of State heritage significance in the *Oakley Homestead, Singleton Army Training Area: Conservation Management Plan* (Suters Architects 2000), due to the current condition of the Estate.

The Wishing Well was found to hold local heritage significance when assessed against the current New South Wales heritage criteria.

Management and mitigation measures have been updated as part of this report to avoid, minimise and manage the potential impacts to historical heritage values resulting from the amended project.

Noise and vibration

The methodology for the assessment of noise and vibration impacts of the amended project has been adjusted to the reflect the proposed amendments and refinements. These include minor changes to representative construction scenarios, the construction road traffic noise methodology and construction activities within the HTP corridor. This also includes changes to the assessment methodology for construction vibration to assess potential vibration impacts to Aboriginal heritage sites to align with the approach adopted in the Aboriginal cultural heritage assessment of the amended project.

Thirty additional sensitive receivers have also been included in the assessment compared to those assessed as part of the exhibited project. These sensitive receivers include those located in proximity to the amendments and refinements of the project, together with sensitive receivers not previously included in the environmental impact statement which have been identified through submissions received during the exhibition of the environmental impact statement

Construction

Construction noise impacts from the use of construction support sites, laydown areas, substations and switching stations for the amended project can be summarised as follows:

- consistent with the environmental impact statement, the predicted impacts are generally limited to residential receivers close to each site
- consistent with the environmental impact statement, noise levels from the out of hours operation of temporary worker accommodation facilities are predicted to exceed the sleep disturbance screening level at two locations near the Freemans Drive construction support site, however this is unlikely to cause awakening reactions
- one new 'other sensitive' receiver (Millfield Cemetery) is predicted to have 'clearly audible' (1-10 dB) impacts.

Construction noise impacts from access track construction and intersection upgrades can be summarised as follows:

- consistent with the EIS, the predicted impacts are generally limited to residential receivers closest to each site
- 23 fewer sensitive receivers would be impacted in comparison to the EIS, the majority of which are in NCA 11
- five additional 'other sensitive' receivers would be impacted in comparison to the EIS. This is attributed to additional passive recreational sites being assessed e.g. walking tracks in the State forests.

Construction noise impacts from construction activities within the HTP corridor and stringing sites can be summarised as follows:

- consistent with the EIS, the predicted impacts are generally limited to residential receivers closest to each site
- one fewer sensitive receiver would be impacted in comparison to the EIS due to the realignment of the HTP corridor
- two additional 'other sensitive' receivers would be impacted in comparison to the EIS. This is attributed to additional passive recreational sites being assessed e.g. walking tracks in the State forests
- noise levels from the potential out of hours use of stringing sites are predicted to have impacts during the nighttime at up to 57 residential sensitive receivers (19 additional compared to the exhibited project). Noise levels from the out of hours use of stringing sites are predicted to exceed the sleep disturbance screening level at five additional sensitive receivers in comparison with the EIS, however this is unlikely to cause awakening reactions.

Of the four locations considered for helipads, only the Freemans Drive construction support site has predicted aircraft noise impacts for residential receivers. Aircraft noise from the arrival and departure of helicopters at the Freemans Drive construction support site is predicted to be above 75 dBA for six residential receivers (compared to five for the exhibited project). The assessment of noise impacts from flights within the HTP corridor as part of the amended project shows that up to three sensitive receivers may experience noise levels above 85 dBA during helicopter flights at

52 metres (170 feet) above ground level within the HTP corridor, with the majority of nearby impacted receivers experiencing 60 to 65 dBA. This is consistent with the impacts assessed for the exhibited project. However, as part of the amended project, an additional 16 sensitive receivers would experience 60-80dBA in comparison to the EIS. There would be no additional impacts from helicopter flights outside the HTP corridor compared to those described for the exhibited project.

As a result of the amendments and refinements to the project, updated construction traffic volumes have been reassessed for all proposed construction traffic access routes. Consistent with the exhibited project, compliance with the Road Noise Policy criteria is predicted for all receivers. A total of 77 residential receivers would be potentially impacted by an increase in road traffic noise levels due to construction related vehicle movements for the amended project. An additional 34 residential receivers would be impacted compared to the environmental impact statement due to adjustments to proposed access routes for construction. Existing traffic numbers were not available during the environmental impact statement on many local roads, with overly conservation assumptions applied. The inclusion of traffic numbers has resulted in a more accurate prediction of impacts.

The noise and vibration impact assessment addendum prepared to support the Amendment Report identified one less sensitive receiver within the minimum working distances for vibration impacts compared to the exhibited project. This is the result of changes to the design of access tracks as part of the amended project and the removal of intersections previously included in error. The use of a 2-4 tonne vibratory roller in place of the larger vibratory rollers proposed to be used would result in a reduction of impacted residential receivers within the cosmetic damage minimum working distances to two (compared to a reduction to three for the exhibited project). The number of residential receivers within the minimum working distance for human comfort would be reduced to 10 (compared to a reduction to 16 for the exhibited project).

Operation

Consistent with the exhibited project, noise levels under fair weather conditions during operation of the amended project are predicted to be under 35 dBA at the edge of the transmission line easement and as such would be compliant at all receivers. The operational noise impacts from the amended project under worst-case scenario (i.e. light rain or mist) conditions show an increase of two potentially impacted receivers in NCA05 as a result of the Mount Thorley realignment. An additional sensitive receiver in NCA05 would be potentially affected by operational noise compared to the environmental impact statement by up to 5dB(A), however this is due to refinements to the sensitive receiver location data for the project.

Assessment of operational residual noise impacts for the amended project at residential receivers shows that during light rain or mist conditions (which is expected to be the worst-case conditions for audible noise impacts) the significance of the noise impact would be:

- considered to be ‘significant’ (more than 5 dBA exceedance) at three residential receivers (compared to two for the exhibited project)
- considered to be ‘moderate’ (between 3 to 5 dBA exceedance) at six residential receivers (consistent with the exhibited project)
- considered to be ‘negligible’ (less than 2 dBA exceedance) at three residential receivers (compared to two for the exhibited project).

There are no changes to the noise and vibration mitigation measures compared to the exhibited project.

Surface water

Construction

Additional trenching activities at the Bayswater South and Eraring substations, and the addition of wastewater treatment plants at the temporary worker accommodation and construction support sites have been identified as construction activities that may create additional potential areas of risk to water quality compared to those identified in the environmental impact statement. However, the general risks to water quality from the amended project are consistent with those identified for the exhibited project.

Potential impacts to surface water from construction of the project were identified in the environmental impact statement as being low to moderate, with the implementation of mitigation measures. Water quality objectives in receiving environments as a result of the amended project would be protected and maintained, consistent with the environmental impact statement.

Consistent with the environmental impact statement, potential impacts to streamflow regime during construction of the amended project are considered low.

The amended project would remove the following interactions with the riparian corridors of 4th order streams and above:

- an interaction of the HTP corridor running parallel with the riparian corridor of the Hunter River
- an interaction of an intersection upgrade with the outer riparian corridor of Loder Creek
- an interaction of minor works to an existing access track with the riparian corridor of an unnamed tributary of Dora Creek
- an interaction of an upgrade to an access track with the riparian corridor of Cedar Brush Creek.
- The amended project would result in one new interaction with riparian corridors of 4th order streams and above, which was not included in the environmental impact statement:
- a new access track crossing of Loder Creek (Strahler stream order of 4) within the HTP corridor

To respond to the feedback received from Department of Climate Change, Energy, the Environment and Water (Water), the riparian corridors at the Hebden Road, Wollombi Road and Freemans Drive construction support site have been mapped in accordance with *Controlled activities - Guidelines for riparian corridors on waterfront land* (DCCEEW 2025), including identifying the inner and outer riparian corridors. In accordance with the *Controlled Activity Guidelines*:

- construction activities in the mapped inner 50 per cent riparian zone would be avoided (with the exception of watercourse crossings and water extraction in accordance with existing water supply work approvals). These would be demarcated as no-go zones
- construction activities in the mapped outer 50 per cent riparian zone would be avoided where possible. However, if construction works cannot be avoided in these areas, they would comply with the Controlled activities - Guidelines for riparian corridors on waterfront land (DCCEEW 2025) (including riparian zone offsets and encroaching cleared areas only).

Additional mitigation measures have been provided in *Appendix D (Updated mitigation measures)* to reflect the clarified mapping at the Hebden Road, Wollombi Road and Freemans Drive construction support sites.

Operation

The potential impacts to water quality and streamflow regime from the operation of the amended project would be consistent with the impacts identified in the environmental impact statement. The operation of the amended project does not require additional infrastructure in watercourses or riparian corridors compared to the construction of the amended project.

Groundwater

The existing groundwater environment for the amended project impact area would remain unchanged from the existing groundwater environment outlined in *section 18.2* of the environmental impact statement, including the existing groundwater systems, hydrogeology and conceptual groundwater model.

The number and type of registered groundwater bores within both the amended project impact area and the amended groundwater study area have increased from 24 as part of the exhibited project to 30 within the amended project impact area as a result of the realignment of the transmission line at Mount Thorley. 27 of the 30 bores identified as being located within the amended project impact area are licenced as monitoring bores. No bores are predicted to be directly impacted by construction of the project.

The potential risks to the groundwater environment during construction of the amended project would be consistent with or lower than those outlined in *section 18.3* of the environmental impact statement. The risk of groundwater drawdown at registered bores from incidental take due to the construction of transmission towers would be lower than that described in the environmental impact statement, largely due to the realignment of the HTP corridor at Mount Thorley moving further away from the Hunter River.

The amended project would have no existing landholder bores within 18 metres of a transmission tower, meaning no existing groundwater bores would experience drawdown from construction of the amended project. The closest existing groundwater bore would be over 50 metres away from a transmission tower.

No changes to the potential impact on groundwater dependent ecosystems or culturally significant sites during construction described in the environmental impact statement are anticipated due to the amended project.

Changes to groundwater flow paths as a result of the interception of the groundwater table from the concrete footings of transmission towers as part of the amended project would be consistent with potential changes described in the environmental impact statement. Additionally, the amendments and refinements as part of the amended project are not anticipated to result in changes to groundwater quality impacts compared to those described in the environmental impact statement.

The potential risks to the groundwater environment during operation of the amended project would be consistent with those outlined in the environmental impact statement. Activities such as the use of large hardstand areas or compaction of underlying soils reducing the potential groundwater recharge, potential contamination due to chemical and fuel spills, and the potential for transmission tower foundations to change groundwater flow directions are consistent with those assessed in the environmental impact statement. Consistent with the environmental impact statement, no ongoing groundwater take is proposed for the amended project during operation, meaning no impacts to groundwater levels and groundwater sensitive receivers are anticipated during operation.

Flooding

The approach to defining flood behaviour under existing conditions and to assess each of the proposed amendments and refinements followed the same approach adopted for the exhibited project. Additional information on drainage systems at the Eraring substation has also been incorporated into the flood modelling as part of the assessment of flooding of the amended project.

The flooding impact assessment addendum identified some adjustments to the existing flood conditions in the sub-catchments of the flood study area (which remains unchanged from the environmental impact statement) in response to the amendments and refinements to the project. Additionally, the existing flood conditions at the Eraring substation have been remodelled.

Construction

In addition to the flood risks to construction activities that are described for the exhibited project, the amended project would also include the following flood risks during construction as a result of project amendments and refinements:

The reconfiguration of the Wollombi Road construction support site to include temporary worker accommodation would increase flood risk during construction as it would introduce an added risk to workers should a flood occur overnight. However, temporary buildings for worker accommodation would be located a minimum 0.5 metres above the peak one per cent AEP level, which is consistent with the flood planning levels that are prescribed in the development control plans of the relevant councils.

Additional trenching between the Bayswater substation and the Bayswater South switching station and at the Eraring substation would cross drainage lines, catch drains and channels that are subject to inundation during rainfall events. At these locations, construction activities would be staged and timed to manage flows through and around the work area, while also managing the discharge into the receiving drainage lines.

New laydown areas within State forests would experience minor overland flows under existing conditions during a one per cent AEP flood event. This presents a minor flood risk at these laydown areas and these risks are consistent with those described for the exhibited project.

Changes to access tracks would increase the total length of access tracks that would be inundated as part of the amended project compared to the exhibited project, however the extent and depth of inundation to access tracks due to a one per cent AEP Hunter River flood would be similar to the exhibited project.

Consistent with the exhibited project, all locations identified for intersection upgrades have the potential to be inundated by floodwater to varying degrees. As provided in the mitigation measures, further flood assessment would be undertaken during detailed design to inform the design of drainage measures that would be required to control any adverse impacts to flood behaviour.

All other amendments and refinements would not result in changed flood risks to construction activities compared to the exhibited project.

During construction, the amended project would generally have a minimal impact on flood behaviour for events up to one per cent AEP in intensity, consistent with the environmental impact statement.

Operation

For the amended project during operation, there would be no change to the layout of the Bayswater South switching station, the Olney switching station, the Eraring substation and upgraded or adjusted transmission lines. As such, the operational flooding impacts associated with these project elements would be consistent with those described in the environmental impact statement for the exhibited project.

For the realignment of the transmission line at Gouldsville and Mount Thorley, the depth and velocity of flooding would be similar to the exhibited project, meaning changes as a result of these amendments would not result in increased flood risk to the project or changes to flood behaviour during operation.

Updated changes in flood levels as a result of the upgrade works at the Eraring substation during the one per cent AEP and probably maximum flood events using additional information on site drainage systems provided by Origin Energy has been included in the flooding impact assessment addendum. While the remodelled flood levels show a reduction in the level of inundation at Eraring, the amended project would increase the depth of inundation at the substation, consistent with the exhibited flooding impact assessment. Consistent with the environmental impact statement, consultation would continue with Origin Energy during detailed design to confirm the impact that an increase in the depth of inundation could have on the operation of the Eraring Power Station and to inform the scope of mitigation measures that may be required.

Soils and contamination

The impacts described in *section 20.3.1* of the environmental impact statement in relation to potential erosion and sedimentation, salinity, acid sulfate soils and naturally occurring asbestos are applicable to the amended construction impact area. The risk ratings assigned to areas of contamination concern and construction activities based on the potential for the activities to cause exposure of sensitive receivers to contamination outlined in *section 20.3.2* of the environmental impact statement are applicable to the amended project.

The amended project would not introduce any additional contamination risks during construction or operation.

Bushfire

Construction

The risk of bushfire from the amended project, in terms of public safety and bushfire ignition, would be consistent with the risks identified for the exhibited project.

Similarly, risks to the project from bushfire in terms of bushfire safety risk to the construction workforce (including temporary worker accommodation) would be consistent with the risks identified for the exhibited project.

The temporary worker accommodation at the Wollombi Road construction support site as part of the amended project would be modular portable building types and require the maintenance of an asset protection zone to 'Bushfire Attack Level' (BAL) 10 specification as per the requirements for all temporary worker accommodation described in the environmental impact statement for the exhibited project. To meet a BAL of 10 at the Wollombi Road construction support site temporary worker accommodation, an asset protection zone (including vegetation to be cleared) of 67 metres is required due to the surrounding forested topography, which would be an increase of 36 metres from the environmental impact statement.

Operation

Risks of bushfire from the operation of the amended project would be consistent with the environmental impact statement for the exhibited project, in terms of risks to public safety, likelihood of the amended project being an ignition source and risks to emergency access and evacuation.

Similarly, operation of the amended project would have consistent risks from bushfire as the exhibited project in terms of bushfire safety risk to the workforce, exposure to bushfire impact (for transmission lines and towers, and switching stations) as well as the potential for the amended project to experience a transmission system outage.

Aviation

Amendments and refinements to the Hunter Transmission Project would not change the potential construction-related aviation risks of the project. Consistent with the environmental impact statement:

- the amended project would not impact any obstacle limitation surface from the construction of transmission line towers and/or the use of cranes
- potential impacts to aerial operations, and from the construction transmission towers and the use of cranes would not infringe applicable regulations
- no PANS-OPS surfaces would be infringed during the construction of the project by transmission towers or cranes
- risks to aerial operations would remain unchanged from the environmental impact statement and would be minimised with the implementation of mitigation measures provided in Appendix D (Updated mitigation measures).

Consistent with the environmental impact statement, the transmission line and transmission towers would not infringe on any certified airport obstacle limitation surface or PANS-OPS surfaces during operation. Impacts to aerial operation from the amended project would be consistent the potential impacts identified in the environmental impact statement, as would impacts to aerial firefighting.

Air quality

Construction

The screening assessment carried out as part of the construction dust assessment for the amended project showed 75 human receivers within 250 metres of the amended project impact area (compared to 31 human receivers for the exhibited project impact area), due to error in the assessment of Pokolbin Mountains Road in the EIS, changes in proposed unsealed access tracks and the inclusion of some additional access track upgrades.

The anticipated dust generating activities would be consistent with those outlined in the environmental impact statement, with the exception of minor increases in the anticipated earthworks requirements for the realignment of the transmission line in Mount Thorley and Gouldsville and changes to the disturbance area at Olney. The unmitigated and mitigated dust risks are consistent with the ratings outlined in the environmental impact statement for all project elements (i.e. there is no change), however the applicable sensitive receivers have been updated to align with the screening assessment.

The amended project would follow conventional construction methods and be guided by a construction air quality management plan to effectively manage environmental impacts.

In addition to the construction works, the construction support sites including temporary worker accommodation would include the operation of diesel generators on-site to provide back-up power in the event of a mains outage during construction of the project. Recommended separation distances for generators greater than or equal to 100 kilowatts, but less than 10 megawatts in aggregate, is 500 metres. A minimum distance of 500 metres between these generators and sensitive receivers would be achieved. Additionally, it is anticipated that the operation of the generators, and hence emissions, would be of short duration. It is therefore unlikely that these generators would have a significant impact on the local air quality.

Operation

Potential air quality impacts of the amended project during operation would be consistent with the impacts identified in the environmental impact statement.

Greenhouse gas

Construction

The estimated greenhouse gas emissions from the Scope 1, Scope 2 and Scope 3 emissions during construction of the amended project are estimated to be up to 678,750 tonnes of CO_2-e per year (compared to 644,384 tonnes of CO_2-e per year for the exhibited project). Consistent with the environmental impact statement, greenhouse gas emissions from pre-construction minor works are anticipated to be negligible and so have not been quantified.

Scope 3 emissions make up the majority of emissions during construction of the amended project, representing 73 per cent of the total (compared to 77 per cent for the exhibited project). Embodied emissions from production materials make up the majority of Scope 3 emissions during construction of the amended project. Scope 1 and 2 emissions for the amended project collectively account for around 27 per cent of total greenhouse gas emissions during construction (compared to 23 per cent for the exhibited project), with the majority of emissions coming from the loss of carbon sink through vegetation clearing.

Relative to 2023 emission inventory totals, Scope 1 and Scope 2 greenhouse gas emissions generated by the construction of the amended project during the peak construction year (2028) would represent around 0.16 per cent of NSW total emissions and 0.04 per cent of national total emissions on an annual average basis.

Operation

The estimated greenhouse gas emissions from the Scope 1, Scope 2 and Scope 3 emissions during operation of the amended project are estimated to be up to 1026 tonnes of CO_2-e per year (compared to 942 tonnes of CO_2-e per year for the exhibited project). The change in greenhouse gas emissions between the exhibited project and the amended project is due to the inclusion of electricity transmission and distribution loss emissions in response to feedback received during community engagement activities. These were not included in greenhouse gas emissions calculations as part of the exhibited project.

Relative to 2022 emission inventory totals, Scope 1 and Scope 2 greenhouse gas emissions generated by the operation of the amended project for annual operations would represent around 0.0002 per cent of NSW total emissions and 0.0008 per cent of national total emissions on an annual average basis.

Additionally, the operation of the amended project would still contribute to the reduction of greenhouse gas emissions through the provision of electricity transmission infrastructure to enable the delivery of renewable energy to the national electricity market. This would contribute to the efforts of the Australian and NSW Governments to meet emissions reduction targets.

Economics

Construction

The amendments and refinements would not result in any material changes to the assessed construction expenditure and workforce impacts outlined in the environmental impact statement.

The amended project would result in some minor changes to the area of non-irrigated agricultural land and irrigated land impacted during construction with a reduction in overall gross value of production impacted ($352,878 per year for the amended project compared to $404,738 per year for the exhibited project). Consequently, there would be some minor reductions in the direct and indirect regional and NSW economic impacts of foregone agriculture during construction.

The annual forestry cost (foregone revenue ignoring salvage value of cleared timber) during the construction of the amended project from State forest land displacement would have a negligible impact at a regional scale.

Operation

The amended project would result in some minor changes to the area of non-irrigated agricultural land and irrigated land impacted during operation with an increase in the overall gross value of production impacted by the project. Consequently, there would be some increase in the direct and indirect regional and NSW economic impacts of foregone agriculture during operation.

The annual forestry cost (foregone revenue ignoring salvage value of cleared timber) during operation of the amended project from State forest land displacement would have a negligible impact at a regional scale.

The amended project impact area intersects 499 hectares of mine leased land. The impacts from the operation of the project on these mining complexes would be managed by agreement between the network operator and the mining operators so as to minimise direct impacts on mining operations as far as practicable.

Impacts to the broader mining industry as a result of the potential loss of coal royalties from the presence of project infrastructure within mining land are anticipated to be negligible.

Cumulative impacts

The list of future projects identified for further consideration to determine the likelihood and consequence of potential cumulative impacts has been reviewed since the exhibition of the environmental impact statement. This review was completed to include additional information that has become available since the exhibition of the environmental impact statement. This includes where feedback from the exhibition of the environmental impact statement has identified additional future projects. In addition to these projects and in response to feedback from Transport for NSW, additional consideration has been given to potential traffic cumulative impacts on the New England Highway or the Golden Highway as a result of proposed renewable energy projects within renewable energy zones or elsewhere in NSW.

Consistent with the environmental impact statement, the combined cumulative impact of the amended project and other relevant future projects would contribute to negative impacts in the cumulative impact study area. These include:

- shortages associated with the increase competition for labour and skills from overlapping construction programs for major projects such the Hunter-Central Coast REZ Transmission Project, New England REZ Transmission Project and other energy generation development projects
- skilled labour shortages and wage competition leading to project delays and the need to procure non-local skilled labour
- excess demand for short and long-term accommodation and housing with the potential to displace community members such as seasonal workers that depend on access to short-term housing and accommodation
- cumulative impacts to road services and infrastructure for several key routes such as the Golden Highway, Great North Road, Wollombi Road, Hebden Road and the New England Highway

- increased traffic and heavy vehicle movements on local and arterial roads with impacts to community safety and amenity especially in rural and semi-rural areas subject to cumulative traffic growth.

Consistent with the environmental impact statement, there are many benefits associated with the combination of the amended project and other relevant future projects. These include:

- the clustering of renewable energy generation developments in the region, which would promote flow-on effects for both the production and consumption of goods and services that service the renewable energy sector
- continued growth and investment in the region associated with the growth of electricity generation, transmission, and storage solutions, which would contribute to improved livelihoods for local business owners
- benefits for local and regional communities, which would also be realised through the promotion of training and employment opportunities in the construction, civil, and environmental services sectors that support a growing renewable energy industry.

Mitigation measures

The measures proposed to mitigate and manage the potential impacts of the amended project are provided in *Appendix D (Updated mitigation measures)*. These measures have been revised in response to submissions raised during public exhibition of the environmental impact statement and project amendments and refinements made following exhibition of the environmental impact statement.

Environmental management

The approach to environmental management for the project has undergone minor updates since exhibition of the environmental impact statement. The approach will be consistent with:

- the objective of avoiding and minimising impacts throughout all stages of the Hunter Transmission Project
- the relevant conditions of approval for the Hunter Transmission Project (if approved), including a condition to allow for the staging of project construction
- mitigation measures and management plans proposed in the environmental impact statement or as otherwise updated in the Submissions Report/Amendment Report
- an early works management plan
- the construction environmental management plans (CEMPs) and sub plans (for construction)
- environmental management system (EMS) (for pre-construction minor works and operation) to be implemented for the Hunter Transmission Project.

The above environmental management approach for the project has been updated since the exhibition of the environmental impact statement to include an early works management plan, which would be prepared to manage early works, which are activities required to facilitate the main construction works and therefore by their nature need to occur prior to main construction. Main construction of the project would be managed in accordance with a construction environmental management plan(s).

Conclusion

The project would close the northern gap between the existing 500 kV transmission lines at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring and unlock the supply of electricity from the Central-West Orana and New England REZs. As the remaining coal fired power stations in NSW close, the project is necessary to protect energy security in NSW for current and future generations.

The project is required to meet both NSW and Commonwelath emissions reductions and climate change objectives. It will facilitate the delivery of renewable energy in accordance with the NSW Electricity Infrastructure Roadmap.

EnergyCo is proposing a number of amendments and refinements to the Hunter Transmission Project in response to community, government and stakeholder engagement, consideration of submissions received during environmental impact statement exhibition, and ongoing development of the design and construction methodology for the Hunter Transmission Project. The amended project would minimise the potential impacts of the Hunter Transmission Project where practicable.

The mitigation measures identified in the environmental impact statement have been updated to manage and minimise any additional potential impacts of the amended project.

During the continued development of the design and the construction methodology, opportunities to further minimise potential impacts would be identified. Ongoing input from stakeholders and the community would be incorporated into the design and construction methodology. The potential residual construction and operation impacts of the amended project are considered manageable with the implementation of the proposed mitigation measures.

Contents

Executive summary ..... **iii**

Glossary ..... **xxxvii**

1 Introduction **1**

1.1 Background 1

1.2 The project 1

1.3 Purpose and structure of this Amendment Report 11

2 Strategic context **14**

2.1 Project need 14

2.2 Government plans and policies 15

2.3 Regional context 17

2.4 Project objectives 18

3 Description of amendments and refinements **20**

3.1 Overview 20

3.2 Proposed amendments 35

3.3 Proposed refinements 64

3.4 Proposed clarifications 66

4 Statutory context **70**

4.1 NSW legislation 70

4.2 Commonwealth legislation 71

4.3 Statutory compliance of the amended project 73

5 Assessment of impacts **74**

5.1 Assessment approach 74

5.2 Biodiversity 79

5.3 Aboriginal heritage 133

5.4 Landscape and visual 153

5.5 Traffic and transport 167

5.6 Land use and property 186

5.7 Agriculture 201

5.8 Social 206

5.9 Historic heritage 234

5.10 Noise and vibration 258

5.11 Surface water 279

5.12 Groundwater 307

5.13 Flooding 312

5.14 Soils and contamination 330

5.15 Bushfire 335

5.16 Aviation 344

5.17 Air quality 346

5.18 Greenhouse gas 355
5.19 Economics 358
5.20 Cumulative impacts 362
6 Environmental management 382
6.1 Approach to environmental management 382
6.2 Pre-construction minor works 384
6.3 Early works 384
6.4 Main construction 385
6.5 Construction environmental management 386
6.6 Operation 387
6.7 Updated summary of mitigation measures 387
6.8 Effectiveness and costs of mitigation 388
6.9 Change management 388
7 Justification of the amended project 390
7.1 Strategic need 390
7.2 Relevant strategic policies and plans 392
7.3 Efforts to avoid and minimise impacts 393
7.4 Community views 395
7.5 Strategic considerations 397
7.6 Biophysical, economic and social considerations 397
7.7 Ecologically sustainable development 402
7.8 Statutory considerations 411
7.9 Evaluation and conclusion 412
8 References 415

Tables

Table 1.1 How engagement informed the Amendment Report 4
Table 1.2 Structure of the HTP Amendment Report 11
Table 2.1 Alignment of the project with updated government plans and policies 15
Table 3.1 Overview of proposed amendments and refinements to the exhibited project 22
Table 3.2 Summary of the changes between the exhibited project and the amended project 24
Table 3.3 Areas of localised easement widening to account for conductor swing 40
Table 3.4 Summary of proposed changes to access routes for construction as part of the amended project 52
Table 3.5 Intersections erroneously omitted from Table 4.10 of *Chapter 4 (Project description)* of the EIS 68
Table 4.1 Summary of key changes to statutory requirements 73
Table 5.1 Screening assessment for proposed amendments 75
Table 5.2 Summary of updates to environmental assessments in response to feedback received during and since exhibition of the EIS 77

Table 5.3 Vegetation disturbance area categories 80
Table 5.4 Native vegetation condition PCTs identified within the amended disturbance area 85
Table 5.5 BC Act listed TECs in the amended disturbance area 86
Table 5.6 EPBC Act listed TECs in the amended disturbance area 87
Table 5.7 Summary of potential direct impacts on native vegetation 89
Table 5.8 Summary of potential direct impacts on TECs 91
Table 5.9 Summary of potential direct impacts on threatened flora species 92
Table 5.10 Summary of potential direct impacts on threatened fauna species 95
Table 5.11 Summary of potential direct impacts to species and communities at risk of SAII 97
Table 5.12 Summary of potential indirect impacts 100
Table 5.13 EPBC Act listed TECs likely to be impacted within the amended disturbance area 107
Table 5.14 EPBC Act listed species requiring ecosystem credits or species credits 108
Table 5.15 Updated mitigation measures – biodiversity 115
Table 5.16 Updated mitigation measures - Aboriginal heritage 141
Table 5.17 Landscape character impact during construction of the amended project (daytime) 157
Table 5.18 Summary of updated detailed assessment for the realignment of the transmission line at Mount Thorley 161
Table 5.19 Summary of updated detailed assessment for the realignment of the transmission line at Gouldsville 162
Table 5.20 Updated mitigation measures – landscape and visual 164
Table 5.21 Crash history between 2020 and 2024 169
Table 5.22 Maximum HTP peak hour traffic generation during peak construction (2028) 170
Table 5.23 Mid-block level of service for future (2028) base traffic volumes without and with construction traffic with a level of service of C or lower 171
Table 5.24 Intersections with an unsatisfactory level of service for future (2028) base traffic volumes with construction traffic 172
Table 5.25 Updated mitigation measures - traffic and transport 178
Table 5.26 Land use within the amended project impact area 187
Table 5.27 Land tenure of the amended project impact area 188
Table 5.28 Mining complexes and mining leases within and surrounding the amended project impact area 189
Table 5.29 Changes to construction land use impacts in the amended project impact area 190
Table 5.30 Construction impacts within State forests 193
Table 5.31 Changes to impacts on mining complexes within the amended construction impact area 194
Table 5.32 Tenure and ownership impacts within the amended operation impact area 197
Table 5.33 Changes to the existing environment of the amended project impact area as it relates to agriculture 201
Table 5.34 Loss of agricultural land during construction of the amended project 202

Table 5.35 Summary of agricultural land type temporarily removed from agricultural production during construction 203
Table 5.36 Estimated primary and secondary productivity impacts to agriculture during construction 204
Table 5.37 Impacts to high capability land and BSAL during construction 204
Table 5.38 Land permanently removed from agricultural production during operation of the amended project 205
Table 5.39 Revised significance matrix from the revised SIA Guideline 207
Table 5.40 Potential social impacts during construction of the amended project 209
Table 5.41 Potential social impacts during operation of the amended project 222
Table 5.42 Updated mitigation measures – social 226
Table 5.43 Reassessment of heritage significance – Oakley Estate and Wishing Well 237
Table 5.44 Assessment of archaeological potential and significance within amended project impact area 238
Table 5.45 Assessment of built fabric significance within the amended project impact area 240
Table 5.46 Updated assessment of potential impacts to listed items of historic heritage as a result of the amended project 241
Table 5.47 Revised impact assessment to archaeological values of listed items of historic heritage 242
Table 5.48 Assessment of impacts of construction of the amended project on listed heritage items and features of heritage or possible heritage significance 244
Table 5.49 Assessment of impacts of operation of the amended project on activity areas and features of heritage significance 250
Table 5.50 Updated mitigation measures - historic heritage 252
Table 5.51 Updated construction scenario descriptions to account for project amendments and refinements 259
Table 5.52 Summary of predicted noise exceedances in NCA02 during construction of the amended project 262
Table 5.53 Summary of predicted noise exceedances in NCA03 during construction of the amended project 263
Table 5.54 Summary of predicted noise exceedances in NCA04 during construction of the amended project 264
Table 5.55 Summary of predicted noise exceedances in NCA05 during construction of the amended project 265
Table 5.56 Summary of predicted noise exceedances in NCA06 during construction of the amended project 266
Table 5.57 Summary of predicted noise exceedances in NCA08 during construction of the amended project 266
Table 5.58 Summary of predicted noise exceedances in NCA09 during construction of the amended project 267

Table 5.59 Summary of predicted noise exceedances in NCA11 during construction of the amended project 269
Table 5.60 Summary of predicted noise exceedances in NCA12 during construction of the amended project 270
Table 5.61 Summary of predicted noise exceedances in NCA13 during construction of the amended project 271
Table 5.62 Summary of predicted noise exceedances in NCA14 during construction of the amended project 271
Table 5.63 Summary of construction road traffic noise on local roads 273
Table 5.64 Overview of vibration impacts of the amended project 274
Table 5.65 Vibration impacts to historic heritage sites identified through the historic heritage impact statement addendum 275
Table 5.66 Transmission line audible noise – predicted number of exceedances 277
Table 5.67 Screening assessment of additional surface water assessment requirements of the amended project 280
Table 5.68 Overview of amended project risks to water quality 282
Table 5.69 Amended project residual impacts to surface water quality 283
Table 5.70 Summary of the riparian corridor assessment for the amended project 288
Table 5.71 Summary of amended project interactions with IRZs 291
Table 5.72 Updated mitigation measures - surface water 299
Table 5.73 Comparison of registered bores and licence types between the exhibited and amended project 309
Table 5.74 Approximate equivalence between AEP and ARI descriptions of flooding 313
Table 5.75 Modelled existing flood conditions in sub-catchments for project amendments 315
Table 5.76 Revised flooding behaviour at the Eraring substation under existing conditions 318
Table 5.77 Comparison of potential impacts on flood behaviour between the exhibited project and the amended project 321
Table 5.78 Changes in flood behaviour at Eraring substation extension 323
Table 5.79 Updated mitigation measures – flooding 325
Table 5.80 Change in proportions of soil landscapes within the amended project impact area 332
Table 5.81 Changes to the proportion of soil management units in the amended project impact area 332
Table 5.82 Updated description of the Eraring Power Station area of contamination concern 333
Table 5.83 APZ required to achieve BAL 10 compliance at Wollombi Road construction support site for the amended project 337
Table 5.84 Updated mitigation measures - bushfire 340
Table 5.85 Construction dust assessment summary for the amended project 350
Table 5.86 GHG emissions during construction of the amended project 356
Table 5.87 Annual regional economic impacts of displaced agricultural land during construction 359

Table 5.88 Annual NSW economic impacts of displaced agricultural land during construction 359
Table 5.89 Potential extent of State Forest land displacement during construction of the project 359
Table 5.90 Annual regional economic impacts of displaced agricultural land during operation 360
Table 5.91 Annual NSW economic impacts of displaced agricultural land during operation 360
Table 5.92 Updated cumulative impact screening of relevant future projects 364
Table 5.93 Updated issue-specific cumulative impact assessment 374
Table 7.1 Ecologically sustainable development principles and how they are considered in the HTP 403
Table 7.2 Sustainability objectives and potential initiatives for the project 405

Figures

Figure 1-1 Amended project overview 6
Figure 1-2 Amended detailed project overview 7
Figure 3-1 Realignment of the transmission line at Mount Thorley 37
Figure 3-2 Realignment of the transmission line at Gouldsville 39
Figure 3-3 Changes at Eraring substation 43
Figure 3-4 Changes to access tracks 46
Figure 3-5 Upgrades to the intersection of an existing access track connection with the Putty Road southbound off ramp 51
Figure 3-6 Wollombi Road construction support site reconfiguration 55
Figure 3-7 Changes to laydown areas within State forests 58
Figure 3-8 Reconfiguration of the Flick Road emergency helicopter landing area 60
Figure 3-9 Removal of stringing site in Olney State Forest to minimise impacts to threatened amphibian species 62
Figure 4-1 Assessment and approval process for the amended project 72
Figure 5-1 Interactions of the amended project with indicative riparian zones 290
Figure 5-2 Interaction of the Hebden Road construction support site with riparian zones 294
Figure 5-3 Interaction of the Wollombi Road construction support site with riparian zones 295
Figure 5-4 Interaction of the Freemans Drive construction support site with riparian zones 296
Figure 5-5 Amended groundwater study area 308
Figure 5-6 Registered groundwater bores within the amended groundwater study area 310
Figure 5-7 Potential flood impacts during construction of the amended project – 10% AEP and 1% AEP 320
Figure 5-8 Amended soils and contamination study area 331
Figure 5-9 Amended air quality study area 347
Figure 5-10 Human receivers assessed as part of construction dust assessment 353
Figure 6-1 Environmental management of the HTP 383

Glossary

Term	Definition
Access tracks	Temporary and permanent tracks used to access the project. Refer to *Appendix A (Updated project description)* of the Amendment Report for further details.
Amended project	The amendments and refinements to the project as described in the EIS (inclusive of clarifications for the exhibited project). Amendments to the project include: • changes to 500 kV transmission line infrastructure, including: — realignment of the transmission line at Mount Thorley — realignment of the transmission line at Gouldsville — localised easement widening for conductor swing • changes to substation infrastructure at Eraring • changes to intersections, access roads and access tracks, including: — changes to access track locations — minor adjustments to the project impact area for intersection upgrades — adjustments to the proposed access routes for construction • changes to construction methods and facilities, including: — reconfiguration of the construction support sites and temporary worker accommodation — changes to the location of laydown areas within State forests — reconfiguration of the Flick Road emergency helicopter landing area — removal of a stringing site within Olney State Forest — changes to construction plant and equipment types and locations of use. Refinements to the project include: • minor changes at Bayswater substation • changes to the disturbance area within Olney State Forest.
Amendment	Change(s) to the project description as included in the exhibited project. As a result, changes to what the proponent is seeking approval for are required, along with an amendment to the CSSI application for the project.
Bayswater Power Station	Existing power station at Bayswater owned by AGL.
Bayswater South switching station	The new switching station that would be constructed south of Bayswater Power Station.

Term	Definition
Clarification	Additional information developed as a result of ongoing design and construction methodology development, submissions received during exhibition of the EIS, minor errors identified in the EIS, or further assessment that has been undertaken since exhibition of the EIS.
Construction	Works to be carried out following pre-construction minor works and early works for the transmission line and substations/switching stations. Construction staging plans for transmission line construction and substation/switching station construction would be prepared by the relevant construction contractors, which will detail how the construction activities will progress.
Construction impact area	The area that would be directly impacted by the construction of the project, including (but not limited to) transmission towers and lines, stringing sites, access roads, access tracks, substations, switching stations, adjustments and upgrades to existing lines, communications infrastructure, temporary worker accommodation, construction support sites, laydown areas and utility adjustments.
Construction access routes	Roads used by construction vehicles (light and heavy).
Construction support site	An area used as the base for construction activities, usually for the storage of plant/equipment and materials, processing facilities (concrete batching, aggregate crushing, grinding and screening), maintenance facilities/workshops, staff facilities, firefighting equipment, helicopter landing pad and support facilities, access and parking, and wastewater treatment. Some construction support sites would also include temporary worker accommodation. Construction support sites are discussed in section A3.5 of Appendix A (Updated project description) of the Amendment Report.
Critical State significant infrastructure (CSSI) application area	The critical State significant infrastructure (CSSI) application for the project covers 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie).
Cumulative impact	The combined impacts of the project on a matter with other relevant future projects.
Disturbance area	This is used primarily to assess potential impacts on biodiversity values in *Appendix E (Revised biodiversity development assessment report)*. Includes the following categories: • disturbance area A • disturbance area A (centreline) • disturbance area B • disturbance area HZ.

Term	Definition
Disturbance area A	The area where vegetation would be completely removed. It includes areas at and around transmission towers (including tower pads and batters), stringing sites, laydown areas, switching stations, substation upgrades, construction support sites, new and upgraded access tracks and road upgrades. Impacts within this area would include sub-surface disturbance from construction activities such as grading, excavation, and full tree removal. With the exception of areas that only require temporary disturbance (i.e. temporary access tracks and stringing sites), this area would also be subject to ongoing maintenance during operation (including vegetation removal to ground level) for operational and safety requirements, including bushfire risk management.
Disturbance area A (centreline)	A 20-metre-wide centreline area between transmission towers where all vegetation would be removed to ground level during construction. This area would also be subject to ongoing maintenance during operation (i.e. removal to maintain vegetation clearance requirements) for operational and safety requirements, including bushfire risk management.
Disturbance area B	The area within the transmission line easement, excluding disturbance area A and disturbance area A (centreline), where partial clearing would be undertaken. Removal of vegetation (including trees) would be undertaken only where it has the potential to exceed vegetation clearance heights. These heights are set for operational and safety requirements, including bushfire risk management (a minimum of 13.5 metres below the conductors at maximum operating temperature). Vegetation with mature growth heights up to two metres can remain, while vegetation exceeding two metres will be managed to maintain these clearance heights. This area would be subject to ongoing maintenance during operation.
Disturbance area hazard tree zone (HZ)	Hazard trees are those that have the potential to pose a risk to safe operation of the transmission line by falling onto the transmission towers, conductors and associated infrastructure within the easement. A hazard tree zone has been identified in limited areas on either side of the transmission line easement through LiDAR analysis of tree heights and topography. Hazard tree management would occur during operation to maintain safe operating clearances for the conductors and tower structures. The hazard tree zone will be inspected for trees in the height range of 20 metres or more, which is typically in the high-risk category. High-risk category trees will be assessed for structural instability and managed according to the risk present, including tree removal if required.

Term	Definition
Early works	Early works would include activities to be carried out following the approval of relevant management plans for the project, such as vegetation clearing in the transmission corridor, at construction support sites and for access tracks and road upgrade works, site establishment works and erection of temporary facilities at construction support sites including temporary worker accommodation, and the delivery of oversize equipment to work sites.
EnergyCo	The Energy Corporation of New South Wales constituted by Section 7 of the NSW *Energy and Utilities Administration Act 1987* as the NSW Government-controlled statutory authority appointed as the infrastructure planner under the NSW *Electricity Infrastructure Investment Act 2020* responsible for the delivery of NSW's REZs. The proponent for the project.
Eraring Power Station	Existing power station at Eraring operated by Origin Energy.
Exclusion zone	A safe clearance area around the transmission line and towers to protect public safety, the network and to maintain access to the asset. It delineates the area where most land use activities are prohibited. The zone is located within the easement and is defined according to the operational voltage and design of the infrastructure.
Exhibited project	The project as described in the publicly exhibited EIS.
Hunter Transmission Project (HTP) or project	The project as described in Appendix A (Updated project description) of the Amendment Report and identified in the overview figures of the Amendment Report.
HTP corridor	Comprises: • the transmission line corridor connecting Bayswater South switching station to Olney switching station • the transmission line corridor connecting the Bayswater South switching station to the existing 500 kV transmission line near Bayswater Power Station • the transmission line corridor connecting the Olney switching station to the existing 500 kV transmission line between Eraring and Kemps Creek. The HTP corridor is around 140 metres wide.

Term	Definition
HTP North, HTP Central and HTP South	Three geographical zones defined as: • HTP North – Bayswater to Broke includes the Bayswater Power Station, major coal mining complexes in the Upper Hunter Valley, Mount Thorley Industrial Estate, Singleton Military Area, and several rural properties generally on the alluvial floodplains of the Hunter River • HTP Central – Pokolbin to Corrabare includes the Pokolbin and Corrabare State forests and the rural residential areas between these forests at Cedar Creek, Millfield and Laguna • HTP South – Olney to Eraring includes the Watagan and Olney State forests, Watagans National Park, the residential areas in Martinsville and Cooranbong, and Eraring Power Station.
Laydown areas	Established to allow for flexibility in construction and to minimise the need for vehicle movements to and from the construction support sites. These would act as temporary staging, storage, and complex plant/equipment setup areas. They would also act as traffic control nodes during construction of the project.
No clearing zone	Areas within the transmission line easement where vegetation removal is not required. These areas would occur where there is sufficient separation of 10 metres or more between the maximum operating temperature conductor position and the existing vegetation. This area is excluded from the disturbance area.
Olney switching station	The new switching station that would be constructed in Olney State Forest.
Operation impact area	The area that would be occupied by permanent components of the project and/or maintained, including transmission line easements, transmission lines and towers, substations, switching stations, communications infrastructure, maintenance facilities, permanent access roads to substations and switching stations and access tracks to the transmission line easement.
Pre-construction minor works	Activities with a low potential to impact the environment that may be permissible in advance of construction and without the requirement for an approved environmental management strategy/construction management plan.
Project impact area	The area that has been assumed for the purpose of the Amendment Report to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
(the) proponent	The Energy Corporation of NSW (EnergyCo).
Refinement	A change that fits within the limits set by the project description of the exhibited project and does not change what the proponent is seeking approval for and/or does not require an amendment to the CSSI application for the project.
Renewable Energy Zone (REZ)	A geographic area identified and declared by the NSW Government as a Renewable Energy Zone.

Term	Definition
Stringing site	Used for the preparation, assembly and operation of stringing equipment to connect the transmission line to the towers. Stringing sites would be positioned along the HTP corridor. On other transmission projects, they may be referred to as 'brake and winch' sites.
Substation	A facility used to increase or decrease voltages between incoming and outgoing lines (e.g. 330 kV to 500 kV).
Switching station	A facility used to connect 2 or more distinct transmission lines of the same designated voltage.
Temporary worker accommodation	Temporary accommodation that would be erected and used during construction to house the construction workforce. Temporary worker accommodation would be located at some construction support sites.
Transgrid	Preferred network operator for the project.
Transmission line easement	An area surrounding and including the transmission lines which is a legal proprietary right and allows for ongoing access and maintenance of the transmission lines. Landowners can typically continue to use most of the land within transmission line easements, subject to some restrictions for safety and operational reasons.
Transmission tower	For 500kV transmission lines, this is typically a free-standing steel lattice structure (suspension or tension tower). Transmission towers for the project would generally be up to 85 metres high.

1

Introduction

1 Introduction

This chapter provides a background to, and description of, the key features of the project as described in the EIS, an overview of the proposed amendments and refinements to the project and a summary of the exhibition of the EIS. It also outlines the purpose and structure of this report.

1.1 Background

The NSW energy system is undergoing a once-in-a-generation transformation as we move from reliance on coal-fired power to renewable energy to meet our daily needs.

Coal-fired power stations currently provide most of NSW's electricity supply as well as the firming capacity that keeps the grid stable during peak periods such as summer heat waves. Most of these power stations are reaching the end of their life and are due to shut in the next 10 years. At the same time, our electricity demand is increasing as our population grows and we electrify our vehicles, homes, businesses and industry. This means NSW needs new electricity supply and associated infrastructure urgently.

The NSW Government has developed the NSW *Electricity Infrastructure Roadmap* (the Roadmap) to transition NSW to a cleaner future and ensure this new supply of electricity can be reliably distributed to consumers. EnergyCo is responsible for coordinating the delivery of the Roadmap.

To maintain the energy supply to the Hunter, Sydney and Illawarra regions, 500 kilovolt (kV) transmission connections are required between Bannaby substation in Marulan south of Sydney and Bayswater Power Station in Liddell in the Upper Hunter Valley. These 500 kV transmission connections and existing 500 kV transmission lines in NSW are referred to as the '500 kV Ring'. The Hunter Transmission Project (HTP, the project) would close the northern gap of the 500 kV Ring, connecting the Bayswater Power Station to a new switching station in the Olney State Forest near Eraring. As the remaining operating coal-fired power stations close, the project is critical for energy security in NSW.

1.2 The project

The project has been declared as a critical State significant infrastructure (CSSI) project under Section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and has been identified as a Priority Network Infrastructure Project (PNIP)under the NSW *Electricity Infrastructure Investment Act 2020* (EII Act). The HTP corridor is located across five local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie) and runs mostly though power station, mining and government land between Bayswater and Broke. It then traverses the

Pokolbin, Corrabare, Watagan and Olney State forests where it joins the existing 500 kV transmission line running between Eraring and Kemps Creek in western Sydney.

The project is expected to provide (up to) an additional five gigawatts (GW) of electricity transfer to the main load centres of the Hunter, Sydney and Illawarra. This would provide a substantial quantity of the necessary transfer capacity for new renewable generation from regional NSW and is critical to unlocking the generation capacity of the Central-West Orana and New England renewable energy zones (REZs).

1.2.1 The project (as exhibited)

The project as described in the publicly exhibited EIS (hereafter referred to as the 'exhibited project') included the following features:

- a new overhead 500 kV double circuit transmission line of around 110 kilometres
- two new switching stations (Bayswater South and Olney)
- upgrades to the existing Bayswater and Eraring substations
- adjustments and upgrades to existing transmission lines
- property adjustment works to facilitate access to the transmission lines and switching stations
- utility adjustments required for the construction of the transmission network infrastructure
- ancillary works to support construction including road upgrades, establishment of new access tracks and upgrades to existing access tracks, construction support sites (some with temporary worker accommodation), and other construction facilities such as laydown areas.

1.2.2 EIS exhibition

An environmental impact statement (EIS) was prepared to support EnergyCo's application for approval of the project in accordance with the requirements of Part 5, Division 5.2 of the EP&A Act. The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) for 28 days between 27 August to 24 September 2025.

Overview of submissions

During the exhibition of the EIS, DPHI invited submissions from the community which included members of the public and organisations (representative community groups, mining and renewable companies directly affected by the project, and utility owners), government agencies and other stakeholders on the EIS. Submissions were then provided to EnergyCo with an instruction to prepare a response to submissions.

A total of 188 submissions were received and registered on the NSW Planning Portal. Of these, 165 were received from the community (138 from members of the public and 27 from organisations). This included instances where a submitter had made multiple submissions. Advice was also received from 23 local, State and Australian Government departments and agencies.

Of the 138 submissions received from the members of the public, 10 (or seven per cent) provided support for the project, 26 (or 19 per cent) provided neutral comment on the project and 102 (or 74 per cent) objected to the project. Of the 27 submissions from organisations, all provided comment on the project but did not state an overall position on, or objection to, the project.

Of the four submissions received from local councils, all provided comment on the project but did not state an overall position on, or objection to, the project. Similarly, all NSW and Australian government department or agency advice received provided comment on the project but did not state an overall position on, or objection to, the project.

Additional information about the submissions received during exhibition of the EIS is included in *Chapter 2 (Analysis of submissions)* of the HTP Submissions Report (EnergyCo 2026).

Overview of consultation and engagement during and after the EIS exhibition

Since the commencement of the EIS public exhibition, EnergyCo identified amendments and refinements to the project to better align with stakeholder feedback and to minimise environmental impacts. A program of technical investigations to assess amendments to the exhibited project was completed. Engagement undertaken between October 2025 and February 2026 supported this work so that community, landowner and stakeholder feedback could directly influence how the amendments were assessed and the mitigation measures developed in the Amendment Report. Engagement was undertaken concurrently with the development of the Amendment Report.

Engagement on amendments and refinements was delivered through a combination of:

- property-based meetings and site inspections with directly affected landowners to review alignment options, access tracks, easement widths, construction interfaces and land use impacts
- council and government agency briefings and workshops to work through traffic, road capacity, bridge and culvert constraints, temporary worker accommodation, cumulative impacts and construction staging issues
- Aboriginal organisation and Registered Aboriginal Party (RAP) consultations, including site discussions, to inform cultural heritage surveys, avoidance strategies and management measures
- environmental organisation and wildlife group meetings to review threatened species, habitat connectivity, clearing footprints, offset requirements and construction impacts
- recreational and forestry user briefings on access, closures, detours and safety
- webinars, technical updates and written correspondence with a wider audience.

Table 1.1 summarises how this engagement directly informed the Amendment Report.

Table 1.1 How engagement informed the Amendment Report

Amendment	Stakeholders engaged	Issues raised through engagement	How engagement informed the Amendment Report
Realignment of the transmission line at Mount Thorley	Landowners, mining companies, Singleton Council, surrounding residents	Visual prominence, agricultural land use, interface with mining operations, flooding, biodiversity, access	Feedback from directly affected landowners was considered in decision making regarding the alignment at this location. Engagement helped to identify and prioritise the scope and focus of technical assessments for the amendment, including detailed visual impact assessment, agricultural land use considerations and biodiversity impacts.
Reconfiguration of the Wollombi Road construction support site and temporary worker accommodation	Nearby residents, Cessnock City Council, Millfield Public School and community groups	Noise, lighting, traffic safety, amenity	Engagement informed the assessment scope and mitigation focus for the amended construction support site, including detailed noise, lighting and traffic assessments and the identification of mitigation measures to minimise amenity impacts.
Changes to access tracks within State forests	Forestry Corporation of NSW, recreational groups, Lake Macquarie City Council	Interface with forestry operations, safe recreational use of State forest	These amendments were identified and subsequently refined through engagement with the Forestry Corporation of NSW. Additional targeted technical assessment was carried out and mitigation measures were included in the Amendment Report
Localised easement widening for conductor swing	Landowners and near neighbours, Forestry Corporation of NSW	Property impacts, impacts to Forestry	The amendment arose from technical and safety requirements, with engagement informing how impacts were assessed and mitigated in the Amendment Report.
Changes to laydown areas within State forests	Councils, landowners, neighbours, Forestry Corporation of NSW	Traffic, vegetation clearing, noise, air quality, visual screening	The amendment arose from feedback from the Forestry Corporation of NSW in consideration of operational interface, Aboriginal heritage concerns and recreational use of the area, with engagement informing how impacts were assessed and mitigated in the Amendment Report.
Changes to substation infrastructure at Bayswater and Eraring	Councils, generators, industry stakeholders	Construction interfaces, staging, operational safety	Feedback contributed to the scope of technical studies and mitigation measures included in the Amendment Report.

Through this process, the Amendment Report documents not only what technical changes were made, but why they were made, including how landowner, council, Aboriginal and stakeholder input shaped the scope, location, design and mitigation measures before they were finalised for assessment.

1.2.3 The project (as amended)

In response to community, government and stakeholder engagement, consideration of submissions received during EIS exhibition, and ongoing development of the design and construction methodology for the project, EnergyCo is proposing a number of amendments and refinements to the exhibited project. The proposed amendments and refinements would minimise the potential impacts of the project where practicable.

The proposed amendments and refinements to the exhibited project (as well as clarifications on the exhibited project) are collectively referred to in this Amendment Report as the 'amended project'.

Amendments to the project include:

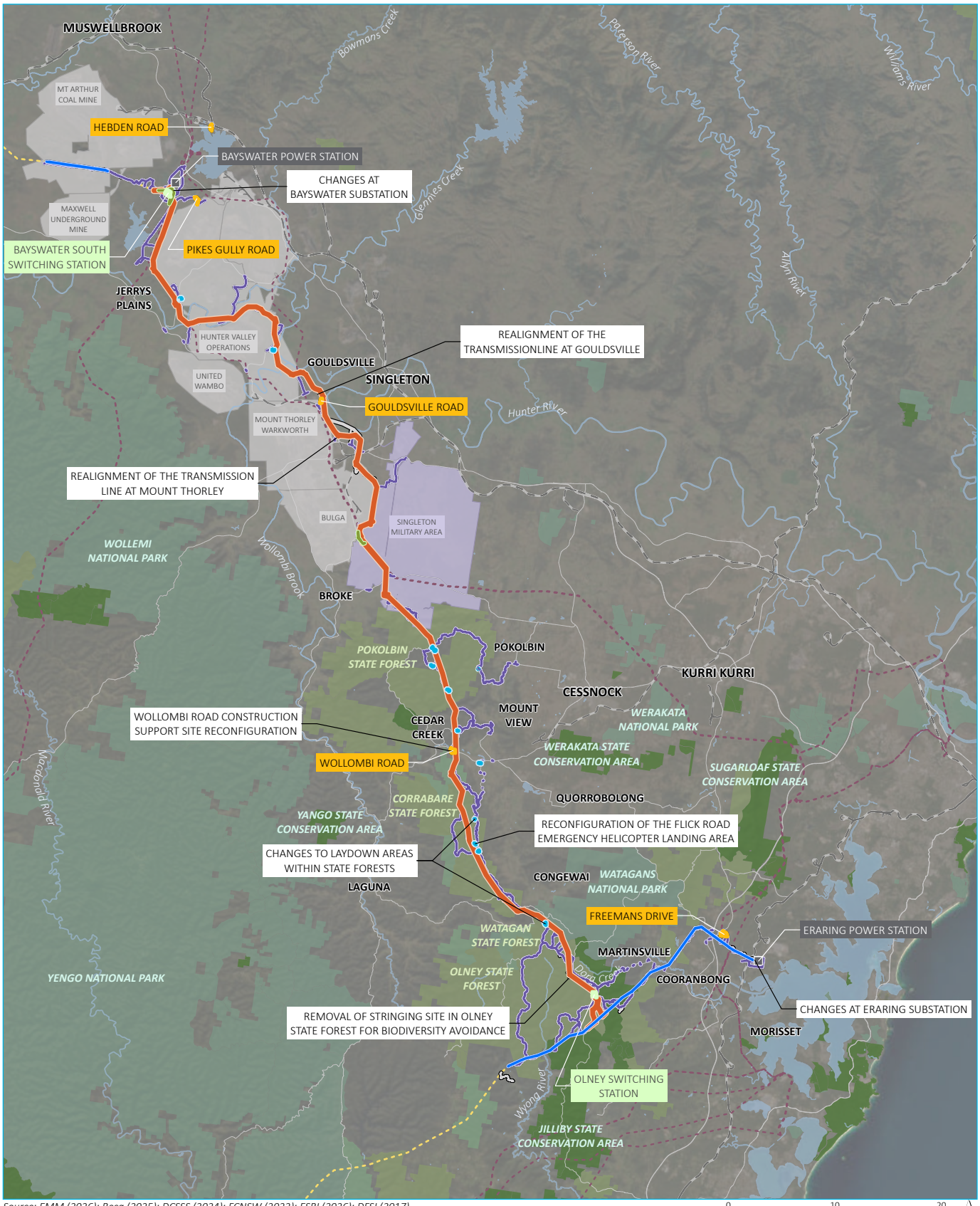
- changes to 500 kV transmission line infrastructure, including:
  - realignment of the transmission line at Mount Thorley
  - realignment of the transmission line at Gouldsville
  - localised easement widening for conductor swing
- changes to substation infrastructure at Eraring
- changes to intersections, access roads and access tracks, including:
  - changes to access track locations
  - minor adjustments to the project impact area for intersection upgrades
  - adjustments to the proposed access routes for construction
- changes to construction methods and facilities, including:
  - reconfiguration of construction support sites and temporary worker accommodation
  - changes to the location of laydown areas within State forests
  - reconfiguration of the Flick Road emergency helicopter landing area
  - removal of a stringing site within Olney State Forest
  - changes to construction plant and equipment types and locations of use.

Refinements to the project include:

- minor changes at Bayswater substation
- changes to the disturbance area within Olney State Forest.

Further information about the proposed amendments and refinements is provided in *Chapter 3 (Description of amendments and refinements)*. A detailed description of the amended project is provided in *Appendix A (Updated project description)*.

An overview of the amended project compared to the exhibited project is shown in *Figure 1-1* and *Figure 1-2.*



Source: EMM (2026); Beca (2025); DCSSS (2024); FCNSW (2022); ESRI (2026); DFSI (2017)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR002_ProjectOverview\AR002_ProjectOverview_20260217_13.aprx 2/17/2026

KEY

- Exhibited HTP project impact area

Amended project impact area

- HTP corridor
- Switching station
- Construction support site
- Laydown area
- Adjustment to existing transmission line
- Upgrades to existing transmission line
- Access tracks, road upgrades and intersection upgrades

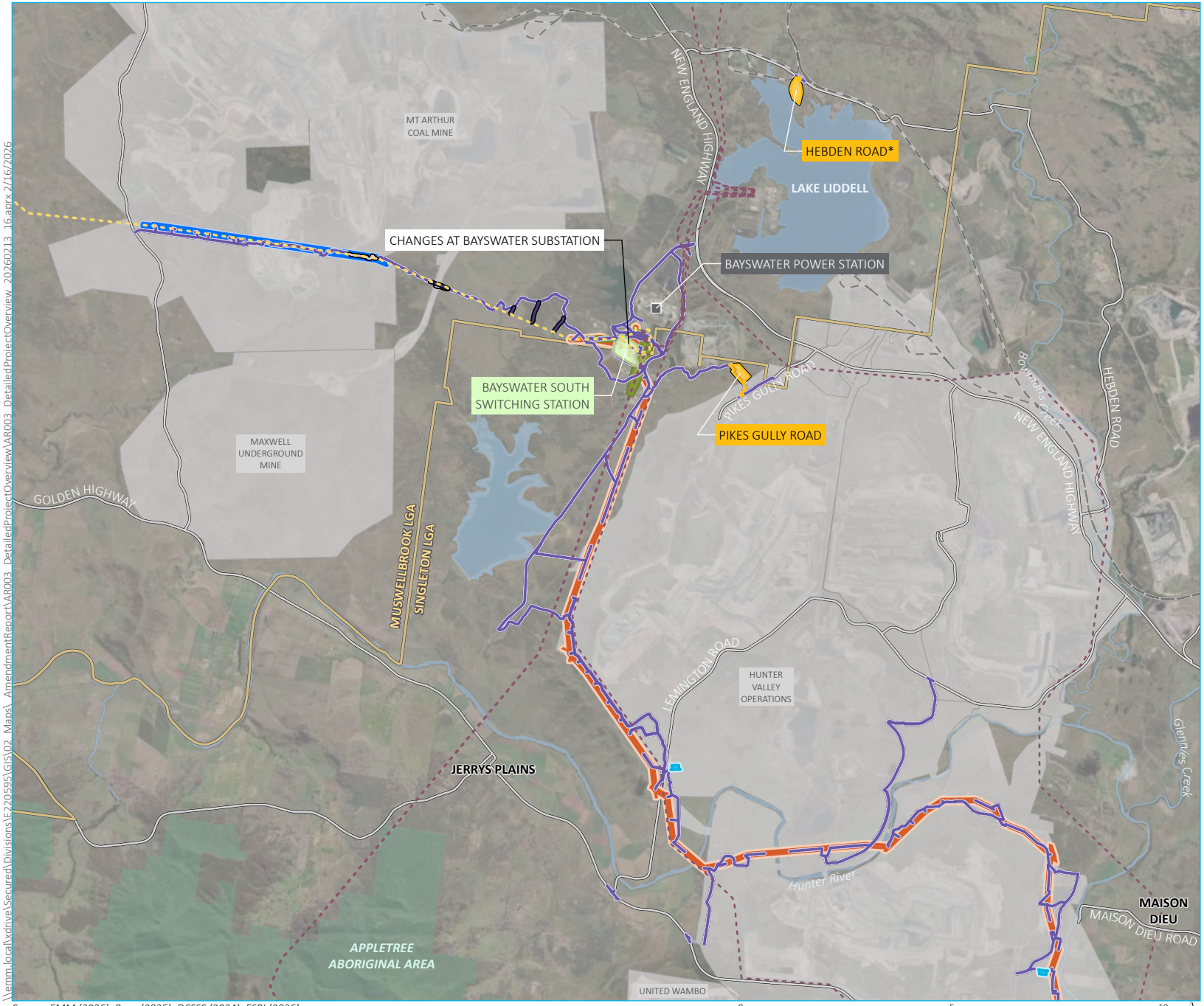
Existing environment

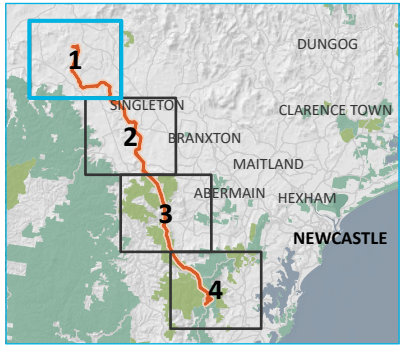
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- State forest
- NPWS reserve
- State conservation area
- Defence
- Energy

Project overview

Hunter Transmission Project
Amendment Report
Figure 1.1

EMM
creating opportunities





KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy
- Local government area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 5 10 km

GDA2020 MGA Zone 56

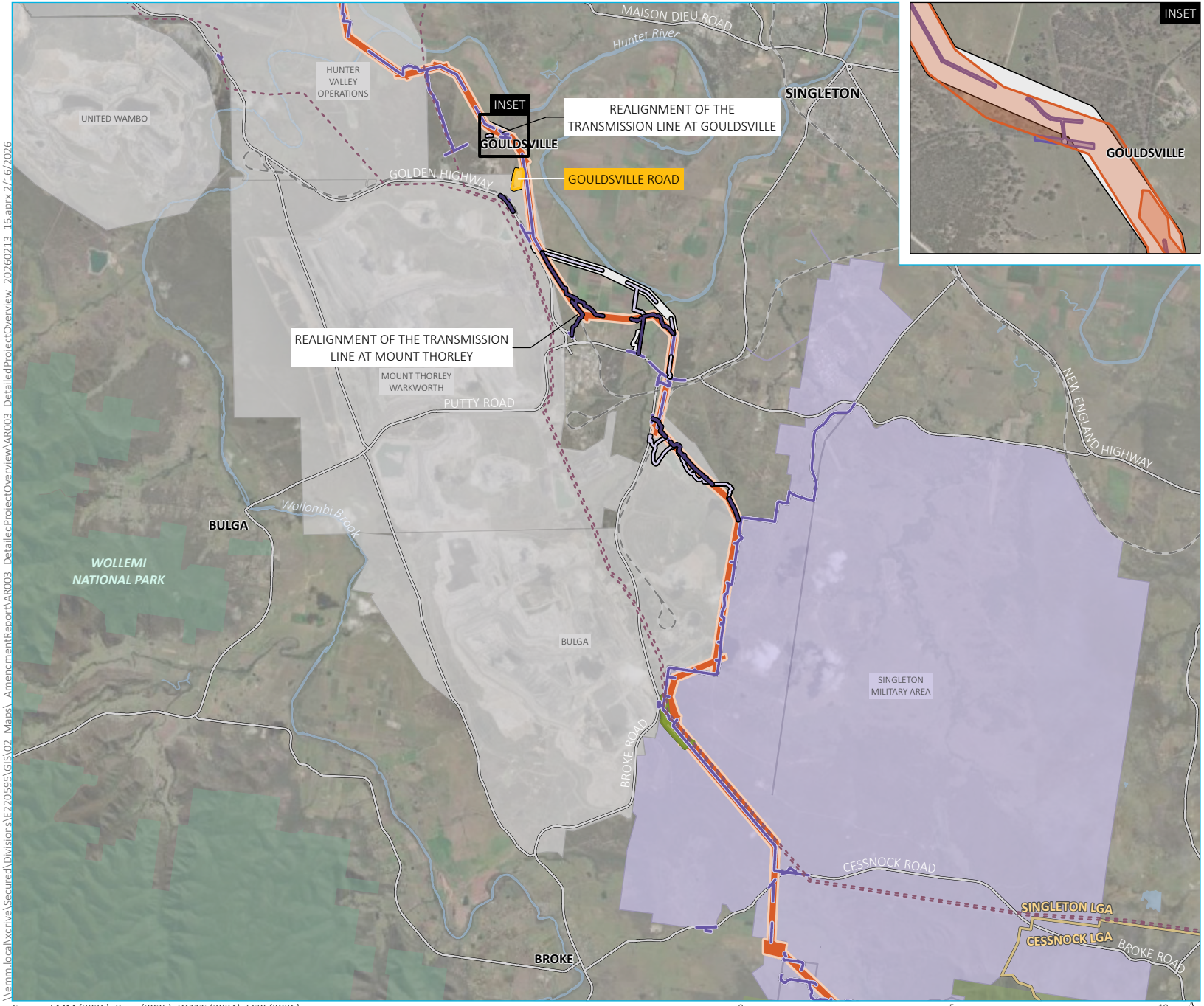
N

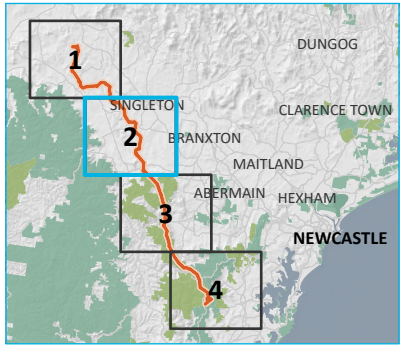
Detailed project overview
Map 1 of 4

Hunter Transmission Project
Amendment Report
Figure 1.2

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR003_DetailedProjectOverview\AR003_DetailedProjectOverview_20260213_16.aprx 2/16/2026





KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy
- Local government area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 5 10 km

GDA2020 MGA Zone 56

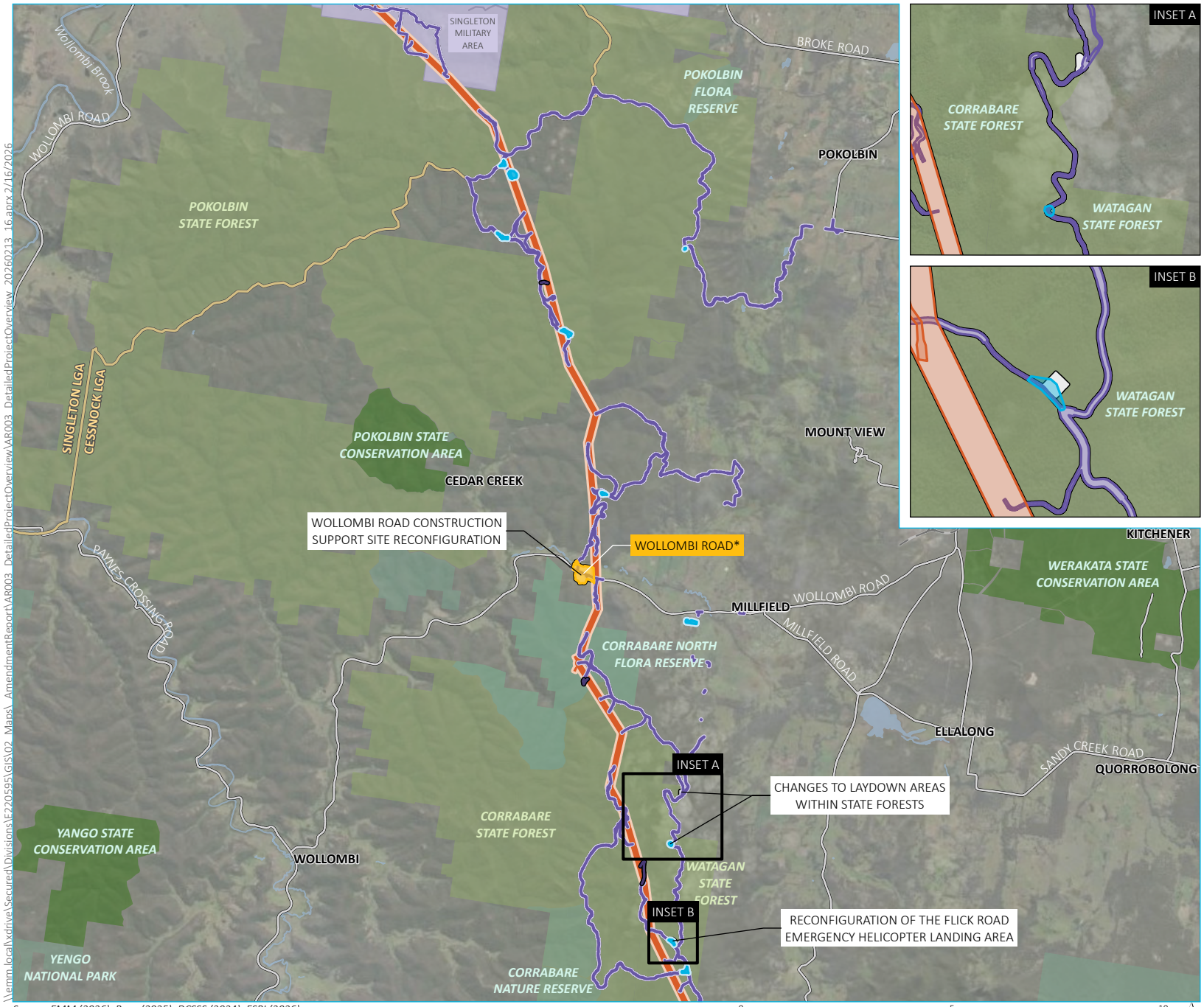
N

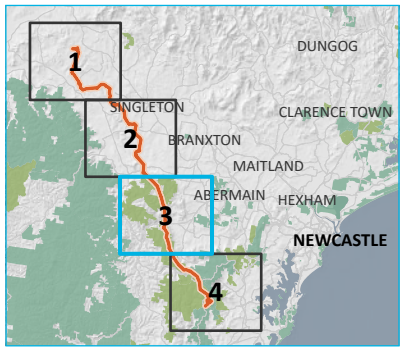
Detailed project overview
Map 2 of 4

Hunter Transmission Project
Amendment Report
Figure 1.2

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR003_DetailedProjectOverview\AR003_DetailedProjectOverview_20260213_16.aprx 2/16/2026





KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades
- New access track

Existing environment

- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence
- Local government area

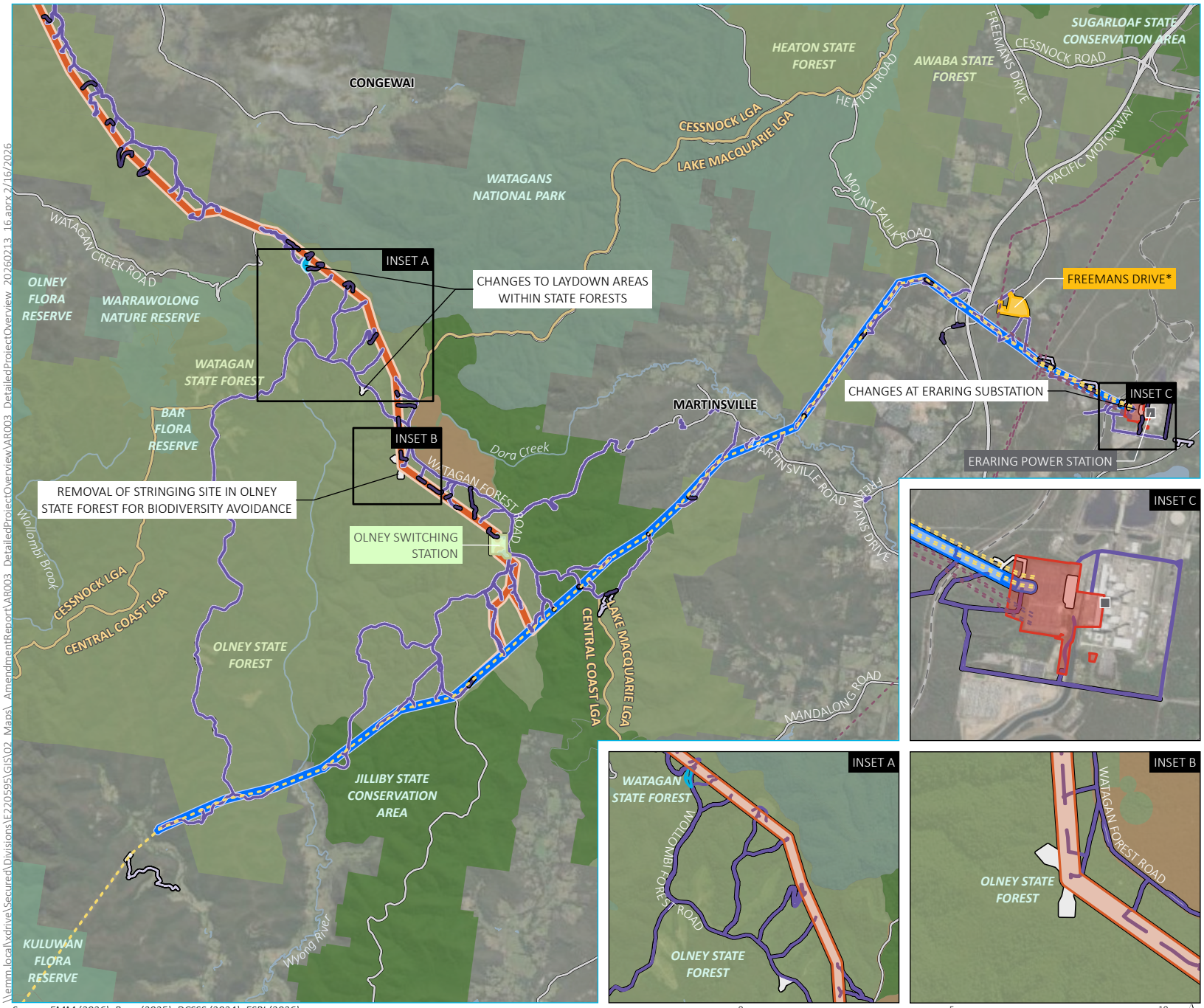
Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

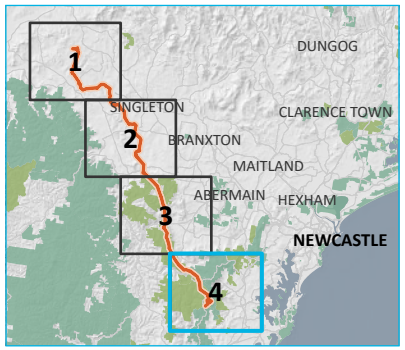
Detailed project overview
Map 3 of 4

Hunter Transmission Project
Amendment Report
Figure 1.2

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR003_DetailedProjectOverview\AR003_DetailedProjectOverview_20260213_16.aprx 2/16/2026





KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area
- Local government area

Detailed project overview
Map 4 of 4

Hunter Transmission Project
Amendment Report
Figure 1.2

EMM
creating opportunities

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR003_DetailedProjectOverview\AR003_DetailedProjectOverview_20260213_16.aprx 2/16/2026

1.3 Purpose and structure of this Amendment Report

1.3.1 Purpose of this report

This Amendment Report has been prepared for the purposes of Clause 179(3) of the *Environmental Planning and Assessment Regulation* 2021 (EP&A Regulation), having regard to the *State Significant Infrastructure (SSI) Guidelines: preparing an amendment report* (DPIE 2022a, now DPHI). The purpose of this Amendment Report is to describe the proposed amendments and refinements to the project since the exhibition of the EIS, assess the potential impacts of the amended project, and identify any changes to the mitigation measures identified in the EIS.

In addition to providing updated impact assessments for the project to account for the amendments and refinements to the project, a number of adjustments to assessment methodologies, impact assessments and changes to mitigation measures have been implemented as part of the Amendment Report in response to additional engagement and submissions received from the community, organisations, special interest groups and/or government agencies (including local councils) during exhibition of the EIS.

1.3.2 Structure of this report

This report has been informed by additional impact assessments for key issues where potential changes to impacts have been identified, including biodiversity, Aboriginal heritage, landscape character and visual amenity, traffic and transport, social, historic heritage, noise and vibration, flooding and bushfire. Where a revised report has been developed for an environmental aspect to support this Amendment Report, it supersedes the exhibited technical report. Where an addendum report has been developed for these technical areas, this should be read in conjunction with the exhibited technical report.

This Amendment Report is to be read in conjunction with the Submissions Report, which responds to the submissions received following EIS exhibition.

The structure of the Amendment Report is outlined in *Table 1.2.*

Table 1.2 Structure of the HTP Amendment Report

Chapter	Description
Main report	
Chapter 1	**Introduction (this chapter)** Provides a background to the project, and an overview of the key features of the project as described in the EIS and the proposed amendments and refinements to the project. The chapter also outlines the overall structure and content of the Amendment Report.
Chapter 2	**Strategic context** Provides an overview of the strategic context and need for the project and any changes from the EIS, including where this has been refined as a result of the proposed amendments and refinements.

Chapter	Description
Chapter 3	**Description of amendments and refinements** Provides a description of, and justification for, the proposed amendments and refinements.
Chapter 4	**Statutory context** Provides an overview of the statutory context for the project, including any changes from the EIS as a result of the proposed amendments and refinements, and the next steps in the approval process.
Chapter 5	**Assessment of impacts** Provides a summary of additional assessment carried out for the amended project, and a description of the potential impacts of the proposed amendments and refinements. This chapter also outlines the proposed mitigation measures for the amended project.
Chapter 6	**Environmental management** Provides a description of the approach to environmental management for construction and operation of the project
Chapter 7	**Justification of amended project** Provides a justification and evaluation of the amended project as a whole, having regard to its environmental and social impacts and the principles of ecologically sustainable development.
Chapter 8	**References** Provides a list of references used to inform the Amendment Report.
Appendices	
Appendix A	Updated project description
Appendix B	Revised utility adjustments schedule
Appendix C	Updated statutory requirements compliance
Appendix D	Updated mitigation measures
Appendix E	Revised biodiversity development assessment report
Appendix F	Aboriginal cultural heritage assessment addendum
Appendix G	Landscape character and visual impact assessment addendum
Appendix H	Revised traffic and transport impact assessment
Appendix I	Social impact assessment addendum
Appendix J	Historic heritage impact statement addendum
Appendix K	Noise and vibration impact assessment addendum
Appendix L	Flooding impact assessment addendum
Appendix M	Bushfire risk assessment addendum

2

Strategic context

2 Strategic context

The strategic context of, need for, and objectives of the project are described in *Chapter 2 (Strategic context)* of the EIS. This chapter provides an overview of the strategic context for the project including where this has been updated as a result of the proposed amendments and refinements.

2.1 Project need

Our energy system is undergoing a once-in-a-generation transformation as we move from reliance on coal-fired power to renewable energy to meet our daily needs.

Coal-fired power stations currently provide most of our electricity supply, however most of these power stations are reaching the end of their life and are due to close in the next 10 years (Liddell Power Station closed in April 2023, with Eraring Power Station to potentially close by 2029 and Bayswater Power Station to close by 2033). At the same time, electricity demand is increasing due to population growth, and increased electrification of vehicles, homes, businesses and industry. This means new electricity supply and associated transmission infrastructure is needed urgently.

The existing 500 kilovolt (kV) transmission lines in NSW are built around the coal-fired power stations in the Hunter region with two lines to the east connecting Eraring substation to Kemps Creek substation and two lines to the west connecting Bayswater Power Station via Wollar substation to Mount Piper Power Station and Bannaby substation. The project would close the northern gap between these existing 500 kV transmission lines.

Renewable electricity from the Central-West Orana and New England Renewables Energy Zones (REZs) would be delivered to the electricity grid via the project. It could then be delivered to NSW consumers particularly in the Hunter, Sydney and Illawarra region where 80 per cent of the State's electricity is used.

Further information about the strategic need for the project is provided in *Chapter 2 (Strategic context)* of the EIS. The amended project remains consistent with the strategic need for the project as described in the EIS and summarised above.

2.2 Government plans and policies

Section 2.2 of the EIS outlines the strategic planning response to the identified challenges facing the existing energy market, including consideration of the project against both NSW and Australian Government policy contexts, such as its alignment with the:

- *2024 Integrated System Plan* (Australian Energy Market Operator (AEMO) 2024)
- 2023 Infrastructure Investment Objectives Report (AEMO 2023)
- *Australia's Nationally Determined Contribution Communication 2022* (Australian Department of Industry, Science, Energy and Resources (DISER) 2022)
- Australia's Long-Term Emissions Reduction Plan (DISER 2021)
- NSW Network Infrastructure Strategy (EnergyCo 2023)
- *Hunter Regional Plan 2041* (NSW Department of Planning and Environment (DPE) 2022a)
- Staying Ahead: State Infrastructure Strategy 2022-2042 (SIS) (Infrastructure NSW 2022)
- *NSW Government's Net Zero Plan Stage 1: 2020 – 2030* (Net Zero Plan) (NSW Department of Planning, Industry and Environment (DPIE) 2020a)
- NSW Electricity Strategy (DPIE 2019)
- NSW Transmission Infrastructure Strategy (DPE 2018).

Some of the government plans and policies outlined in the EIS have been updated since the exhibition of the EIS. The alignment of the project with these updated plans and policies is discussed in *Table 2.1*.

Table 2.1 Alignment of the project with updated government plans and policies

Policy/plan	Project consistency with policy/plan
2026 Draft Integrated System Plan (ISP) (AEMO 2025a) The 2026 Draft ISP reaffirms that renewable energy, connected by transmission and distribution, firmed with storage and backed up by gas, presents the least-cost way to supply secure and reliable electricity to consumers through to 2050, as coal plants retire and while meeting government policies. It highlights that transmission networks are being extended to bring renewable energy from high-resource areas to the industries, cities and towns that need it. The 2026 Draft ISP forecasts that around 6000 kilometres of new transmission would be needed by 2050, including 2800 kilometres from already committed or anticipated projects.	The project is identified as a project that is likely to remain actionable in the 2026 Draft ISP. This means that it is required to be delivered urgently to contribute to the optimal development path towards a cleaner energy market recognised in the 2026 Draft ISP.

Policy/plan	Project consistency with policy/plan
2025 Infrastructure Investment Objectives Report (AEMO 2025b) This report considers the evolution of NSW's energy transition and determines an optimal pathway for development. It responds to changes to future demand in the network and the timing of coal-fired power stations retiring. It contains a comprehensive plan to achieve the infrastructure investment objectives and maximise value for NSW electricity consumers. The report recognises that the delivery of new network infrastructure, both within REZs and to support REZs through transmission, underpins the development pathway and the infrastructure investment objectives more broadly.	The report recognises the importance of the project in unlocking additional transfer capacity for renewable energy projects, which is essential to meeting energy demands into the future. It also recognises the need for ongoing consultation with EnergyCo around the delivery of the project in line with the anticipated operation of the project by the end of 2029.
Australia's Nationally Determined Contribution Communication 2025 (Australian DCCEEW 2025a) This communication sets out the nationally determined contribution under the Paris Agreement and makes a commitment to an emissions reduction target of 62-70 per cent below 2005 levels by 2035.	The project would facilitate the longer-term transition to low emission energy sources as it involves the construction of new transmission infrastructure between Bayswater and Eraring, which would enable the connection of new renewable energy projects in the Central-West Orana and New England REZs into the national electricity market (NEM). This would lead to the lowering of Australia's greenhouse gas emissions from the energy sector and would therefore contribute to the Australian Government's nationally determined contribution for 2035 under the Paris Agreement.
NSW *Net Zero Plan Stage 1: 2020-2030 Implementation Update* (Office of Energy and Climate Change 2022a) In March 2020, the NSW Government announced the *Net Zero Plan Stage 1: 2020-2030*. The plan laid the foundation for NSW's action on climate change to reach its goal of net zero emissions by 2050. In 2021, the NSW Government released an implementation update on the plan, which included a target to reduce NSW emissions by 50 per cent below 2005 levels by 2030. The 2022 implementation update outlines several new policies and programs that will contribute to reducing emissions and supporting the NSW economy. Taking these into account, the 2022 implementation update includes a target to reduce emissions by 70 per cent below 2005 levels by 2035.	The project would support the transfer of electricity generated within the Central-West Orana and New England REZs. This would encourage the continued expansion of renewable energy generation within these REZs and help to facilitate the transition of the NEM to energy sources with lower greenhouse gas emissions. The project would align with and contribute to the net zero plan, including updated targets of the 2021 and 2022 implementation updates.

Various government strategies, plans and policies, such as AEMO's *2026 Draft Integrated System Plan* (AEMO 2025a), the *NSW Transmission Infrastructure Strategy* (DPE 2018), the *Hunter Regional Plan 2041* (DPE 2022a), the NSW *Net Zero Plan Stage 1: 2020-2030 Implementation Update* (Office of Energy and Climate Change 2022a) and the *NSW Network Infrastructure Strategy* (EnergyCo 2023), identify the important role the project would provide in connecting the Central-West Orana and New England REZs to the NEM. The project is noted as likely to remain actionable in the 2026 Draft ISP for the transition of the NEM to renewable energy over the next 20 years.

To maintain reliable electricity supply into the load centres of the Hunter, Sydney and Illawarra regions as power stations close, as identified in the *2026 Draft Integrated System Plan*, 500 kV transmission connections are required, including as part of the project.

The *NSW Network Infrastructure Strategy* (EnergyCo 2023) recognised the project as a 'Deliver Now' project which means it is required to developed in the near-term to support grid-scale generation and storage in REZs and to maintain the supply of electricity as coal-fired power stations close in NSW. The project is recognised as adding 5 gigawatts (GW) of network capacity and is noted to be essential to alleviate downstream network constraints when the total power from these REZs exceeds 3 GW.

Overall, the proposed amendments and refinements identified in this Amendment Report would fall within the same strategic context as was previously discussed in the EIS and would be consistent with the aims and objectives of the strategic planning and policy documents included in *Table 2-1* and *Table 2-2* of the EIS, and the updated planning and policy documents in *Table 2.1* of this Amendment Report.

2.3 Regional context

The regional context of the project as described in *section 2.3* of the EIS remains applicable to the amended project, as described in this section.

The HTP corridor is located across five local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie). The region includes important ecosystems, some of which have significant cultural importance, the Hunter River and associated tributaries, forested wetlands, groundwater systems, conservation areas, State forests and National Parks. The region also includes power stations, mining and government land.

Aboriginal communities in the region retain a strong link with Country and include Traditional Owners and Custodians of the Wonnarua, Awabakal and Darkinjung nations.

The largest industries by value from the regional economy are coal mining, manufacturing, electricity generation, residential care and social assistance, and insurance and superannuation funds. The top sectors for employment in the region are coal mining, hospitals, supermarkets and grocery stores.

The Hunter region is a diverse region covering over 22,500 square kilometres with a broad mix of land uses including an urban corridor, extensive regional and rural residential areas, major coal mines, equine and viticulture industries, Mount Thorley Industrial Estate, Singleton Military Area, several State forests and large conservation areas.

The Hunter region forms part of the Sydney Basin bioregion and has two distinct landscapes: the Hunter Valley floor and the forested plateau. The valley floor has been heavily cleared over the last 200 years. Consequently, remnant vegetation is highly fragmented and has a high conservation value.

In selecting the HTP corridor, impacts to biodiversity have been avoided and minimised where possible. Using land that has been subject to previous disturbance and the State forests was a key strategy to avoid and minimise impacts on private properties and residential communities in the Hunter region. The HTP corridor also avoids sensitive land uses including vineyards, tourist areas, and the Werakata and Watagans National Parks.

A number of renewable energy projects are currently proposed, approved or under construction in the Hunter region. In addition to renewable energy projects, mining projects in the area are operational and subject to proposed or approved expansions.

Further detailed information about the regional context of the project is provided in *section 2.3* of the EIS.

2.4 Project objectives

The following objectives of the project remain applicable to the amended project:

- provide five gigawatts of additional transfer capacity between Bayswater and Eraring
- cost effectively enable the supply of electricity from the Central-West Orana and New England REZs
- strengthen the supply of clean and reliable electricity to consumers – particularly in the Hunter, Sydney and Illawarra where 80 per cent of the State's electricity is used
- avoid breaches of the NSW Energy Security Target as outlined in the NSW Electricity Infrastructure Investment Act 2020 (EII Act)
- harness and build on the region's diverse skill base and provide opportunities for the community to share in the project's benefits
- start operation by the end of 2029 providing reliable electricity to consumers at a reasonable cost
- avoid and/or minimise impacts on people and the environment.

3

Description of amendments and refinements

3 Description of amendments and refinements

3.1 Overview

EnergyCo is proposing a number of amendments to the exhibited project to:

- respond to feedback received through:
  - submissions received during the exhibition of the EIS
  - community, government, special interest groups, organisation and stakeholder engagement activities
- minimise/mitigate the potential impacts of the project
- implement ongoing development of the design and construction methodology of the project.

An amendment involves a change to the project description of the exhibited project and amendments to the associated CSSI application for the project.

Refinements are separate to amendments, and are changes that fit within the limits set by the project description of the exhibited project. Refinements do not change what the proponent is seeking approval for and/or would not require an amendment to the CSSI application for the project.

The amendments and refinements to the exhibited project (including additional information and clarifications on the EIS) are collectively referred to in this report as the 'amended project'.

Amendments to the project include:

- changes to 500 kV transmission line infrastructure, including:
  - realignment of the transmission line at Mount Thorley
  - realignment of the transmission line at Gouldsville
  - localised easement widening for conductor swing
- changes to substation infrastructure at Eraring
- changes to intersections, access roads and access tracks, including:
  - changes to access track locations
  - minor adjustments to the project impact area for intersection upgrades
  - adjustments to the proposed access routes for construction
- changes to construction methods and facilities, including:
  - reconfiguration of construction support sites and temporary worker accommodation
  - changes to the location of laydown areas within State forests
  - reconfiguration of the Flick Road emergency helicopter landing area
  - removal of a stringing site within Olney State Forest
  - changes to construction plant and equipment types and locations of use

Refinements to the project include:

- changes at Bayswater substation
- changes to the disturbance area within Olney State Forest.

Table 3.1 provides an overview of the amendments and refinements proposed as part of this Amendment Report, and where these are described further.

In addition to the amendments and refinements, there are also a number of clarifications developed as a result of submissions received during exhibition of the EIS, ongoing stakeholder engagement and minor errors identified in the EIS. These clarifications are described in *section 3.4*.

Table 3.2 provides a summary of the changes from the exhibited project to the amended project, with a more detailed description of each of the amendments and refinements provided in *section 3.2.1* to *section 3.3.2*. The project description provided in *Chapter 4 (Project description)* of the EIS has been updated to reflect the amended project. This consolidated, detailed description of the amended project is provided in *Appendix A (Updated project description)*. Assessments of the potential environmental impacts of the proposed amendments and refinements, where relevant, are provided in *Chapter 5 (Assessment of impacts)* of this Amendment Report. The construction contractor(s), once appointed, will continue to refine and confirm the design and construction methodology during detailed design and construction planning with the objective of further reducing potential impacts.

Table 3.1 Overview of proposed amendments and refinements to the exhibited project

Project feature	Justification	Amendment	Refinement	Subject to further assessment	Where project feature is described
Changes to 500kV infrastructure					
Realignment of the transmission line at Mount Thorley	Feedback received in engagement activities	✓	-	✓	*Section 3.2.1*
Realignment of the transmission line at Gouldsville	Feedback received in engagement activities	✓	-	✓	*Section 3.2.1*
Localised easement widening for conductor swing	Ongoing development of the project design	✓	-	✓	*Section 3.2.1*
Changes to substation infrastructure					
Minor changes at Bayswater substation	Ongoing development of the project design	-	✓	-	*Section 3.3.1*
Changes to substation infrastructure at Eraring	Ongoing development of the project design	✓	-	✓	*Section 3.2.2*
Changes to intersections, access road and access tracks					
Changes to access track locations	Feedback received in engagement activities Ongoing development of the project design	✓		✓	*Section 3.2.3*
Minor adjustments to the project impact area for intersection upgrades	Feedback received in engagement activities Ongoing development of the project design	✓		✓	*Section 3.2.3*
Adjustments to the proposed access routes for construction	Ongoing development of the project design	✓		✓	*Section 3.2.3*

Project feature	Justification	Amendment	Refinement	Subject to further assessment	Where project feature is described
Changes to construction methods and facilities					
Reconfiguration of construction support sites and temporary worker accommodation	Ongoing development of the construction methodology	✓	-	✓	*Section 3.2.4*
Changes to the location of laydown areas within State forests	Feedback received in engagement activities	✓	-	✓	*Section 3.2.4*
Reconfiguration of Flick Road emergency helicopter landing area	Feedback received in engagement activities	✓	-	✓	*Section 3.2.4*
Removal of stringing site in Olney State Forest	Feedback received in engagement activities	✓	-	✓	*Section 3.2.4*
Changes to construction plant and equipment types and locations of use	Ongoing development of the construction methodology	✓	-	✓	*Section 3.2.4*
Changes to the disturbance area within Olney State Forest	Feedback received in engagement activities	-	✓	✓	*Section 3.3.2*

Table 3.2 Summary of the changes between the exhibited project and the amended project

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Overview			
New transmission line and transmission towers	• Overhead 500 kV double circuit transmission line of around 110 kilometres between the Bayswater South 500 kV switching station and the Olney 500 kV switching station • Steel lattice towers up to 85 metres high and that are spaced anywhere between 75 metres to around 1.5 kilometres apart depending on topography (typically between 300 and 600 metres) • 500 kV transmission lines with a minimum vertical clearance of 13.5 metres • Construction corridor 140 metres wide	Changes to the transmission line alignment at Mount Thorley and Gouldsville.	*Appendix A (Updated project description)*
Adjustments and crossings – existing transmission lines	• Adjustments to existing 500 kV transmission lines: – Line 5A1 and 5A2: Eraring – Kemps Creek 500 kV at Ravensdale to connect to the new Olney 500 kV switching station – Line 5A3: Bayswater – Mt Piper 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station – Line 5A4: Bayswater – Wollar 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station • Adjustments to existing 330 kV transmission lines: – Line 31: Bayswater – Regentville 330 kV – Line 32: Bayswater – Sydney West 330 kV – Line 81: Newcastle – Liddell 330 kV	No change.	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
	• Crossing of existing 330 kV transmission lines: – Line 31: Bayswater – Regentville 330 kV at Bayswater – Line 32: Bayswater – Sydney West 330 kV at Bayswater – Line 81: 330 kV: Newcastle – Liddell 330 kV at Lemington and again at the Singleton Military Area – Line 82: 330 kV: Tomago – Liddell 330 kV at Warkworth and again at the Singleton Military Area		
Upgrades – existing transmission lines and towers	• Upgrades to overhead earth wire on existing 500 kV transmission lines including: – around 10 kilometres of upgrades at Bayswater (Line 5A3 and Line 5A4) – around 17 kilometres of upgrades at Martinsville, Ravensdale and Cedar Brush Creek (Line 5A1 and 5A2) • New communications infrastructure including: – new underground fibre cable connection between the existing Bayswater 500 kV/330 kV substation and the new Bayswater South 500 kV switching station – new optical ground wire for the new HTP 500 kV transmission line between Bayswater South 500 kV switching station and Olney 500 kV switching station – new optical ground wire on the existing and upgraded 500 kV transmission line between Olney	No change.	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
	500 kV switching station and Eraring 500 kV/330 kV substation (Line 5A1 and 5A2) • Tower strengthening on various existing towers on Line 5A1, Line 5A2, Line 5A3 and Line 5A4		
Switching stations/substation upgrades	• New Bayswater South 500 kV switching station – construction impact area around 26.6 hectares • Modifications at the existing Bayswater 500 kV/330 kV substation within the existing footprint • New Olney 500 kV switching station – construction impact area around 20 hectares • Augmentation and modifications at the Eraring 500 kV/ 330 kV substation, including installation of two new 1500 MVA transformers • Remote work at existing substations, consisting of replacing or upgrading existing control and communication equipment	The amended project would include an underground fibre optic communication connection between the Bayswater 500 kV/330 kV substation and the Bayswater South 500 kV switching station. As part of the amended project, this underground fibre optic connection would be located in a trench within the exhibited HTP corridor and would not result in any alteration to the exhibited construction impact area. The amended project would include the following at the Eraring 500 kV/330 kV substation: • a larger footprint for constructability, including for parking and the adjustment of utilities • substation generator connections on the existing hardstand area • modification works on the existing substation bench • new poles and adjustment of the existing generator connections into Eraring Power Station. The construction impact area at the Eraring substation would increase to 24 hectares to accommodate these changes (compared to one hectare for the exhibited project).	*Section 3.2.2* Figure 3-3

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Access roads and tracks	• Access roads and tracks, including oversize/overmass routes, for the construction of the project is described in *section 5.5*	The amended project would include changes to access track locations in response to consultation with the Forestry Corporation of NSW and other landowners, and to minimise impacts to biodiversity. This would also include the upgrade of some existing access tracks that were previously included in the project impact area as being used in their current state; however have since been identified as requiring upgrades.	*Section 3.2.3* *Figure 3-4*
Construction			
Construction impact area	• Construction impact area around 2350 hectares • This is the area that would be affected by the construction of the project, including (but not limited to) transmission towers and lines, stringing sites, access roads, access tracks, substations, switching stations, adjustments and upgrades to existing lines, communications infrastructure, temporary worker accommodation, construction support sites, laydown areas and utility adjustments • As the larger of the construction and operation impact areas, the construction impact area was used to determine the extent of the overall project impact area	• The amended construction impact area would be around 2379 hectares	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
HTP corridor	• 140 m wide to allow for the construction of the new transmission line • This includes areas required for stringing activities and material laydown	• The HTP corridor would be realigned in Mount Thorley in response to landowner consultation • The HTP corridor would be realigned in Gouldsville to reduce impacts to biodiversity • A stringing site has been removed in Olney State Forest to reduce impacts to biodiversity • The location of laydown areas within State forests have been adjusted in response to feedback received from Forestry Corporation of NSW • The Flick Road emergency helicopter landing area has been adjusted in response to feedback received from Forestry Corporation of NSW	*Section 3.2.1* Figure 3-1 Figure 3-2 *Section 3.2.4* Figure 3-7 Figure 3-8 Figure 3-9
Vegetation clearing	• Around 762 ha of native vegetation cleared within a disturbance area of 1266 ha	• Around 945 ha of native vegetation cleared within a disturbance area of 1345 ha • Additional no clearing zones included within Olney State Forest to minimise the potential impacts to threatened amphibian species in Olney State Forest	*Section 79*
Construction support sites	• Five construction support sites: Hebden Road, Pikes Gully Road, Gouldsville Road, Wollombi Road and Freemans Drive • Helicopter pads (helipads) indicatively at: Hebden Road, Pikes Gully Road, Gouldsville Road and Freemans Drive	No change.	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Temporary worker accommodation	• Three temporary worker accommodation facilities catering for around 780 of the main construction workforce are located at the Hebden Road, Gouldsville Road and Freemans Drive construction support sites	• Temporary worker accommodation would no longer be provided at the Gouldsville Road construction support site, in response to feedback received from local council and design and construct contract tenderers • An additional temporary worker accommodation facility would be provided at the Wollombi Road construction support site. This facility would provide accommodation for up to 300 workers during construction • The provision of temporary worker accommodation facilities at the Hebden Road and Freemans Drive construction support sites would remain consistent with the exhibited project • An overall increase in temporary worker accommodation capacity of 120 is proposed for the amended project.	*Section 3.2.4* Figure 3-6
Ancillary sites	• Laydown areas, which would be established to allow for various construction activities and to minimise the need for vehicle movements to and from the construction support sites	• Two laydown areas would be established in the Corrabare State Forest and the Watagan State Forest to replace two laydown areas assessed as part of the exhibited project • The Flick Road emergency helicopter landing area would be reconfigured as part of the amended project	*Section 3.2.4* Figure 3-7 Figure 3-8

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Access roads and tracks	• Upgrades to the existing public road network and existing access tracks and the construction of new access tracks would be required in some locations to provide access to the construction impact area and would be undertaken prior to and during construction	• The amended project would include changes to access track arrangements in response to consultation with the Forestry Corporation of NSW and other landowners, and to minimise impacts to biodiversity • The amended project would include an additional intersection upgrade at Jerrys Plains Road southbound off ramp / existing access track at Mount Thorley, as a result of the changes to access tracks associated with the change to transmission line alignment at Mount Thorley. Additional traffic assessments have also resulted in adjustments to the project impact area and proposed design treatment at four intersection locations • The amended project would include adjustments to the proposed access routes for construction following a review of the proposed construction methodology for the project	*Section 3.2.3* Figure 3-4
Land requirements	• Total permanent areas (including transmission line easement and access road easements): 926 hectares • Total temporary areas (including construction leases within the HTP corridor and other temporary locations such as construction support sites and laydown areas): 1886 hectares • Total freehold acquisition areas (including whole of property and substation acquisition areas): 305 hectares	• Total permanent areas (including transmission line easement and access road easements): 1014 hectares • Total temporary areas (including construction leases within the HTP corridor and other temporary locations such as construction support sites and laydown areas): 1954 hectares • Total freehold acquisition areas (including whole of property and substation acquisition areas): 305 hectares	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Utility adjustments	• Third party utility works including fibre optics, electricity, gas, telecommunication, water, sewer and stormwater	• The utility adjustment schedule from the exhibited project has been updated to capture additional utility adjustment requirements during construction	*Appendix B (Updated utility adjustments schedule)*
Construction program	• Construction to start in 2027 • Operation by the end of 2029	No change.	*Appendix A (Updated project description)*
Construction resource requirements	• Around 830 full-time equivalent workers during peak construction periods • Plant and equipment including dozers, excavators, graders, compactors, rollers, cranes, dump trucks, water carts, delivery trucks, stringing blocks and winches, concrete trucks, asphalt truck and sprayers, helicopters/stringing drones, mobile concrete batching plants, mulchers, spider excavators and dewatering equipment (among others) • Materials such as concrete and steel reinforcement for tower foundations, steel for the transmission towers and substation gantry, densely graded base and crushed rocks, conductors, insulators and cabling for the transmission line, electrical components for the substations, PVC conduits, metal fencing and gates, stormwater drainage materials, diesel and petrol, pre-fabricated buildings, general building materials and fire system materials • Around 1580 ML of water (170 ML of potable water and 1410 ML of non-potable water)	• In addition to the construction plant and equipment assessed as part of the exhibited project, diesel generators, crushing and screening plant, washdown facilities and wastewater treatment plants would also be required. This has been informed by design and construction contractor tenderer feedback	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Operation			
Operation impact area	• Operation impact area around 1260 hectares • This is the area that would be occupied by permanent components of the project and/or maintained during operations, including transmission line easements, transmission lines and towers, substations, switching stations, communications infrastructure, maintenance facilities, permanent access roads to substations and switching stations and access tracks to the transmission line easement	• The amended operation impact area would be around 1371 hectares	*Appendix A (Updated project description)*
Operational transmission line easement	• Operational easement generally 70 metres wide within which the 500 kV transmission line would be located	• The operational easement would largely remain consistent with the 70-metre-wide easement assessed as part of the exhibited project, with the exception of some discrete areas where the operational easement would be required to be wider than 70 metres to account for conductor swing during periods of high wind. The widened areas of the operational easement would range between 80 and up to about 140 metres in width	*Appendix A (Updated project description)*
Access roads and tracks	• Treatment works at existing public roads and intersections to support construction requirements would be permanent improvements to be maintained by the relevant road authority • New permanent access to the transmission line easement and switching stations utilising new or upgraded access tracks	No change.	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Land requirements	• Total permanent areas (including transmission line easement and access road easements): 926 hectares • Total freehold acquisition areas (including whole of property and substation acquisition areas): 305 hectares	• Total permanent areas (including transmission line easement and access road easements): 1014 hectares • Total freehold acquisition areas (including whole of property and substation acquisition areas): 305 hectares	*Appendix A (Updated project description)*
Vegetation management	• Vegetation within the easement would be maintained to achieve operational and safety requirements, including bushfire risk management (indicatively 13.5 metres below the conductors under maximum operating line conditions) • Hazard trees that pose a risk to safe operation of the transmission line by falling onto tower structures, conductors and associated infrastructure, would be removed to manage any future risk to the transmission infrastructure • Vegetation in the easement and in asset protection zones (APZ) would be managed as needed on a cyclical basis over the life of the project	No change.	*Appendix A (Updated project description)*

Project element	Summary of the exhibited project	Summary of the amended project	Reference
Resource requirements	• Operational workforce of up to 10 full-time equivalent workers • Resources used during operation would be associated with, but not limited to: — maintenance of electrical components at Eraring substation and the new switching stations such as transformers, reactors, control and protection systems, electrical cabling and high voltage plant such as circuit breakers as required — maintenance of the transmission line and towers — maintenance of access tracks and roads — maintenance of fences and access gates — maintenance activities and use of machinery and vehicles (e.g. fuels, lubricants and metals) — maintenance of vegetation throughout the transmission line easement and along access tracks and roads — potable and non-potable water requirements — electricity for the operation of the switching stations and communications facilities. • During operation of the project, about 10,000 L of water per year would be required for maintenance activities, on-site staff facilities and testing of firefighting systems and services • Potable water would preferentially be sourced from council owned potable water supplies. Water would be purchased and transported to the switching stations as required, where it would be stored in water tanks	No change.	*Appendix A (Updated project description)*

3.2 Proposed amendments

This section provides a description of the proposed amendments to the exhibited project. An assessment of the potential impacts associated with these amendments, and any changes to the environmental impact assessment described in the EIS, is provided in *Chapter 5 (Assessment of impacts)*.

3.2.1 Changes to 500 kV transmission line infrastructure

Realignment of the transmission line at Mount Thorley

EIS description

Section 4.1 of the EIS provides a general overview of the transmission line alignment of the project within the HTP corridor. The HTP corridor would consist of a 140-metre-wide corridor during construction, containing the new 500 kV double circuit transmission line and construction ancillary sites. Once operational, the transmission line easement would typically be around 70 metres wide.

Chapter 3 (alternatives and options) of the EIS notes that the transmission line alignment was refined as the project design commenced within the preliminary HTP corridor, engagement with landowners and the community occurred, and the findings of key environmental investigations were made available, resulting in changes to avoid specific property and environmental impacts.

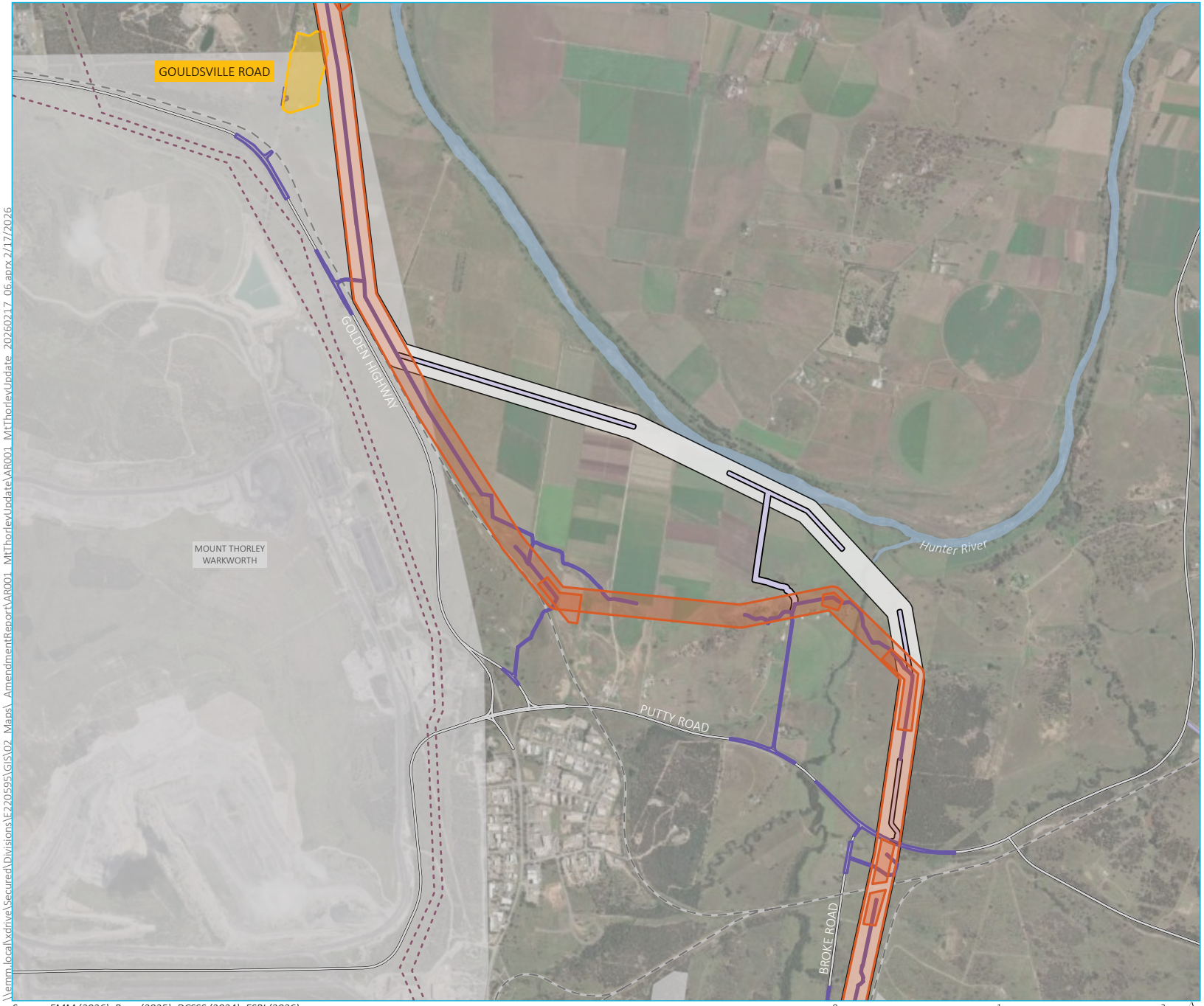
The transmission line alignment between Bulga and Mount Thorley was designed to utilise mining-owned land wherever feasible and avoid the designated conservation offset area associated with the Bulga mining complex. To address safety concerns related to major hazardous facilities, the transmission line alignment was developed to establish a safe minimum distance from facilities (Enaex and Dyno Nobel) in Mount Thorley Industrial Estate. Further refinements within the Mount Thorley-Warkworth mining complex land adjacent to the Golden Highway shifted the transmission line alignment away from the Hunter River, further west. This adjustment allowed tower foundations to be sited in areas with reduced peak flood depths and velocities, improving resilience during flood events.

The alignment of the HTP corridor as exhibited is shown in *Figure 4-2* of the EIS.

Amendment description

Around four kilometres of the new 500 kV double circuit transmission line at Mount Thorley would be realigned, moving it up to around 900 metres further south and away from the Hunter River. This proposed realignment has been developed with input from the directly impacted landowners and stakeholders and would involve the transmission line continuing south adjacent to the Whittingham to Mount Thorley rail line before deviating in an eastward direction to join the exhibited HTP corridor north of the Putty Road / Broke Road intersection. Changes to access tracks would be required as a result of this alignment shift (see *section 3.2.3*). The proposed realignment of the transmission line at Mount Thorley would be located within the same properties as the exhibited project, but would reduce impacts on agricultural land (including biophysical strategic agricultural land) and would reduce flood risks on transmission towers previously located closer to the Hunter River.

The location of the transmission line alignment at Mount Thorley as exhibited and the proposed realignment that forms part of the amended project is included in *Figure 3-1.* The realignment of the transmission line at Mount Thorley has been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.



KEY

- Exhibited project impact area
- Access tracks no longer required

Project impact area

- HTP corridor
- Construction support site
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named waterbody
- Defence
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR001_MtThorleyUpdate\AR001_MtThorleyUpdate_20260217_06.aprx 2/17/2026

Realignment of the transmission line at Mount Thorley

Hunter Transmission Project
Amendment Report
Figure 3.1

EMM
creating opportunities

Realignment of the transmission line at Gouldsville

EIS description

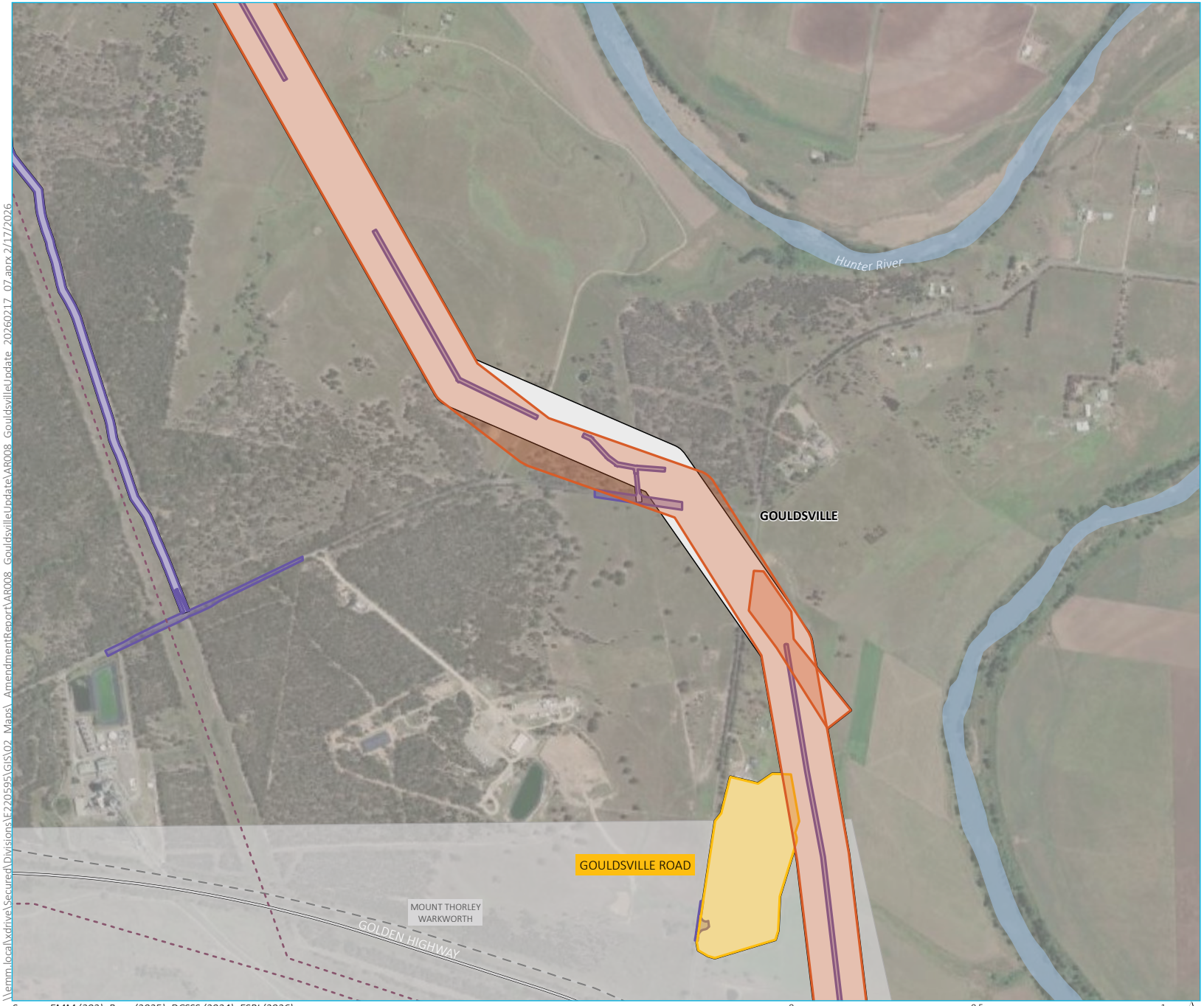
Section 4.1 of the EIS provides a general overview of the transmission line alignment of the project within the HTP corridor. The HTP corridor would consist of a 140 metre wide corridor during construction, containing the new 500kV double circuit transmission line and construction ancillary sites. Once operational, the transmission line easement would typically be around 70 metres wide.

The transmission line alignment in Gouldsville was designed to avoid impacts on high-quality threatened ecological communities through co-location with existing electrical infrastructure easements and access tracks, where possible.

Amendment description

Around one kilometre of the new 500 kV double circuit transmission line at Gouldsville would be realigned, moving it slightly south towards Long Point Road West and Gouldsville Road. This proposed realignment has been developed to further minimise impacts to threatened ecological communities, including the Central Hunter Grey Box – Ironbark Woodland threatened ecological community, listed as endangered under the NSW *Biodiversity Conservation Act 2016* (BC Act).

The location of the transmission line alignment at Gouldsville as exhibited and the proposed realignment that forms part of the amended project is included in *Figure 3-2*. The realignment of the transmission line at Gouldsville has been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.



KEY

- Exhibited project impact area

Project impact area

- HTP corridor
- Construction support site
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named waterbody
- Energy
- Footprint

Source: EMM (202); Beca (2025); DCSSS (2024); ESRI (2026)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\F220595\GIS\02_Maps_AmendmentReport\AR008_GouldsvilleUpdate\AR008_GouldsvilleUpdate_20260217_07.aprx 2/17/2026

Realignment of the transmission line at Gouldsville

Hunter Transmission Project
Amendment Report
Figure 3.2

EMM
creating opportunities

Localised easement widening for conductor swing

EIS description

Section 4.5.1 of the EIS outlines that the operation of the transmission line would occur within a permanent 70-metre-wide easement.

Section 7.2.2 of the EIS provides the operation impact area of the project. The operation impact area is the area that may be impacted by the operation of the project and is much smaller than the construction impact area (i.e. around 1261 hectares).

Amendment description

Further development of the project design has identified localised areas of the transmission line easement where the span of conductors between transmission towers would 'swing' during periods of high wind, to a point where there is the potential that during these situations the conductors would extend outside of the 70-metre-wide operational easement. In consultation with Transgrid (as the preferred network operator for the project), the exhibited 70-metre-wide transmission line easement would be widened to be between 80 metres and around 140 metres wide in certain locations so that the transmission line assets stay wholly within the operational easement for the project.

A summary of the areas where localised widening of the permanent easement would be required to account for conductor swing is provided in *Table 3.3*. Outside of these locations, the transmission line easement would remain at 70 metres wide.

The areas of widened transmission line easement would total around 16.4 kilometres in length. As a result of this amendment, the amended area of the new transmission line easement would be 816 hectares and the overall operation impact area of the project would be 1371 hectares.

These localised areas of easement widening have been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

Table 3.3 Areas of localised easement widening to account for conductor swing

Location	Property ownership	Easement width (EIS) (metres)	Easement width (amended project) (metres)	Indicative approximate length of widened easement (metres)
Ravensdale	Forestry Corporation of NSW	70	80*	660
Olney	Forestry Corporation of NSW	70	80	730
Olney	Forestry Corporation of NSW	70	80	690
Olney	Forestry Corporation of NSW	70	80	1300

Location	Property ownership	Easement width (EIS) (metres)	Easement width (amended project) (metres)	Indicative approximate length of widened easement (metres)
Corrabare	Forestry Corporation of NSW	70	100	810
Corrabare	Forestry Corporation of NSW	70	80	660
Corrabare	Forestry Corporation of NSW	70	110	880
Watagan	Forestry Corporation of NSW	70	80	660
Corrabare	Forestry Corporation of NSW	70	90	770
Watagan	Forestry Corporation of NSW	70	90	750
Corrabare	Forestry Corporation of NSW	70	120	950
Corrabare	Forestry Corporation of NSW	70	80	660
Corrabare	Forestry Corporation of NSW	70	90	800
Corrabare	Forestry Corporation of NSW	70	90	760
Millfield	Private	70	110	900
Cedar Creek	Forestry Corporation of NSW	70	80	570
Cedar Creek	Forestry Corporation of NSW	70	90	790
Broke	Forestry Corporation of NSW / Department of Defence	70	140	1060
Singleton Military Area	Department of Defence	70	80	690
Singleton Military Area	Department of Defence	70	80	680

Location	Property ownership	Easement width (EIS) (metres)	Easement width (amended project) (metres)	Indicative approximate length of widened easement (metres)
Warkworth	Hunter Valley Operations	70	80	670

*(additional acquisition of permanent easement width to be undertaken in consultation with property owner)

3.2.2 Changes to substation infrastructure at Eraring

EIS description

Upgrades would be required at the existing 500 kV / 330 kV substation at Eraring to accommodate the project. *Section 4.2.3* in the EIS provides a general overview of the proposed upgrades at Eraring substation, which include:

- expansion of the substation to accommodate the installation of new transformers
- relocating generator connections from Eraring Power Station and installation/replacement of associated switchgear as required
- relocation of the existing transformer spare unit
- installation of new 500 kV / 330 kV transformer units, augmentation of 500 kV / 330 kV bays and associated switchgear and connections
- adjustments to existing utilities and drainage infrastructure to accommodate the proposed substation expansion.

Amendment description

In addition to the upgrades to Eraring substation included in the EIS, the amended project would include:

- a larger footprint for constructability (24 hectares for the amended project compared to one hectare for the exhibited project), including for the adjustment of utilities and to include existing parking at Eraring
- substation generator connections on the existing hardstand area
- modification works on the existing bench
- new poles and adjustment of the existing generator connections into Eraring Power Station.

It is also proposed to carry out localised undergrounding of the optical ground wire route near Eraring substation outside the exhibited project impact area by trenching between existing transmission towers.

The changes are outlined in *Figure 3-3* and have been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

KEY

- Exhibited Eraring substation upgrade
- Amended Eraring substation upgrade
- Access tracks, road upgrades and intersection upgrades
- Proposed trenching location

Existing environment

- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Minor road

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 250 500 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR005_ErariingSubstation\VAR005_ErariingSubstation_20260216_05.aprx 2/16/2026

Changes at Eraring substation

Hunter Transmission Project
Amendment Report
Figure 3.3

EMM
creating opportunities

3.2.3 Changes to intersections, access roads and access tracks

The amended project includes changes to intersections, access roads and access tracks across the project impact area in response to consultation with government agencies, stakeholders, landowners and species experts as well as continued development of the project's design and construction methodology. A description of these changes is provided in the sections below and changes to access tracks are shown collectively on *Figure 3-4*.

Changes to access track locations

EIS description

Access requirements for construction and operation of the project were described in *section 4.3.5* of the EIS. Based on the concept design and early construction planning, potential access routes, including access roads and access tracks are listed in Table 4-7 and shown in Figure 4-10 of the EIS.

Section 4.3.5 of the EIS identified that the project would require the use of new and existing access tracks on private properties. Some improvements to access tracks would be required to provide appropriate and safe access during construction and operation and to accommodate construction vehicles and machinery.

New and upgraded access tracks would be designed to accommodate the expected vehicle movements during both construction and operation. The upgrades to existing access tracks would vary depending on the condition of individual tracks, however they would generally need to be up to six metres wide and able to accommodate a 19-metre semi-trailer (or similar vehicle).

Amendment description

The amended project includes changes to access tracks proposed for use during construction and operation of the project. The amended project impact area includes 457 hectares of access tracks, compared to 408 hectares of access tracks for the exhibited project. Changes to access tracks have been identified through:

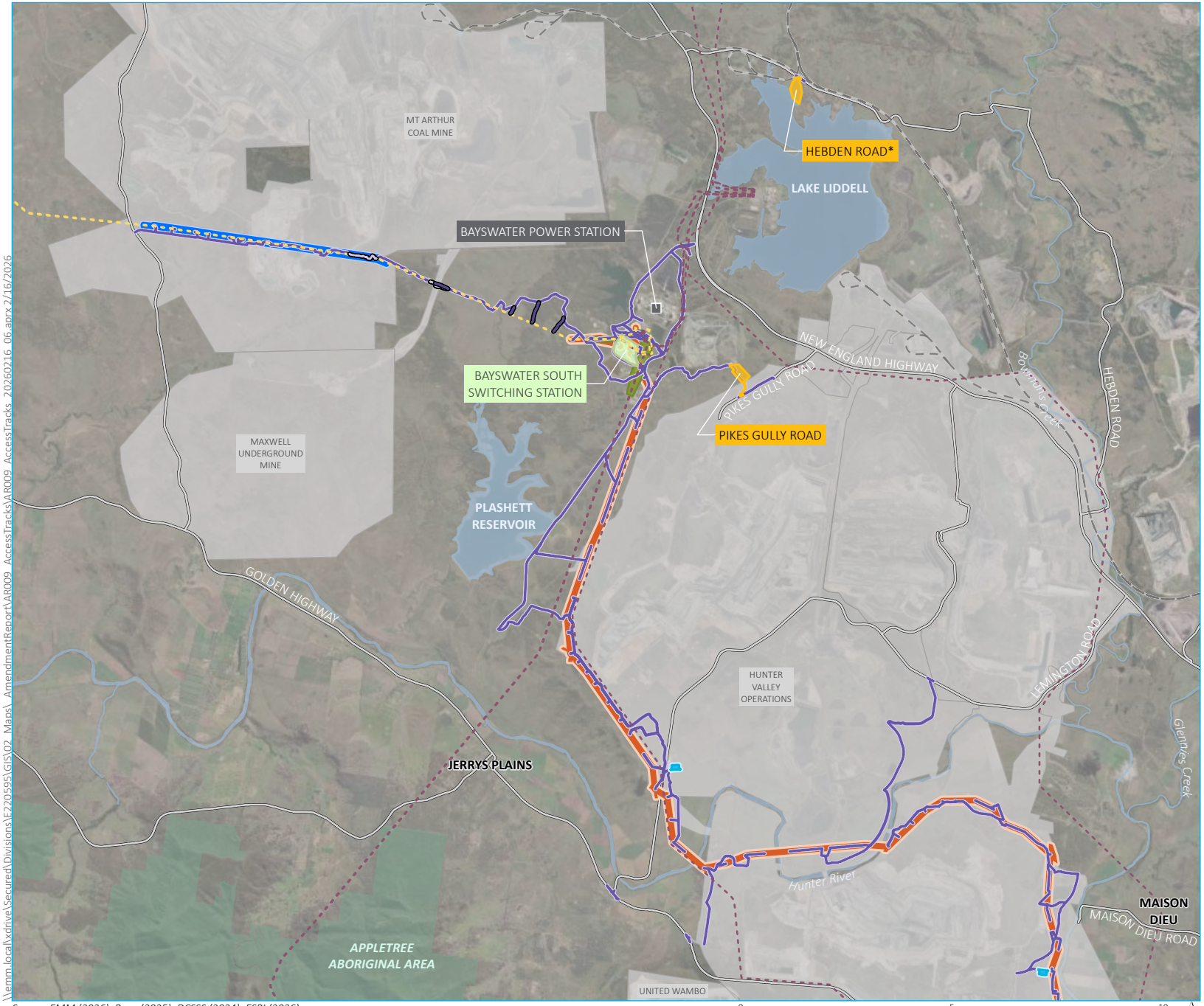
- feedback received through consultation with:
  - Forestry Corporation of NSW
  - Glencore (as the mining operator of Bulga Coal Mining complex)
  - landowners
  - regulators and government agencies responsible for assessing the project impacts on biodiversity
- ongoing development of the project design.

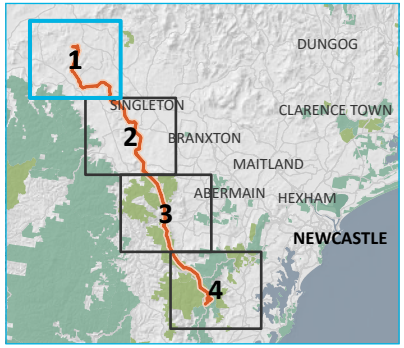
The proposed changes to access tracks are shown in *Figure 3-4*. These changes to access tracks have also been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report. Construction of additional/changed sections of access tracks would be consistent with the construction methodology outlined in *section 4.3.5* of the EIS.

The use of the additional/changed access tracks:

- within the State forests, would:
  - provide a more suitable route for construction vehicles to access some of the transmission tower pads
  - improve access to the HTP corridor for construction and lower safety risks to workers
  - avoid the need to cross riparian zones in various locations along the HTP corridor
- within Olney State Forest would minimise impacts a number of threatened amphibians species and their habitat, including the Littlejohn's Tree Frog (*Litoria littlejohni*), listed as endangered under both the BC Act and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- on land that forms part of the Glencore Bulga Coal Mining complex would:
  - avoid a clean water diversion
  - keep access for the project separate from Bulga mining complex operations
  - stay within the HTP corridor as much as possible
  - avoid direct project impacts to existing biodiversity offset areas
- for the upgrades to existing transmission lines and towers would:
  - ensure the access tracks are fit for purpose, given their current condition is not considered suitable
  - reduce impacts to landowners by utilising existing tracks as much as possible
- off Putty Road to access the proposed realignment of the transmission line at Mount Thorley would efficiently access tower locations, avoid sensitive areas for stakeholders, and avoid impacts to active agricultural areas by aligning with existing farm tracks
- near the Bayswater substation would avoid impacts to an existing offset area.

Changes to access tracks identified as part of this Amendment Report would also mean that some access tracks identified as being required in the EIS would no longer be used.





KEY

- New project access track
- Access tracks no longer required

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy
- Local government area

Changes to access tracks
Map 1 of 4

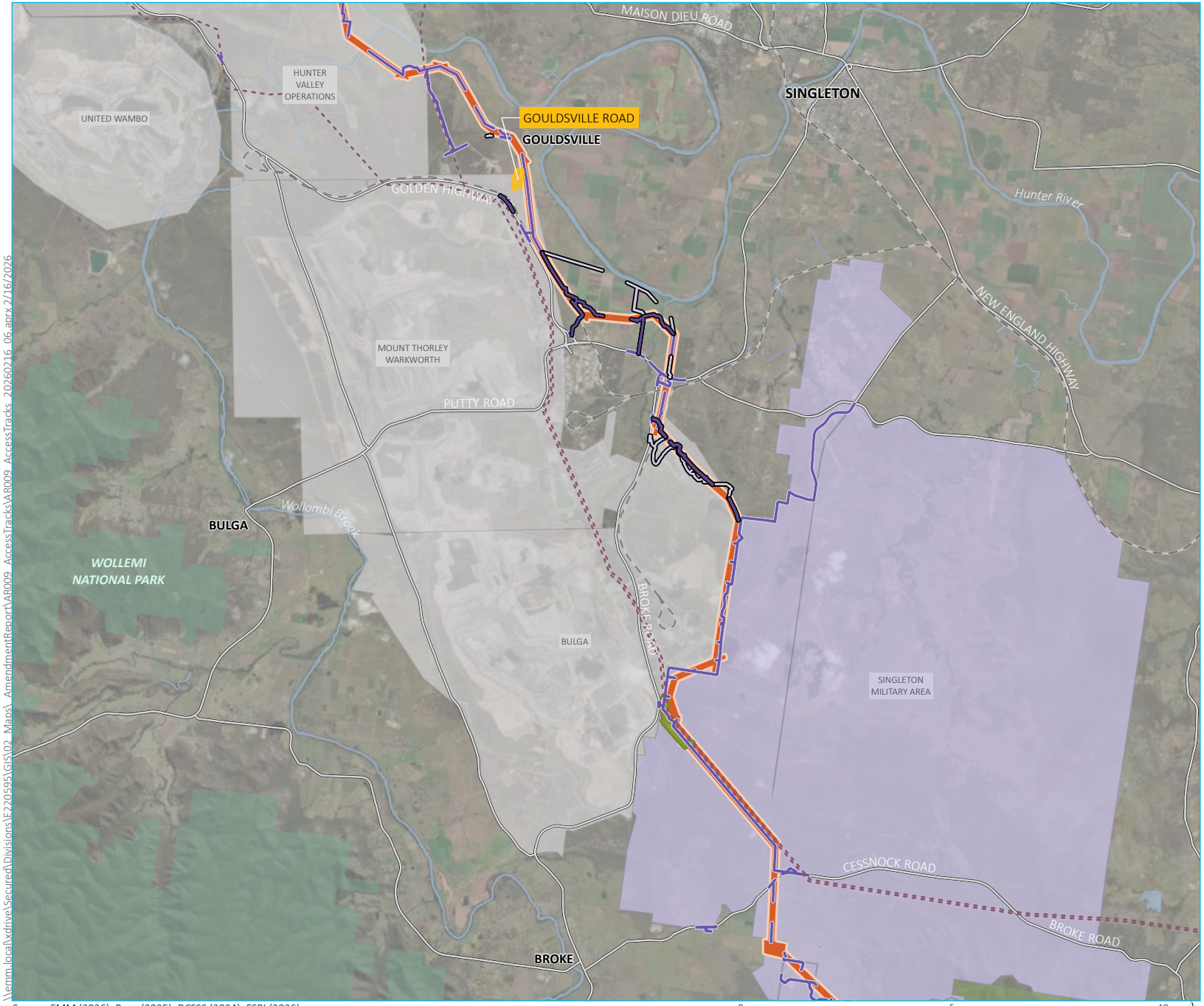
Hunter Transmission Project
Amendment Report
Figure 3.4

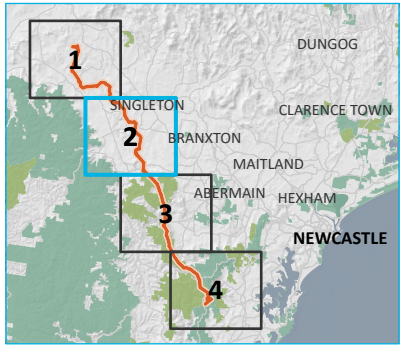
EMM
creating opportunities

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 5 10 km
GDA2020 MGA Zone 56
N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR009_AccessTracks\AR009_AccessTracks_20260216_06.aprx 2/16/2026





KEY

- New project access track
- Access tracks no longer required

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy
- Local government area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 5 10 km

GDA2020 MGA Zone 56

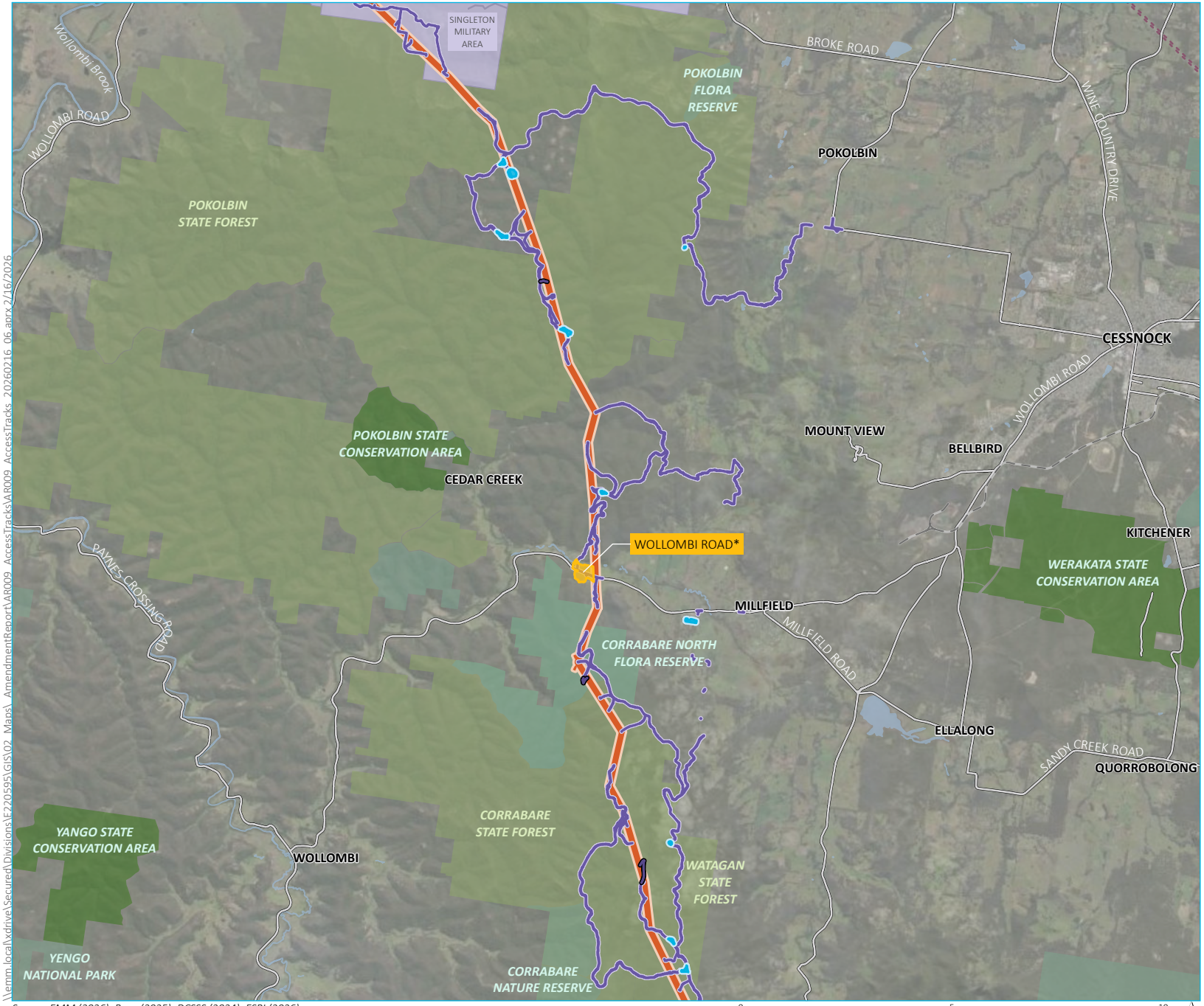
N

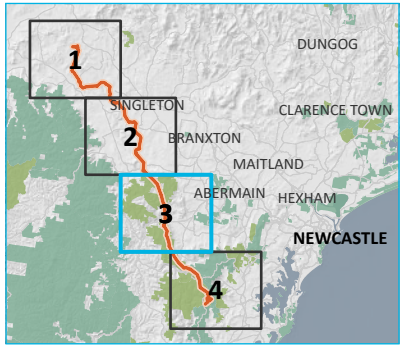
Changes to access tracks
Map 2 of 4

Hunter Transmission Project
Amendment Report
Figure 3.4

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR009_AccessTracks\AR009_AccessTracks_20260216_06.aprx 2/16/2026





KEY

- New project access track

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence
- Local government area

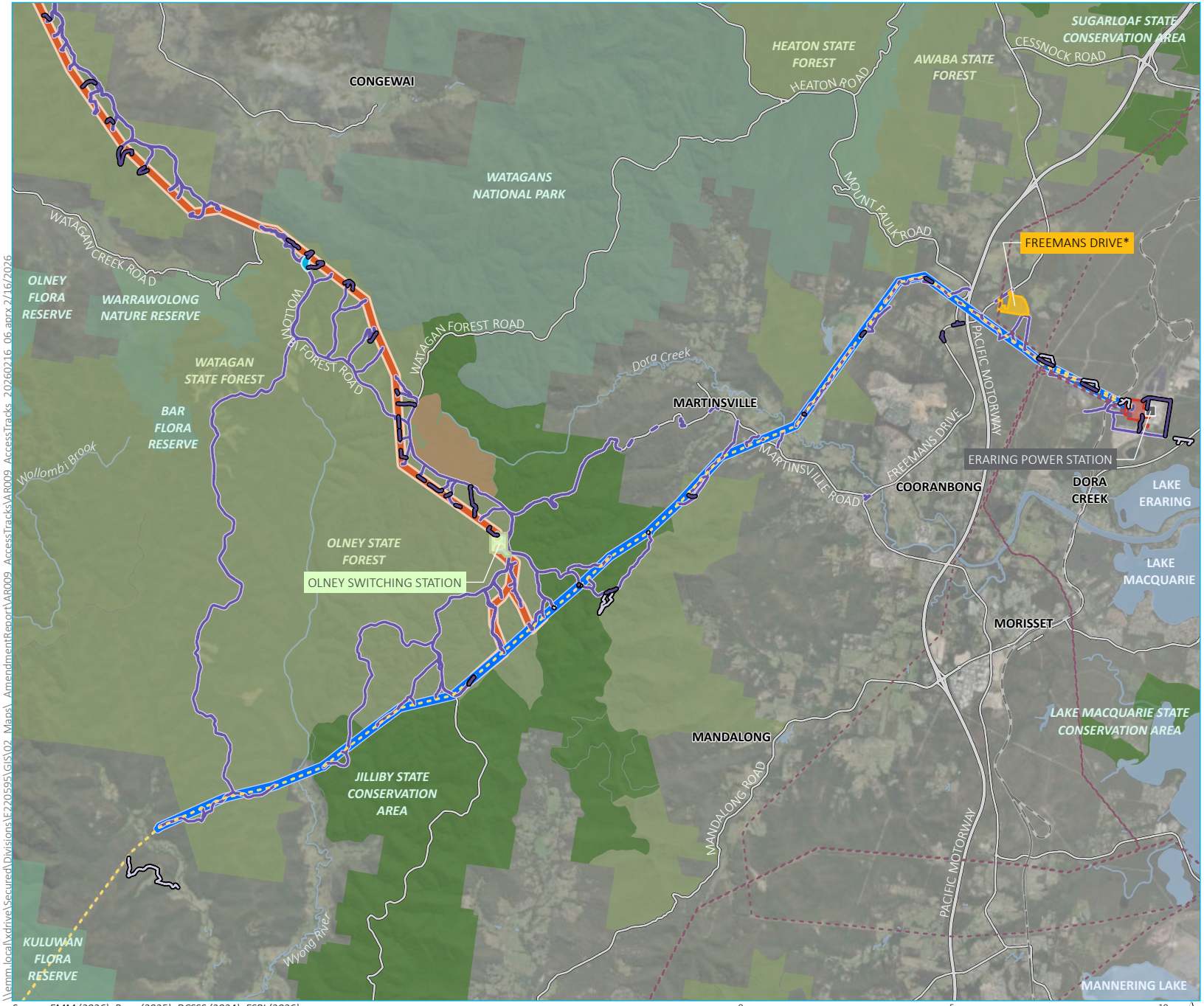
Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

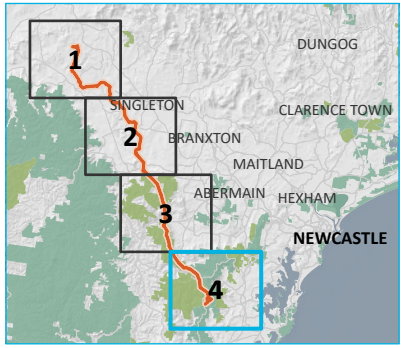
Changes to access tracks
Map 3 of 4

Hunter Transmission Project
Amendment Report
Figure 3.4

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR009_AccessTracks\AR009_AccessTracks_20260216_06.aprx 2/16/2026





KEY

- New project access track
- Access tracks no longer required

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area
- Local government area

Changes to access tracks
Map 4 of 4

Hunter Transmission Project
Amendment Report
Figure 3.4

EMM
creating opportunities

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR009_AccessTracks\AR009_AccessTracks_20260216_06.aprx 2/16/2026

Minor adjustments to the project impact area for intersection upgrades

EIS description

Section 4.3.5 of the EIS notes that the project would rely on the use of existing public roads during construction and operation of the project. In several locations along the construction routes, upgrade works would be required, including at several intersections (which were listed in Table 4-10 of the EIS), to cater safely for the proposed construction traffic volumes and delivery of oversized equipment and construction material and to ensure public road safety.

Amendment description

The assessment of the amended project as part of the revised traffic and transport impact assessment identified the need for an additional upgrade at the Jerrys Plains Road southbound off ramp / existing access track intersection at Mount Thorley as a result of the changes to access tracks associated with the change to transmission line alignment at Mount Thorley (refer to s*ection 3.2.1* of this Amendment Report for more information). The upgrade of this additional intersection has been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report, and is shown on Figure 3-5 below.

The revised traffic and transport assessment prepared to support this Amendment Report:

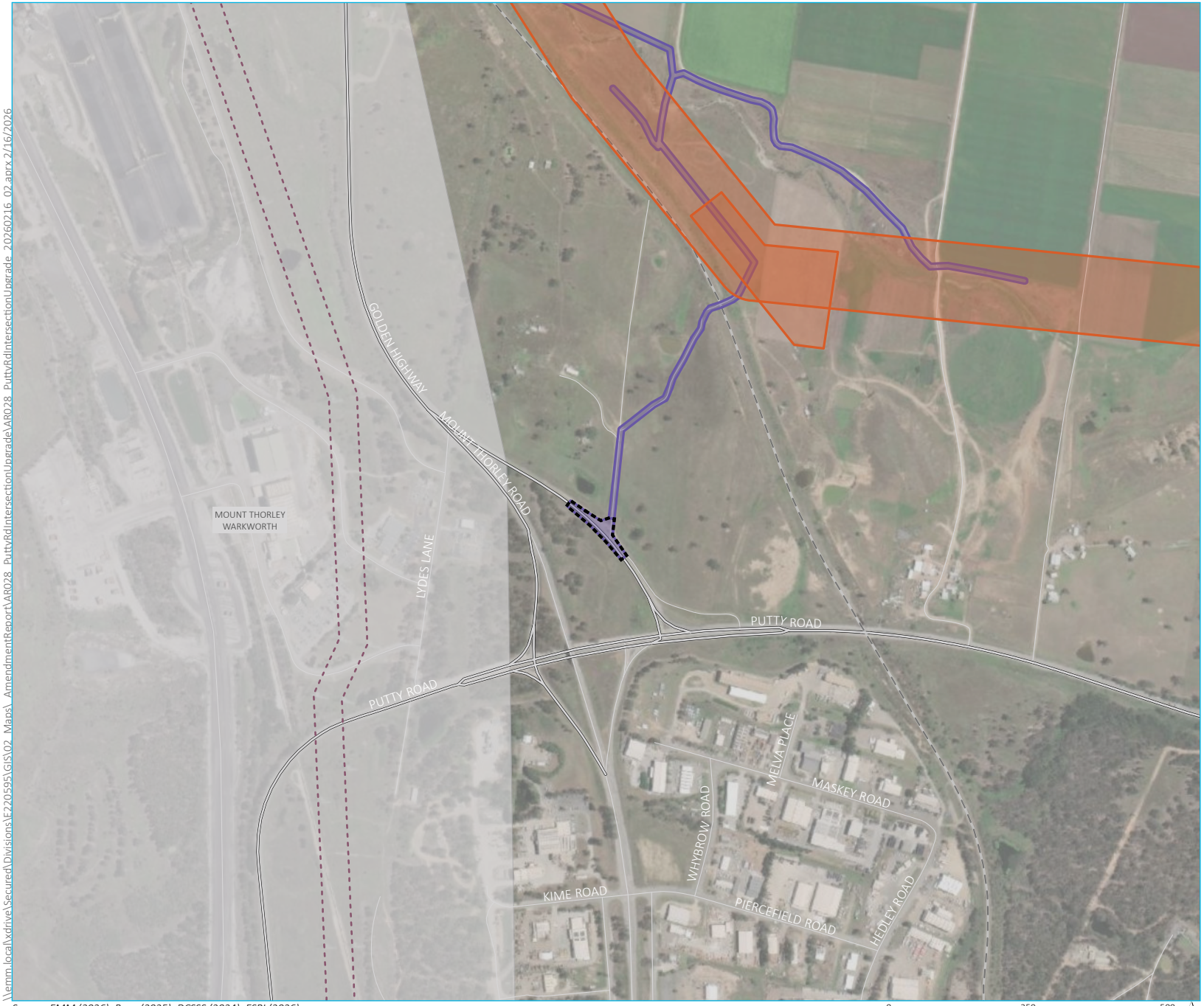
- assesses the potential impacts to traffic and transport-related matters for construction and operation of the amended project
- provides an updated assessment methodology and assessment of potential impacts from the amended project as a whole, taking into account the changes as a result of the adjusted methodology in response to feedback from Transport for NSW during exhibition of the EIS.

The revised traffic and transport assessment is included in *section 5.5*, and provided in full at *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.

Revised turn warrant assessments were completed as part of the revised TTIA for the intersections to be used during construction of the project. In addition, a consistency check has been completed between the EIS and the revised TTIA. As a result, different intersection treatments have been identified at five intersections compared to the EIS, including:

- Freemans Drive / Martinsville Road (intersection ID I-23), for additional land acquisition to accommodate turning vehicle movements
- Putty Road / existing access track (intersection ID I-31), for an eastbound merge lane along Putty Road
- Cessnock Road / new access track (intersection ID I-37), for widening on Cessnock Road for acceleration and deceleration lanes
- Golden Highway / Gouldsville Road (intersection ID I-07), to incorporate a channelised right hand turn.

This has resulted in minor increases to the project impact area. These changes have been included in the updated project description and incorporated into the amended project impact area, provided in *Appendix A (Updated project description)* of this Amendment Report.



KEY

- Putty Road southbound off ramp intersection upgrade

Amended project impact area

- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Minor road
- Energy

Upgrades to the intersection of an existing access track connection with the Putty Road southbound off ramp

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 250 500 m

GDA2020 MGA Zone 56

N

Hunter Transmission Project
Amendment Report
Figure 3.5

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR028_PuttyRdIntersectionUpgrade\VAR028_PuttyRdIntersectionUpgrade_20260216_02.aprx 2/16/2026

Adjustments to the proposed access routes for construction

EIS description

Table 4-7 of the EIS provided a summary of the proposed access routes to be used for construction of the project. This list was based on the concept design and early construction for the project.

Amendment description

A revised traffic and transport assessment has been prepared to support this Amendment Report, which assesses the potential impacts to traffic and transport-related matters for construction and operation of the amended project, and also provides an updated assessment methodology, taking into account the changes as a result of the adjusted methodology in response to feedback from Transport for NSW during exhibition of the EIS.

The revised TTIA, provided as *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report included a review of the proposed construction methodology for the project and as a result, there have been adjustments to the proposed access routes for construction.

A summary of the changes to the proposed construction access routes based on the revised traffic and transport-related matters are provided in Table 3.4 below. All roads presented in strikethrough text are no longer proposed to be used. All roads presented in bold text have been added into the proposed access routes for construction or have been amended.

The complete list of proposed access routes for construction is provided in Table A-7 of *Appendix A (Updated project description)* of this Amendment Report and assessment of the potential impacts to the proposed access routes from construction of the project is included in *Appendix H (Revised traffic and transport impact assessment)* and summarised in *section 5.5* of this Amendment Report.

Table 3.4 Summary of proposed changes to access routes for construction as part of the amended project

Local government area	Location (suburb)	Road name	Road classification
Singleton	**Lemington**	**Old Lemington Road**	**Local road**
Cessnock	~~Black Hill~~	~~John Renshaw Drive~~	~~State road~~
	~~Olney~~	~~Bowmans Road~~	~~Local road~~
	~~Cedar Creek~~	~~Brush Creek Road~~	~~Local road~~
	~~Cedar Creek~~	~~Cedar Creek Road~~	~~Local road~~
	~~Kurri Kurri~~	~~Cessnock Road~~	~~Local road~~
	~~Olney~~	~~Farrells No 1 Road~~	~~Local road~~
	~~Olney~~	~~Heaton Road~~	~~Local road~~
	~~Cessnock~~	~~Maitland Road~~	~~Local road~~
	~~Olney~~	~~New Mill Road~~	~~Local road~~
	~~Cedar Creek~~	~~Sawpit Road~~	~~Local road~~
Lake Macquarie	~~Cooranbong~~	~~M1 Pacific Motorway~~	~~National and State road~~
	Morriset	**Dora Street**	**State road**

Local government area	Location (suburb)	Road name	Road classification
	Morriset	**Main Road**	**State road**
	Cooranbong	Freemans Drive (south of ~~Cooranbong~~**the M1 Pacific Highway**)	Local road
	~~Freemans Waterhole~~	~~Palmers Road~~	~~Local road~~
	Martinsville	**Pringles Road**	**Local road**
Central Coast	~~Jilliby~~	~~Hue Hue Road~~	~~Local road~~
	~~Mardi~~	~~Old Maitland Road~~	~~Local road~~
	~~Warnervale~~	~~Sparks Road~~	~~Local road~~
	~~Wyong Creek~~	~~Yarramalong Road~~	~~Local road~~

3.2.4 Changes to construction methods and facilities

Reconfiguration of construction support sites and temporary worker accommodation

EIS description

Section 4.3.6 of the EIS describes the location, size and function of the Gouldsville Road construction support site and the Wollombi Road construction support site.

The Gouldsville Road construction support site would be located off Gouldsville Road and the Golden Highway to the ease of the Mount Thorley Warkworth mining complex in HTP North. It would be located on land currently zoned RU1 – Primary Production and would have a total area of nine hectares. An overview of the Gouldsville Road construction support site as assessed in the EIS is included in Figure 4-17 of the EIS.

The construction support site would be located off Wollombi Road west of Millfield in HTP Central on land zoned RU1 – Primary Production and would have a total area of around 15 hectares. It is described as being separated into two sections (Wollombi Road A and Wollombi Road B construction support sites), which are separated by Wollombi Road, with Wollombi Road A construction support site to the north and Wollombi Road B construction support site to the south. An overview of the Wollombi Road construction support site as assessed in the EIS is included in Figure 4-18 of the EIS.

The EIS assumed a peak construction workforce of 830 workers, with allowance for 780 workers to be housed in temporary worker accommodation at the Hebden Road, Gouldsville Road and Freemans Drive construction support sites, as follows:

- Hebden Road construction support site – capacity for around 300 workers
- Gouldsville Road construction support site – capacity for around 180 workers
- Freemans Drive construction support site – capacity for around 300 workers.

The following facilities would be provided at construction support sites with temporary worker accommodation:

- utilities, including telecommunications services, electricity and water (including water treatment plant)
- demountable accommodation and office buildings
- workforce amenities, including food and catering, laundry, bathroom and first aid facilities
- generators.

Amendment description

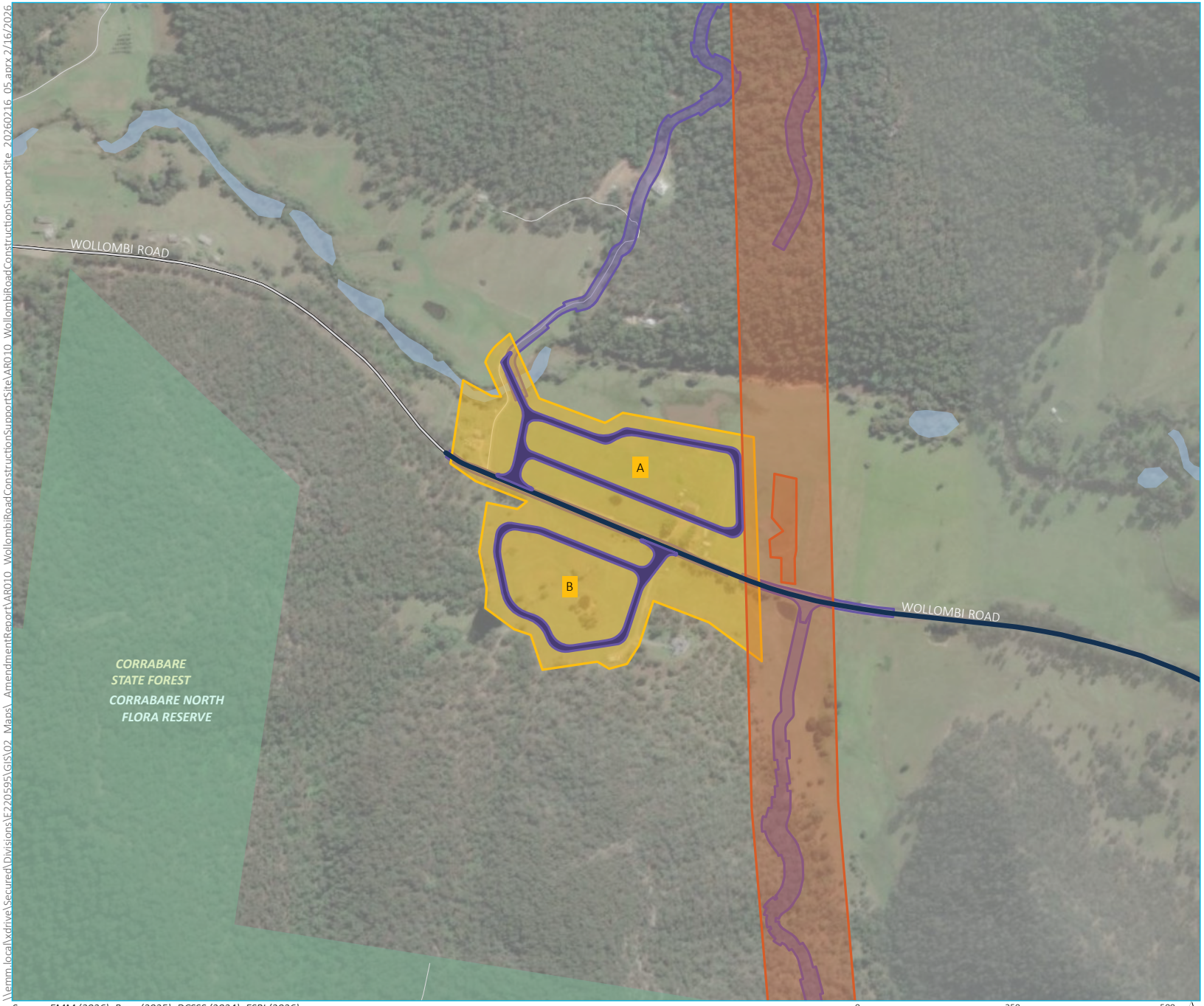
Revisions to the construction methodology of the project relating to construction support sites and temporary worker accommodation have been undertaken in response to stakeholder feedback received during and post-exhibition of the EIS and from design and construction contract tenderers, which has resulted in the removal of temporary worker accommodation at the Gouldsville Road construction support site and the inclusion of temporary worker accommodation within the exhibited project impact area at the Wollombi Road construction support site with capacity to house up to 300 construction workers.

When in use during construction, the temporary worker accommodation facility would be operational 24 hours per day seven days per week. This amendment would provide additional accommodation capacity for the construction workforce, but would not increase the assumed peak construction workforce (830 personnel at peak construction).

The temporary worker accommodation facility at the Wollombi Road construction support site would be included as part of the amended project in addition to those already proposed at Hebden Road and Freemans Drive construction support sites.

The amended project would therefore include a change in activities proposed to be carried out at the Wollombi Road construction support site, including an increase in light vehicle movements in and out of the construction support site (from 378 for the exhibited project to 434 for the amended project) and extended operating hours at the temporary worker accommodation facility (24 hours seven days per week), resulting in potential changes to amenity impacts. The amended project would also reduce the scale of construction activities at the Gouldsville Road construction support site, with extended operating hours to support the temporary worker accommodation no longer proposed.

The Wollombi Road construction support site reconfiguration is outlined in *Figure 3-6*. The location and size of the Wollombi Road construction support site remains unchanged compared to the exhibited project, with the temporary worker accommodation to be provided at Wollombi Road A construction support site on the northern side of Wollombi Road. Changes to the Wollombi Road construction support site, including the provision of temporary worker accommodation, have also been included in *Appendix A (Updated project description)* of this Amendment Report.



KEY

- Construction support site
- HTP corridor
- Access tracks, road upgrades and intersection upgrades
- Proposed access road
- Construction traffic route

Existing environment

- Major road
- Minor road
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 250 500 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR010_WollombiRoadConstructionSupportSite\VAR010_WollombiRoadConstructionSupportSite_20260216_05.aprx 2/16/2026

Wollombi Road construction support site reconfiguration

Hunter Transmission Project
Amendment Report
Figure 3.6

EMM
creating opportunities

Changes to the location of laydown areas within State forests

EIS description

Section 4.3.8 of the EIS describes the laydown areas required to support construction of the project. They would generally be at the areas of the project where there is a transition from more accessible to less accessible areas (for instance, at the tops of ridges and ends of long access routes in the State forests) and would be located both within and outside of the HTP corridor. The EIS describes laydown areas as being temporary staging, storage and complex plant/equipment setup areas that would also act as traffic control nodes during construction, and would also assist in minimising the number of vehicle movements to and from the larger construction support sites.

Figure 4-2 of the EIS shows the locations of laydown areas located outside the HTP corridor. Laydown areas identified in the EIS as being located within the State forests include:

- Broken Back Road in Cedar Creek
- Campbell Spring Trail in Cedar Creek
- Trig Road/Mf1 Road in Corrabare
- Trig Road/Crumps Road in Corrabare
- Wollombi Forest Road in Ravensdale.

Amendment description

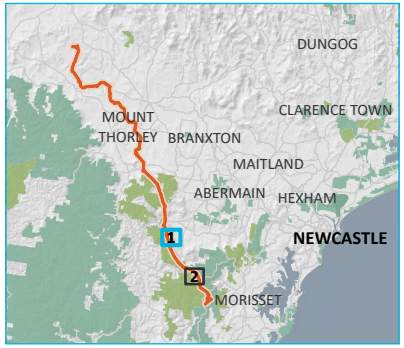
Feedback received from Forestry Corporation of NSW during continued development of the project design identified an alternative arrangement of laydown areas for construction within the State forests. As a result, the amended project includes:

- removal of the laydown areas included in the EIS located at:
  - the intersection of Trig Road / Mf1 Road / North Road in the Corrabare State Forest due to Aboriginal heritage finds identified as part of the exhibited Aboriginal cultural heritage assessment
  - Wollombi Forest Road (south of Halls Road) in the Watagan State Forest in response to feedback from Forestry Corporation of NSW due to the area being located within an operational forestry plantation
- inclusion of two new laydown areas within the State forests located at:
  - the Trig Road / Flick Road intersection in the Corrabare State Forest, which would replace the laydown area that formed part of the exhibited project at the intersection of Trig Road / Mf1 Road / North Road
  - the Watagan Creek Road / Burma Road intersection in the Watagan State Forest, which would replace the laydown area that formed part of the exhibited project along Wollombi Forest Road (south of Halls Road).

These new laydown areas would perform the same functions as laydown areas described in the EIS. However, these new laydown areas would result in changes to the disturbance area and the project impact area compared to the EIS. The new laydown area at the Trig Road / Flick Road intersection would be 0.47 hectares (compared to 0.72 hectares for the exhibited laydown area at the Trig Road / Mf1 Road / North Road intersection) and the new laydown area at the Watagan Creek Road / Burma

Road intersection would be 1.6 hectares (compared to 1.73 hectares for the exhibited laydown area on Wollombi Forest Road (south of Halls Road)).

Changes to laydown areas in the State forests are shown in *Figure 3-7* and have also been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.



KEY

- Exhibited laydown area location

Amended project impact area

- Laydown area
- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Minor road
- Vehicular track
- NPWS reserve
- State forest

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 0.5 1 km

GDA2020 MGA Zone 56

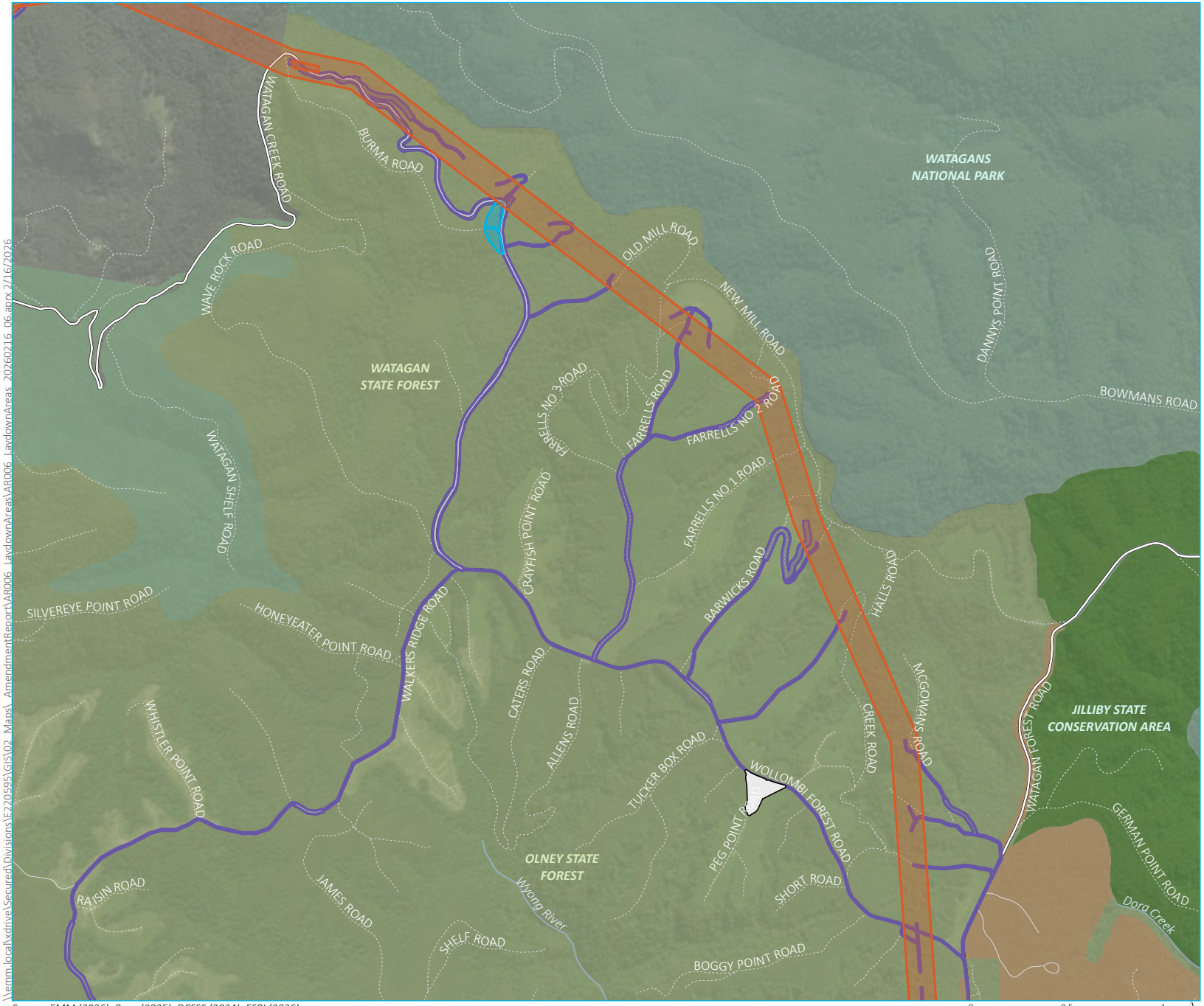
N

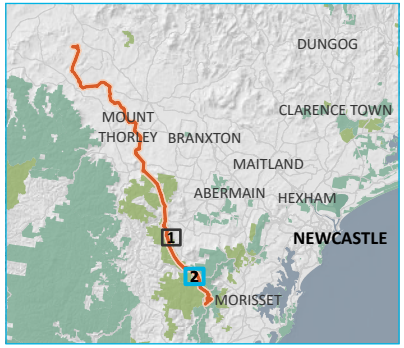
Changes to laydown areas within State forests
Map 1 of 2

Hunter Transmission Project
Amendment Report
Figure 3.7

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR006_LaydownAreas\AR006_LaydownAreas_20260216_06.aprx 2/16/2026





KEY

- Exhibited laydown area location

Amended project impact area

- Laydown area
- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- NPWS reserve
- State conservation area
- State forest
- Recreation area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 0.5 1 km

GDA2020 MGA Zone 56

N

Changes to laydown areas within State forests
Map 2 of 2

Hunter Transmission Project
Amendment Report
Figure 3.7

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR006_LaydownAreas\AR006_LaydownAreas_20260216_06.aprx 2/16/2026

Reconfiguration of the Flick Road emergency helicopter landing area

EIS description

The construction methodology described in the EIS noted that the project would include the provision of emergency helipads at laydown areas on Wollombi Forest Road and Flick Road for helicopters to land in the event of an emergency.

Amendment description

Continued construction planning and consultation with Forestry Corporation of NSW identified that the arrangement of the emergency helicopter landing area along Flick Road would need to be reconfigured so that its design complements the natural site topography and terrain. The amended Flick Road emergency helicopter landing area would result in a change in the disturbance area and project impact area compared to the EIS (0.76 hectares for the amended project compared to 0.49 hectares for the exhibited project). The construction methodology and use of the emergency helicopter landing area would not change compared to the exhibited project.

The reconfigured Flick Road emergency helicopter landing area is shown in *Figure 3-8* and has been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

KEY

- Exhibited emergency helicopter landing area
- Reconfigured emergency helicopter landing area
- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Minor road
- State forest

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 100 200 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR007_FlickRdHeliload\AR007_FlickRdHeliload_20260216_05.aprx 2/16/2026

Reconfiguration of the Flick Road emergency helicopter landing area

Hunter Transmission Project
Amendment Report
Figure 3.8

EMM
creating opportunities

Removal of stringing site in Olney State Forest

EIS description

Section 4.3.2 of the EIS outlines the construction works that would be carried out within the HTP corridor, including stringing sites which would be used for the preparation, assembly and operation of stringing equipment to connect the transmission line to the towers. Stringing sites would be positioned along the HTP corridor at various locations, typically where there are changes in direction of the transmission line alignment including in the Olney State Forest north of the Olney switching station.

Amendment description

In response to consultation carried out with species experts and regulators for the biodiversity assessment of the project, refinements to the project to reduce to the extent of impacted amphibian species habitat have been made within the exhibited HTP corridor in the Olney State Forest to the north of the proposed Olney switching station. These changes have been made in consultation with species experts and regulators to minimise impacts to threatened species, particularly a number of amphibian species within the Olney State Forest, including the Littlejohn's Tree Frog (*Litoria littlejohni*). As a result of these changes, the proposed stringing site to the north of the Olney switching station has been removed to minimise disturbance in this location.

The removal of the stringing site in Olney State Forest for biodiversity avoidance is shown in *Figure 3-9* and has been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

KEY

- Removed stringing site in Olney State Forest

Amended project impact area

- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Major road
- Minor road
- State forest
- Recreation area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

0 250 500 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR017_StringingSiteOlneySF\AR017_StringingSiteOlneySF_20260216_03.aprx 2/16/2026

Removal of stringing site in Olney State Forest to minimise impacts to threatened amphibian species

Hunter Transmission Project
Amendment Report
Figure 3.9

EMM
creating opportunities

Changes to construction plant and equipment types and locations of use

EIS description

Section 4.4.2 of the EIS outlined the anticipated plant and equipment that would be required to construct the project, including:

- dozers
- scrapers
- excavators (various sizes)
- spider excavators
- hydraulic hammers
- graders
- dump trucks
- elevated work platforms
- cranes (various sizes)
- compactors
- rollers
- water carts
- chainsaws
- tub grinders/mulchers
- drum mulchers
- pavement laying machines
- stringing blocks and winches
- asphalt truck and sprayers
- concrete trucks
- smooth drum rollers
- generators
- power tools
- delivery trucks
- mobile concrete batching plant
- helicopters/stringing drones
- dewatering equipment.

Amendment description

Further development of the project construction methodology and detailed construction planning has identified the need for additional construction plant and equipment not included in the EIS. As such, it is proposed to amend the construction methodology as part of the amended project to include an updated list of plant and equipment required during construction of the project to also include the following:

- diesel generators, located at the construction support sites and laydown areas. It is anticipated that diesel generators would only be required at the construction support sites temporarily until permanent power supply is established. Diesel generators would be used intermittently at laydown areas, depending on the construction support activities being undertaken across the duration of construction
- crushing and screening plant, located at the construction support sites and at laydown areas within the State forests to generate suitable materials for road construction and tower pads from localised site won material
- washdown facilities located at construction support sites and laydown areas.

These additional items of construction plant and equipment have been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

3.3 Proposed refinements

This section provides a description of the proposed refinements to the exhibited project. An assessment of the potential impacts associated with these refinements, and any changes to the environmental impact assessment described in the EIS, is provided in *Chapter 5 (Assessment of impacts)*.

3.3.1 Minor changes at Bayswater substation

EIS description

Section 4.2.3 of the EIS includes a general overview of the proposed upgrades to the Bayswater substation as part of the project, including:

- works within the substation to trench and connect communications infrastructure to Bayswater South switching station via underground fibre cable
- modifications and upgrades to protection, control, automation and communication equipment.

Section 4.2.3 of the EIS also includes a general overview of the proposed construction of Bayswater South switching station. Bayswater South switching station would be around 400 metres southwest of the existing substation at Bayswater Power Station on land owned by AGL. Space would be provided at Bayswater South switching station to allow for additional switching station infrastructure, such as additional line shunt reactors and switching station bays, and connections for additional transmission lines in the future.

Amendment description

Based on continued development of the project design, it has been identified that the project is required to include an underground fibre optic communication connection between the Bayswater substation and the Bayswater South switching station. As part of the amended project, this underground fibre optic connection would be located in a trench within the exhibited HTP corridor. The trench would require excavation of about 200 metres in length and would be around 0.6 metres wide and up to one metre deep.

Changes would also include an extension of the hardstand to allow for future fitout of two additional switching bays required for the connection with the New England REZ project. This would occur within the exhibited footprint of the Bayswater South switching station.

These changes have been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

3.3.2 Changes to the disturbance area within Olney State Forest

EIS description

Section 7.3 of the EIS included a summary of the use of disturbance areas in the assessment of the potential impacts of the project. As described in *section 7.3* of the EIS, the assessment of biodiversity impacts includes a disturbance area within the project impact area to provide a more accurate estimation of the likely magnitude of vegetation clearance required, and any associated biodiversity impacts. This assessment is in accordance with the requirements of the Biodiversity Assessment Method (BAM) 2020 (DPIE 2020b).

The disturbance area takes a more precise approach than the project impact area and represents areas of direct impacts such as full clearing at transmission towers and partial clearing within the transmission line easement. This approach was adopted to avoid a substantial overestimation of the likely biodiversity impacts and the associated quantity of biodiversity offsets required.

Amendment description

In response to consultation carried out with species experts and regulators for the biodiversity assessment of the project, refinements to the project to reduce to the extent of vegetation clearing have been made within the exhibited HTP corridor in the Olney State Forest to the north of the proposed Olney switching station. These changes have been made in consultation with species experts and regulators to minimise impacts to threatened species and their habitat, particularly a number of amphibians species within the Olney State Forest, including the Littlejohn's Tree Frog (*Litoria littlejohni*). These refinements within Olney State Forest have included adjustments to the disturbance area used to assess the potential impacts to biodiversity in accordance with the BAM.

While changes have been made to the disturbance area at this location, the HTP corridor would remain the same within the Olney State Forest as the exhibited project, and the same approach to vegetation management in the disturbance area as the EIS would apply.

The assessment of potential impacts to biodiversity from the amended project are summarised in *section 5.2* of this Amendment Report, and a revised biodiversity development assessment report (BDAR) has been prepared, which is provided in *Appendix E (Revised biodiversity development assessment report)* of this Amendment Report.

3.4 Proposed clarifications

3.4.1 Assessment of impacts from use of Pokolbin Mountains Road

EIS description

The assessment of the potential impacts of construction and operation of the project were based on applying a project impact area. The project impact area is the area that has been assumed for the purpose of the EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.

The project impact area was shown on the project overview, provided as Figure 1-1 of the EIS.

Clarification

It has been identified following the receipt of feedback during the EIS exhibition from community members and special interest groups that a number of technical reports assessed did not assess the upgrade of Pokolbin Mountains Road due to an error in spatial data. The assessments identified with this error in the project impact area included:

- *Technical Report 8 – Noise and vibration impact assessment*
- *Technical Report 10 – Surface water impact assessment*
- *Technical Report 18 – Air quality and greenhouse gas impact assessment.*

Where this has been identified, the revised technical reports and environmental assessments that have been prepared to support this assessment have been updated to reflect the amended project impact area, which includes the full project extent along Pokolbin Mountains Road.

3.4.2 Assessment of potential contamination impacts at Eraring Power Station

EIS description

The EIS included the preparation of a contamination assessment, that was provided as *Technical Report 13 – Contamination preliminary site investigation* and summarised in *Chapter 20 (Soils and contamination)* of the EIS.

The Eraring Power Station was identified as an area of high contamination concern in the EIS, with the reasons for concern associated with spills from maintenance activities on-site and / or potential leaks associated with fuel/transformer oil storage.

The potential contaminants of concern at the Eraring Power Station were identified as polychlorinated biphenyls (PCBs), benzene, toluene, ethylbenzene, xylene, and naphthalene (collectively referred to as BTEXN), total recoverable hydrocarbons (TRH) and per- and polyfluoroalkyl substances (PFAS).

Potential sensitive receivers were listed as being:

- construction/maintenance workers
- aquatic ecosystems
- terrestrial ecosystems near the substation
- off-site agricultural users on adjacent farming land.

Clarification

Engagement with Origin Energy through regular interface meeting with EnergyCo identified the need to adjust the contamination assessment provided as part of the EIS to better reflect the contaminants of concern at the Eraring Power Station.

The potential contaminants of concern have been updated to include heavy metals as a potential contaminant of concern, which has been included in *section 5.14* of this Amendment Report. The inclusion of heavy metals as a potential contaminant of concern for the Eraring Power Station would not materially affect the assessment outcomes (i.e. no increase in risks to identified sensitive receivers) or the proposed mitigation measures relating to the avoidance, minimisation or management of contamination impacts within Eraring Power Station.

3.4.3 Description of intersection upgrades in the EIS

EIS description

Table 4.10 of *Chapter 4 (Project description)* of the EIS provided a list of the intersections that would potentially require upgrading for construction of the project. This list of intersections was informed by *Technical Report 4 – Traffic and transport impact assessment*, which was appended to the EIS.

Clarification

During preparation of this Amendment Report, it was identified that two intersections requiring upgrading were erroneously omitted from Table 4.10 of *Chapter 4 (Project description)* of the EIS; however, were included in the assessment of traffic and transport impacts provided in *Technical Report 4 – Traffic and transport impact assessment*. These intersections are described in *Table 3.5* below, and have been included in the updated project description, provided in *Appendix A (Updated project description)* of this Amendment Report.

Table 3.5 Intersections erroneously omitted from Table 4.10 of *Chapter 4 (Project description)* of the EIS

Local government area	Intersections	Road classification	Location	Treatments required
Singleton	Broke Road / existing access track (intersection ID I-36)	Regional/ Local	Mount Thorley	• Localised intersection widening required on the existing access road • Upgrade to an auxiliary left turn and basic right turn intersection to comply with turn treatment warrants • In addition, this intersection does not comply with safe intersection sight distance (SISD) requirements. Reduced temporary speed limit required along Broke Road on approach to its intersection with the existing access track
	Broke Road / existing access track (intersection ID I-38)	Regional/ Local	Mount Thorley	• Localised intersection widening required on the existing access track • Upgrade to an auxiliary left turn and basic right turn intersection to comply with turn treatment warrants • In addition, this intersection does not comply with safe intersection sight distance (SISD) requirements. Reduced temporary speed limit required along Broke Road on approach to its intersection with the existing access track

4

Statutory context

4 Statutory context

This chapter provides an overview of the statutory context for the project and provides a summary of the statutory requirement changes that would occur as a result of the proposed amendments and refinements.

4.1 NSW legislation

The project was declared as critical State significant infrastructure (CSSI) under Section 5.13 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) in July 2022 by the NSW Minister for Planning and Public Spaces. The project is listed in Schedule 5, Section 30 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and is subject to assessment and approval by the NSW Minister for Planning and Public Spaces in accordance with Part 5, Division 5.2 of the EP&A Act.

An environmental impact statement (EIS) was prepared to support EnergyCo's application for approval of the project in accordance with Part 5, Division 5.2 of the EP&A Act, and with regard to the *State Significant Infrastructure Guidelines – preparing an environmental impact statement* (Department of Planning, Industry and Environment (DPIE) 2022b). It addressed the Secretary's environmental assessment requirements (SEARs) for the project issued on 12 August 2024.

As described in *section 1.2.2*, the EIS was placed on public exhibition for a period of 28 days between 27 August to 24 September 2025. During the exhibition period, interested stakeholders and members of the community were able to review the EIS online, participate in consultation and engagement activities, and make a written submission to DPHI for consideration in its assessment of the project.

In accordance with Clause 179(2) of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), an application may, with the approval of the Planning Secretary, be amended at any time before the application is determined. This Amendment Report outlines the proposed amendments and refinements to the project (the amended project) and assesses the associated environmental impacts. It has been prepared having regard to the NSW *State Significant Infrastructure Guidelines – preparing an amendment report* (DPIE 2022a).

4.2 Commonwealth legislation

A referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was also submitted (EPBC 2024/09874) to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 30 April 2024. Following additional engagement with Australian DCCEEW, a request to vary the proposal to take an action for the project was subsequently issued to DCCEEW on 31 October 2024 under section 156 of the EPBC Act including changes to the HTP corridor alignment, refinements to the proposed works for upgrades to existing transmission lines and towers, and a revised description of project construction activities and facilities.

Australian DCCEEW subsequently determined the project to be a controlled action on 5 February 2025 and that it would be assessed in accordance with the NSW Bilateral Agreement under Part 9 of the EPBC Act. DPHI issued Supplementary SEARs on 14 March 2025 to include the Minister's requirements under the NSW Assessment Bilateral Agreement.

As such, the project also requires approval from the Australian Minister for the Environment and Water under the EPBC Act. This Amendment Report would be provided to the Australian DCCEEW as part of the package of information to allow them to make their determination regarding the project.

An overview of the NSW and Commonwealth planning approvals process and current status of the project application within this process is shown in *Figure 4-1*. Further information about the approval framework for the project is provided in *Chapter 5 (Statutory context)* of the EIS.

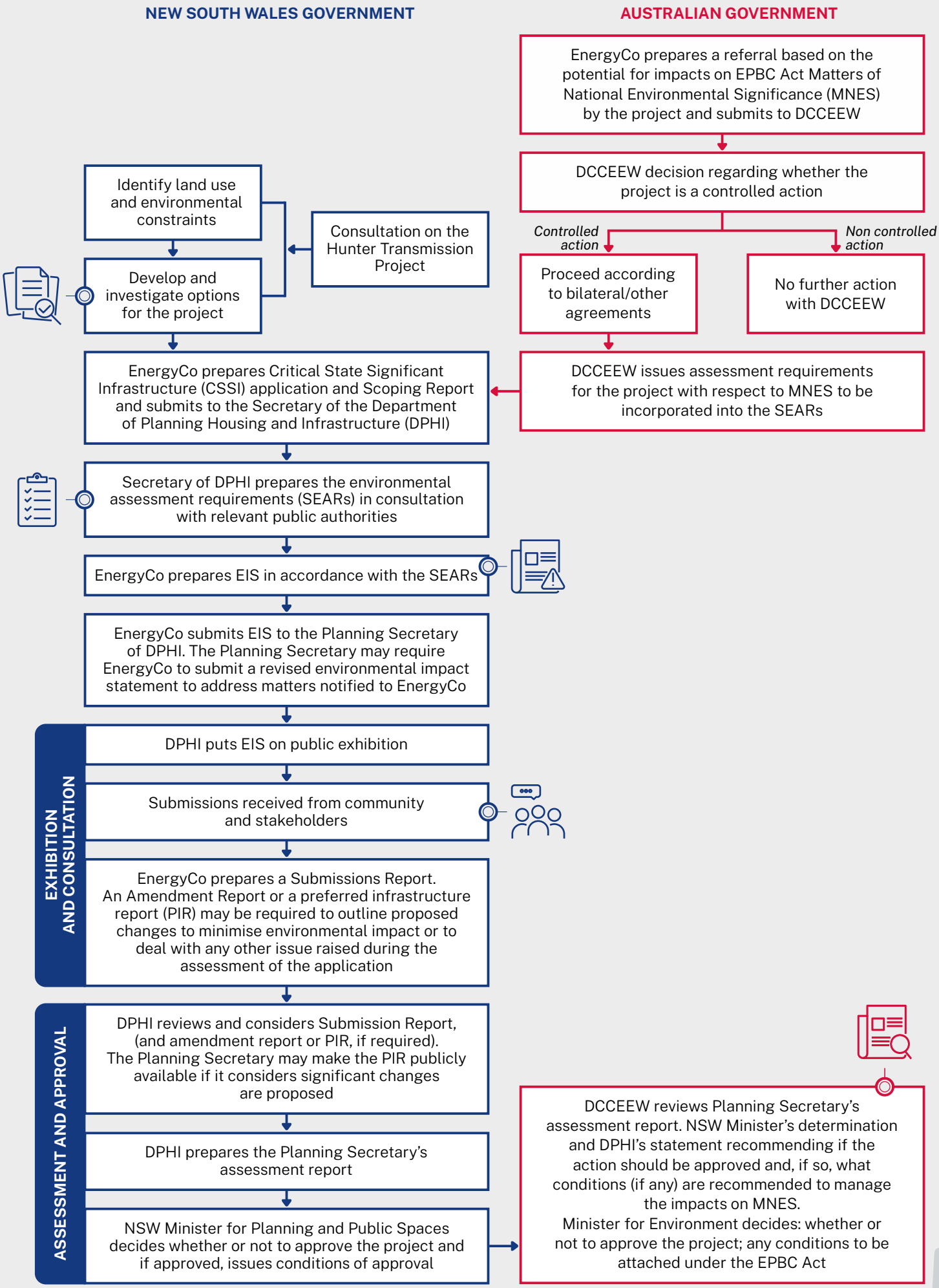


Figure 4.1 Assessment and approval process for the project

4.3 Statutory compliance of the amended project

EnergyCo is proposing amendments and refinements to the exhibited project, as detailed in *Chapter 3 (Description of amendments and refinements)* of this Amendment Report. This Amendment Report has been prepared in accordance with Section 179(3) of the EP&A Regulation.

The proposed amendments and refinements do not change the permissibility of the project or its declaration as CSSI. The assessment and approval requirements under the EP&A Act are described in *Chapter 5 (Statutory context)* of the EIS.

A summary of the key changes to statutory requirements for the amended project, taking into account the proposed amendments and refinements, is provided in *Table 4.1*. The detailed updated statutory requirements for the amended project are provided in *Appendix C (Updated statutory requirements compliance)*.

Table 4.1 Summary of key changes to statutory requirements

Legislation	Exhibited project	Amended project
Protection of the Environment Operations Act 1997 **(POEO Act)**	Possibly an environment protection licence (EPL) under Chapter 3 of the POEO Act for helicopter movements during construction.	The project is likely to exceed the criteria listed under Clause 20 of Schedule 1 of the POEO Act (helicopter-related activity), being more than 30 flight movements per week (where take-off and landing are separate flight movements) and that these movements are conducted within one kilometre of a dwelling not associated with the landing, taking-off or parking of helicopters. Based on this, the helicopter movements as part of the construction of the project would constitute a scheduled activity and would require an EPL. Additionally, with the inclusion of crushing and screening plant as part of the plant and equipment required for the amended project (refer to *section 3.2.4*), the project is likely to exceed the criteria listed under Clause 16 of Schedule 1 of the POEO Act (Crushing, grinding or separating), as the project is anticipated to process more than 30,000 tonnes of materials per year. The final quantities for crushing and screening would be subject to detailed design, however it is anticipated that crushing and screening works would constitute a scheduled activity and require an EPL.

5 Assessment of impacts

This chapter provides a summary of the additional assessments undertaken to assess the amended project. These additional assessments have been carried out to identify and assess the potential construction, operational and cumulative impacts associated with the amended project, focusing on potential changes to the expected impacts identified in the EIS as a result of the amendments and refinements to the project discussed in *Chapter 3 (Description of amendments and refinements)* of this Amendment Report. Where required, additional or revised environmental management measures have been proposed.

5.1 Assessment approach

The assessment of potential environmental impacts of the amended project has considered potential impacts and changes as a result of:

- amendments and refinements to the project, as described in *Chapter 3 (Description of amendments and refinements)* and *Appendix A (Updated project description)* of this Amendment Report
- feedback received during exhibition of the EIS, including through formal submission provided to DPHI

A description of how this has been incorporated into the assessment approach for this Amendment Report is provided in *section 5.1.1* and *section 5.1.2*.

5.1.1 Assessment of the potential impacts of the amended project

The EIS provides an assessment of the potential impacts of the exhibited project in accordance with the SEARs. A screening assessment has been carried out to determine whether the amended project would result in changes to the potential impacts assessed in the exhibited project.

Table 5.1 identifies whether additional environmental assessment of the proposed amendments to the project would be required or if the assessment in the exhibited project remains applicable. Any new or updated mitigation measures resulting from further assessment carried out are included in *section 5.2* to *section 5.20*. For assessment matters where the exhibited project remains applicable, no further assessment has been carried out in this Amendment Report and potential impacts would be managed in accordance with the relevant mitigation measures included in *Appendix D (Updated mitigation measures)* of this Amendment Report.

Table 5.1 Screening assessment for proposed amendments

Assessment matter	Comparison of amended project with exhibited project				Further assessment of the amended project required
	Changes to 500 kV transmission line infrastructure	Changes to substation infrastructure at Eraring	Changes to intersections, access roads and access tracks	Changes to construction methods and facilities	
Biodiversity	✓	-	✓	✓	Yes – refer to *section 5.2* and *Appendix E (Revised biodiversity development assessment report)*
Aboriginal heritage	✓	✓	✓	✓	Yes – refer to *section 5.3* and *Appendix F (Aboriginal cultural heritage assessment addendum)*
Landscape and visual	✓	-	-	✓	Yes – refer to *section 5.4* and *Appendix G (Landscape character and visual impact assessment addendum)*
Traffic and transport	-	-	✓	✓	Yes – refer to *section 5.5* and *Appendix H (Revised traffic and transport impact assessment)*
Land use and property	✓	✓	✓	✓	Yes – refer to *section 5.6*
Agriculture	✓	-	✓	-	Yes – refer to *section 5.7*
Social	✓	✓	✓	✓	Yes – refer to *section 5.8* and *Appendix I (Social impact assessment addendum)*
Historic heritage	✓	-	✓	✓	Yes – refer to *section 5.9* and *Appendix J (Historic heritage impact statement addendum)*
Noise and vibration	✓	✓	✓	✓	Yes – refer to *section 5.10* and *Appendix K (Noise and vibration impact assessment addendum)*
Surface water	✓	-	✓	✓	Yes – refer to *section 5.11*
Groundwater	✓	-	-	-	Yes – refer to *section 5.12*
Flooding	✓	✓	✓	✓	Yes – refer to *section 5.13* and *Appendix L (Flooding impact assessment addendum)*

Assessment matter	Comparison of amended project with exhibited project				Further assessment of the amended project required
	Changes to 500 kV transmission line infrastructure	Changes to substation infrastructure at Eraring	Changes to intersections, access roads and access tracks	Changes to construction methods and facilities	
Soils and contamination	✓	✓	✓	✓	Yes – refer to *section 5.14*
Bushfire	✓	-	✓	✓	Yes – refer to section 5.15 and *Appendix M (Bushfire risk assessment addendum)*
Dangerous goods	-	-	-	-	No
Electric and magnetic fields (EMF)	-	-	-	-	No
Telecommunications	-	-	-	-	No
Aviation	✓	-	-	-	Yes – refer to *section 5.16*
Air quality	✓	✓	✓	✓	Yes – refer to *section 5.17*
Greenhouse gas	-	-	-	✓	Yes – refer to *section 5.18*
Waste	-	-	-	-	No
Economics	✓	-	-	-	Yes – refer to *section 5.19*
Cumulative impacts	✓	✓	✓	✓	Yes – refer to *section 5.20*

5.1.2 Additional environmental assessment in response to feedback received since exhibition of the EIS

As is outlined in *section 1.3.1*, a number of adjustments to the assessment methodologies, impact assessments and changes to mitigation measures have been undertaken as part of the Amendment Report in response to additional engagement and submissions received from the community, organisations, special interest groups and government agencies (including local councils).

A summary of the updates to environmental assessments for the amended project in response to the feedback received during and since exhibition of the EIS is provided in *Table 5.2* below.

Table 5.2 Summary of updates to environmental assessments in response to feedback received during and since exhibition of the EIS

Environmental assessment component	Description of updates / changes made in response to feedback received	Where included in the Amendment Report
Biodiversity	Updates in response to feedback received from CPHR, University of Newcastle and Commonwealth DCCEEW, including review and agreement on: • survey effort and methods • candidate species • land categorisation • partial impact assumptions • species polygons • risks of serious and irreversible impacts.	*Section 5.2* and *Appendix E (Revised biodiversity development assessment report)*
Aboriginal heritage	Feedback received on the exhibited ACHA during exhibition of the EIS has resulted in: • changes to how the archaeological assemblage of the project impact area has been determined • a more detailed assessment of potential indirect impacts to Aboriginal heritage	*Section 5.3* and *Appendix F (Aboriginal cultural heritage assessment addendum)*
Traffic and transport	Adjustments to the traffic and transport assessment methodology and construction methodology of the project have been made in response to feedback received from Transport for NSW and other stakeholders including local councils, Pokolbin Mountain Road residents and Forestry Corporation of NSW during exhibition of the EIS relating to: • the data used as part of the development of the existing traffic conditions of the study area, relating to intersection counts and historic crash data • the AM peak hour used in the assessment of construction traffic impacts on the road network and at intersections has changed to consider the project construction traffic peak (referred to as the HTP peak hour), rather than road network peak at some locations • updates to the Safe Intersection Sight Distance (SISD) criteria used in the turn-treatment warrant assessments for the project • further analysis, including swept path assessment for OSOM movements • construction traffic management requirements for improved alignment with existing use of construction access routes.	*Section 5.5* and *Appendix H (Revised traffic and transport impact assessment)*

Environmental assessment component	Description of updates / changes made in response to feedback received	Where included in the Amendment Report
Historic heritage	Adjustments to the assessment methodology have been made in response to feedback received from Heritage NSW, NPWS and Foresty Corporation of NSW. This has included development of a predictive model and impact assessment of items of unlisted historic heritage significance as well as further assessment of the wishing well and Oakley Estate.	*Section 5.9* and *Appendix J (Historic heritage impact statement addendum)*
Surface water	Updates to the assessment of riparian corridors and waterways, particularly at construction support sites, in response to feedback received from DCCEEW – Water during exhibition of the EIS.	*Section 5.11*
Flooding	Updates to the assessment of potential flooding impacts at the Eraring Power Station using updated information from Origin Energy regarding the existing conditions of this section of the amended project impact area.	*Section 5.13* and *Appendix L (Flooding impact assessment addendum)*
Economics	Further qualitative assessment of the potential impacts of the project on the mining industry in NSW as a result of the loss of coal royalties was undertaken in response to feedback received during exhibition of the EIS from Glencore (as the operator of the Hunter Valley Operations mining complex)	*Section 5.19*

5.2 Biodiversity

Chapter 8 (Biodiversity) and *Technical Report 1 – Biodiversity development assessment report* of the EIS assessed the potential impacts from construction and operation of the exhibited project on biodiversity.

Additional assessment has been undertaken to identify whether the amended project would result in changes to the biodiversity impacts identified in the exhibited EIS and to respond to feedback received during exhibition of the EIS. A revised biodiversity development assessment report (revised BDAR) has been prepared to support this Amendment Report, and is provided in *Appendix F (Revised biodiversity development assessment report)* of this Amendment Report. This revised BDAR assesses the amended project as a whole and supersedes the exhibited BDAR. The findings of the revised BDAR are described in this section.

5.2.1 Assessment approach

EnergyCo and NSW Department of Climate Change, Energy, the Environment and Water – Conservation Programs, Heritage and Regulation Group (herein referred to as CPHR) adopted a partnered approach to the development of the revised BDAR for the amended project. This approach was carried out to maximise avoidance and minimisation of biodiversity impacts and to resolve complex technical issues identified in CPHR's review of the exhibited BDAR.

As part of this process, EnergyCo and CPHR participated in several workshops to review and agree:

- survey effort and methods
- candidate species
- land categorisation
- partial impact assumptions
- species polygons
- risks of serious and irreversible impacts.

This collaborative process has resulted in several minor changes to the assessment approach in the revised BDAR compared to the exhibited BDAR. The revised methodology is described in detail in *section 2* of the revised BDAR.

A high-level comparison of the revised assessment approach adopted in the revised BDAR compared to the exhibited BDAR is presented below.

Legislation, plans, policies and guidelines

The revised BDAR was prepared with consideration of the same legislation, policies, plans and guidelines as the exhibited BDAR as described in *section 8.1.1* of the EIS. In particular, the revised BDAR was prepared to comply with the requirements of the NSW *Biodiversity Conservation Act 2016* (BC Act), the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Biodiversity Assessment Method* (BAM) *2020* (DPIE, 2020) as well as other relevant legislation, plans, policies and guidelines.

Study area and approach to vegetation removal assessment

The revised BDAR adopted similar assessment areas to the exhibited BDAR, as summarised in *section 8.1.2 and section 8.1.5* of the EIS, with minor changes to accommodate the amended project impact area and amended disturbance area.

As such, the revised BDAR was prepared with the following key definitions in relation to study areas:

- the locality, being the area within 10 kilometres of the amended disturbance area, within which database searches and broader vegetation mapping were used to inform the desktop assessment
- the BAM site context assessment area, which includes all areas of land within 500 metres of the centreline of the transmission line (as amended), extending up to 1500 metres from the edge of the switching stations, construction support sites, laydown areas and access roads/tracks as per the amended project impact area
- the amended project impact area, which comprises the area that has been assumed for the purpose of the Amendment Report to be directly affected by the construction and operation of the amended project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation
- the amended biodiversity study area, which includes a minimum 140 metre wide transmission line corridor that was surveyed in accordance with Stage 1 of the BAM. This area generally aligns with (or is within) the amended project impact area, but excludes existing access tracks and roads where no upgrades or disturbance would be required
- the amended disturbance area (identified as the subject land in the revised BDAR), which is a subset of the amended project impact area, includes all areas that would be directly impacted by the construction of the amended project. The amended disturbance area incorporates different project elements with varying degrees of physical disturbance to reflect construction and operational requirements, which are reflected in four sub-categories that are consistent with the exhibited BDAR (refer to Table 5.3).

Table 5.3 Vegetation disturbance area categories

Disturbance area category	Definition
Disturbance area A	The area where vegetation would be completely removed. It includes areas at and around transmission towers (including tower pads and batters), stringing sites, laydown areas, switching stations, substation upgrades, construction support sites, new and upgraded access tracks and road upgrades. Impacts within this area would include sub-surface disturbance from construction activities such as grading, excavation, and full tree removal. With the exception of areas that only require temporary disturbance (i.e. temporary access tracks and stringing sites), this area would also be subject to ongoing maintenance during operation (including vegetation removal to ground level) for operational and safety requirements, including bushfire risk management.

Disturbance area category	Definition
Disturbance area A (centreline)	A 20 m wide centreline area between transmission towers where all vegetation would be removed to ground level during construction. This area would also be subject to ongoing maintenance during operation (i.e. removal to maintain vegetation clearance requirements) for operational and safety requirements, including bushfire risk management. This is a subset of Disturbance area A.
Disturbance area B	The area within the transmission line easement, excluding disturbance area A and disturbance area A (centreline), where partial clearing would be undertaken. Removal of vegetation (including trees) would be undertaken only where it has the potential to exceed vegetation clearance heights. These heights are set for operational and safety requirements, including bushfire risk management (a minimum of 13.5 m below the conductors at maximum operating temperature). Vegetation with mature growth heights up to 2 m can remain, while vegetation exceeding 2 m will be managed to maintain these clearance heights. This area would be subject to ongoing maintenance during operation.
Disturbance area hazard tree zone (HZ)	Hazard trees are those that have the potential to pose a risk to safe operation of the transmission line by falling onto the transmission towers, conductors and associated infrastructure within the easement. A hazard tree zone has been identified in limited areas on either side of the transmission line easement through LiDAR analysis of tree heights and topography. Hazard tree management would occur during operation to maintain safe operating clearances for the conductors and tower structures. The hazard tree zone will be inspected for trees in the height range of 20 m or more, which is typically in the high-risk category. High-risk category trees will be assessed for structural instability and managed according to the risk present, including tree removal if required.

No clearing zones have also been defined and refers to the areas within the transmission line easement where vegetation removal is not required (also shown on the maps as 'no disturbance'). These areas would occur where there is sufficient separation of 10 metres or more between the maximum operating temperature conductor position and the existing vegetation. These areas are excluded from the subject land/amended disturbance area as no impacts occur within it but it has been defined to clarify what areas will not be affected.

Desktop assessment

The revised BDAR was prepared in consideration of generally the same information sources as the exhibited BDAR as summarised in *section 8.1.3* of the EIS, with some updated desktop searches carried out as well as some additional information provided by CPHR for specific biodiversity aspects.

Warkworth Sands Woodland (a listed threatened ecological community (TEC) under the BC Act and EPBC Act) and its associated plant community type (PCT) 3636 was previously mapped to conservatively align with the mapping of PCT 3636 as per the NSW State Vegetation Type Map

(SVTM) release C2.0M2.1 mapping. Based on this mapping, Warkworth Sands Woodland would have been impacted by the disturbance area for the project.

Since the exhibited BDAR was prepared, CPHR provided additional information on the known distribution and area of occupancy of the Warkworth Sands Woodland vegetation community, which is outside the amended biodiversity study area. This meant that the mapping of Warkworth Sands Woodland and PCT 3636 in the assessment was revised so that the project no longer impacts this vegetation community, which is reflected in the revised BDAR (refer to *section 4.3 and Figure 4.3* in the revised BDAR).

Field surveys

The revised BDAR was informed by the field surveys carried out for the exhibited BDAR (as described in *section 8.1.4* of the EIS) as well as additional surveys that were carried out in the amended disturbance area to identify native vegetation, (PCTs, TECs and threatened flora and fauna species. These additional surveys were carried out in response to new areas identified in the amended disturbance area compared to the exhibited disturbance area, to reduce areas of assumed presence compared to the exhibited BDAR or as recommended in feedback from CPHR on survey effort and methods.

The additional surveys that informed the revised BDAR were carried out between EIS public exhibition in August 2025 and January 2026. The additional surveys included (refer to *sections 2.3 to 2.5* of the revised BDAR):

- vegetation mapping and additional BAM plot surveys
- opportunistic and targeted threatened flora surveys
- fauna habitat assessment and targeted surveys for threatened fauna within potentially suitable areas that were previously unsurveyed or partially surveyed. This included carrying out:
  - bird surveys
  - Koala spot assessment technique (SAT) surveys
  - Amphibian habitat assessments
  - mammal and avian call-playback
  - spotlighting
  - deployment of fauna cameras and ultrasonic microbat detectors
  - microbat harp trapping.

The survey coverage of the amended disturbance area, which was based on the targeted threatened flora survey effort coverage of native vegetation, is 81.09 per cent. Of the remaining land within the amended disturbance area, 9.83 per cent of the area was not surveyed due to accessibility issues (eg clifflines or inaccessible terrain), 3.88 per cent of the area had no access available (eg lack of permission to access) and 5.20 per cent of the area was excluded as no impact would occur.

As per the exhibited BDAR, for areas with limited access where candidate species could not be surveyed within the required seasonal window, the candidate species have been conservatively assumed present. For areas with no access, the *Remote assessment of biodiversity values: BAM guide* (Remote Assessment Guide) (DCCEEW, 2025) was applied to support the assumed presence or exclusion of candidate threatened species.

Biodiversity credit calculations

The revised BDAR was prepared with generally the same biodiversity credit calculation methodology as the exhibited BDAR (as summarised in *section 8.1.6* of the EIS). This involved use of the Biodiversity Assessment Method Calculator (BAM-C) to calculate the credit liability for ecosystem credit species and species credit species to be impacted. The calculation addressed partial impacts by adjusting the future vegetation integrity score for each disturbance area and associated vegetation zone based on how much of the species composition, structure and function is expected to be retained during construction and operation.

However, the revised BDAR no longer proposes the additional species offsets (as outlined in sections *8.2.3, 8.2.4* and *8.3.4* of the exhibited BDAR) to account for indirect impacts as a result of fauna strike and prescribed impacts as a result of impacts to habitat connectivity. This is due to CPHR's feedback recommending additional mitigation measures for affected species rather than additional species credits.

5.2.2 Avoidance and minimisation of impacts

The revised BDAR expanded the information on the avoidance and minimisation process carried out for the project compared to the exhibited BDAR and described additional measures that were adopted in the amended project to further avoid and minimise biodiversity impacts (refer to *section 7* of the Revised BDAR).

Notably, in response to submissions from CPHR and the community on the EIS, refinements to the disturbance area were made between the Olney switching station and Corrabare State Forest to further avoid and minimise impact to the important breeding habitats for threatened frog species, including Littlejohn's Treefrog (*Litoria littlejohni*) and Stuttering Frog (*Mixophyes balbus*). The design and construction methodology refinements included (refer to *section 3.3.2* of this Amendment Report):

- reducing the disturbance area of stringing areas near waterways where threatened frogs were detected
- reducing and avoiding direct impacts on University of Newcastle's artificial ponds for Littlejohn's Treefrog
- introducing and relocating towers to create additional no-clearing zones
- increasing buffers to waterways
- implementing hand clearing within easement areas associated with waterway crossings.

The proposed realignment of the transmission line at Gouldsville as part of the amended project has also been developed to further minimise impacts to TECs, particularly the Central Hunter Grey Box - Ironbark Woodland TEC listed as endangered under the BC Act.

5.2.3 Existing environment

Landscape features

The revised BDAR generally considered the same landscape features as the exhibited EIS as summarised in *section 8.3.1* of the EIS. Notably, the amended project is within the same three Interim Biogeographic Regionalisation for Australia (IBRA) subregions: Wyong, Yengo and Hunter subregions.

Native vegetation

Native vegetation covers around 77 per cent (1,105.06 hectares) of the amended disturbance area (1,428.66 hectares). The remaining areas are generally previously disturbed by historical and ongoing mining, agricultural, energy transmission and defence activities and have been mapped as Category 1 – Exempt land under the NSW *Local Land Services Act 2013* (LLS Act), excluded land, or non-native vegetation. These areas are excluded from further assessment under the BAM.

Most of the amended disturbance area occurs in the Hunter IBRA subregion (50 per cent), with the remainder split between the Yengo (23 per cent) and Wyong (27 per cent) IBRA subregions. Native vegetation within the amended disturbance area has been assigned to seven vegetation formations and 12 vegetation classes occur across these three IBRA subregions, including:

- Dry sclerophyll forests (shrub/grass sub-formation)
- Dry sclerophyll forests (shrubby sub-formation)
- Forested wetlands
- Grassy Woodlands
- Rainforests
- Wet sclerophyll forests (grassy sub-formation)
- Wet sclerophyll forests (shrubby sub-formation).

Native vegetation within the amended disturbance area aligns with 38 PCTs which occur in varying condition states (refer to *Table 5.4*).

Around 44 per cent of the native vegetation that occurs within the amended disturbance area is in varying degrees of disturbed condition state, including derived grasslands (200.80 hectares) and thinned/poor/plantation woodlands (186.60 hectares) associated with previous clearing and mine rehabilitation and hardwood forestry plantations (31.61 hectares).

Figure 14.9 of the revised BDAR identifies the distribution of native vegetation within the amended disturbance area based on PCT association, as well as the locations of disturbed land and non-native vegetation.

Table 5.4 Native vegetation condition PCTs identified within the amended disturbance area

IBRA subregion	Condition state	PCT	Area (hectares)
Hunter	Mod-good	3086, 3241, 3244, 3438, 3444, 3605, 4039, 4072	64.53
	Poor/thinned	3314, 3315, 3431, 4015, 4089	171.42
	Derived/disturbed grassland[1]	3314, 3315, 3431, 3444, 4015, 4089	167.64
	Plantation	3431	15.18
Total – Hunter subregion			**418.77**
Yengo	Mod-good	3086, 3087, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3328, 3438, 3444, 3446, 3489, 3599, 3605, 3617, 4039, 4072	237.07
	Poor/thinned	-	-
	Derived/disturbed grassland[1]	3444	0.32
	Plantation	3239	2.83
Total – Yengo subregion			**240.22**
Wyong	Mod-good	3029, 3150, 3230, 3239, 3242, 3244, 3250, 3263, 3433, 3436, 3581, 3582, 3583, 3617, 3621, 4042, 4044	239.81
	Poor/thinned	-	-
	Derived/disturbed grassland	3150, 3230, 3250, 3263, 3433, 3582, 3583, 4042, 4044	32.84
	Plantation	3150, 3230	13.6
Total – Wyong subregion			**286.25**
Total native vegetation			**945.24**

1: Derived/disturbed grassland PCTs have mature growth heights of less than 2 metres. The area of derived/disturbed grassland PCTs identified is limited to Disturbance area A (full clearing). Additional derived/disturbed grassland PCTs occurs within Disturbance area B (no clearing <2 metres) and has not been included in this table as these PCTs would not be impacted.

Threatened ecological communities

Based on PCT association, around 228.23 hectares of native vegetation within the amended disturbance area aligns with seven TECs listed under the BC Act (all endangered) and 166.55 hectares of native vegetation aligns with three EPBC Act listed TECs (two are critically endangered and one is endangered). These TECs and their associated PCT, condition state and extent within the amended disturbance area is identified in *Table 5.5* (BC Act) and *Table 5.6* (EPBC Act).

While the classification of TECs under the BC Act and EPBC Act broadly overlaps, it varies according to PCT and condition state. *Section 4.4* of the revised BDAR describes the native vegetation broad condition states.

Table 5.5 BC Act listed TECs in the amended disturbance area

TEC	BC Act status	Associated PCT and condition state	Area (ha)
Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	E	3314_Thinned (50.02 ha) 3314_Poor (21.18 ha) 3431_Thinned (71.14 ha) 3431_Poor (8.40 ha) 3431_Plantation (15.18 ha)	165.92
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	E	3315_Thinned (9.56 ha)	9.56
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	E	4089_Poor (4.31 ha)	4.31
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	E	3446_Mod-good (1.13 ha)	1.13
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	E	3444_Mod-good (42.32 ha) 3444_Derived (2.36 ha)	44.68
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	3328_Mod-good (1.08 ha) 4039_Mod-good (1.16 ha)	2.24
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	4044_Mod-good (0.12 ha) 4044_Derived (0.27 ha)	0.39
		Total	**228.23**

Table 5.6 EPBC Act listed TECs in the amended disturbance area

TEC	EPBC Act status	Associated PCT and condition state	Area (ha)
Central Hunter Valley eucalypt forest and woodland	CE	3314_Thinned (50.02 ha) 3315_Thinned (9.56 ha) 3431_Thinned (71.14ha) 3431_Poor (8.40 ha) 3431_Plantation (15.18 ha) 3438_Mod-good (8.76 ha) 3446 Mod-good (1.13 ha)	164.19
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	4044_Mod-good (0.12 ha)	0.12
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	CE	3328_Mod-good (1.08 ha) 4039_Mod-good (1.16 ha)	2.24
		Total	**166.55**

Threatened flora

Seventy-eight candidate threatened flora species were identified as potentially occurring within the amended disturbance area and were assessed for habitat suitability. Of these, 27 species were excluded from further assessment due to habitat absence, degradation or constraints. The remaining 51 candidate threatened flora species were the subject of targeted surveys and further assessment.

Threatened fauna

Sixty candidate threatened fauna species were identified as potentially occurring within the amended disturbance area and assessed for habitat suitability. Of these, 19 species were excluded from further assessment due to habitat absence, degradation or constraints. The remaining 41 candidate threatened fauna species were the subject of targeted surveys.

Aquatic ecology

The amended project impact area is located within the Hunter-Central Rivers catchment and Hunter River sub-catchment and crosses 25 named watercourses as well as many unnamed watercourses.

Desktop assessments presented in *Appendix L (Aquatic biodiversity impact assessment)* of the revised BDAR identified that 19 named watercourses and 55 unnamed watercourses were mapped as key fish habitat (KFH). 14 of the named watercourses are perennial (Strahler stream order of four and higher) and would be crossed by the proposed transmission line and/or access tracks (new and upgraded), including:

- transmission line crossings: Hunter River, Wollombi Brook, Loder Creek, Monkey Place Creek, Deep Creek, Cedar Creek, Congewai Creek, Sweetmans Creek and Watagan Creek

- new and upgraded access tracks: Monkey Place Creek, Black Creek, Felled Timber Creek, Jigadee Creek, Maidswater Creek, and Peach Tree Creek.

The amended project impact area contains mapped habitat for the Southern Purple Spotted Gudgeon (*Mogurnda adspersa*), listed as endangered under the *NSW Fisheries Management Act 1994* (FM Act). Field surveys confirmed the presence of the Southern Purple Spotted Gudgeon habitat where it intersects with Wollombi Brook, Congewai Creek, Monkey Place Creek and Black Creek.

There is also mapped habitat for the Darling River Hardyhead (*Craterocephalus amniculus*), listed as endangered under the FM Act, located upstream of the project impact area (Hunter River). This species was considered further on a precautionary basis as potential habitat for this species was identified during the field surveys.

Likelihood of occurrence assessments were completed in accordance with the FM Act which determined that the Southern Purple Spotted Gudgeon has a high likelihood of occurrence, while Darling River Hardyhead was assessed as having a moderate likelihood.

There are no FM Act listed ecological communities present in the amended biodiversity study area.

Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) are communities of plants, animals, and other organisms whose extent and life processes are dependent on groundwater.

The Groundwater Dependent Ecosystems Atlas (BoM 2024) indicates that several vegetation formations within the amended project impact area have a high or moderate potential to be terrestrial GDEs, including:

- high potential GDEs – forested wetlands
- moderate potential GDEs – include some Wet and Dry Sclerophyll Forests.

Figure 14.20 of the revised BDAR identifies the location of mapped GDEs.

5.2.4 Potential impacts - construction

Native vegetation

Construction of the amended project would result in potential direct impacts to around 945.24 hectares of native vegetation that aligns with 38 PCTs. Around 734.88 hectares would be completely cleared (disturbance Area A, including the centreline) and 210.36 hectares would be partially cleared (disturbance areas B and HZ) (refer to Table 5.7).

For derived grassland vegetation conditions, the impacts are limited to disturbance area A where there would be complete vegetation removal and potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. Where partial clearing occurs in disturbance area B, understory species would be retained and only vegetation with mature growth heights of more than two metres would be removed. This has resulted in the avoidance of impacts to around 76.32 hectares of derived grassland vegetation. The revised BDAR includes a detailed summary of the methodology used to determine the Vegetation Integrity (VI) score for partial impacts based on existing transmission line easements in the Hunter Valley and scientific literature.

A total of 32 scattered trees, some of which are hollow bearing, were recorded within the amended disturbance area and would be impacted by the amended project, including five trees in the Wyong IBRA subregion, nine trees in the Yengo IBRA subregion and 18 (some that were observed or were estimated to be hollow bearing) in the Hunter IBRA subregion.

Table 5.7 Summary of potential direct impacts on native vegetation

Plant community type	Disturbance area (hectares)			
	A	B	HZ	Total
3029 - Lower North Wet Gully Palm Rainforest	1.17	2.17	0.00	3.34
3086 - Lower North Hinterland Riparian Dry Rainforest	6.33	1.12	0.00	7.45
3087 - Lower North Ranges Riparian Turpentine Forest	1.33	1.49	0.00	2.82
3150 - Hunter Coast Ranges Turpentine Wet Forest	32.23	15.45	0.19	47.87
3151 - Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	0.87	0.98	0.00	1.85
3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest	0.25	0.67	0.00	0.92
3230 - Central Coast Escarpment Moist Forest	73.22	15.02	0.05	88.29
3237 - Hunter Range Blue Gum Gully Forest	2.89	3.03	0.00	5.92
3238 - Hunter Range Colluvial Apple-Gum Forest	0.01	0.04	0.00	0.05
3239 - Hunter Range Sheltered Grey Gum Forest	85.59	23.59	0.07	109.25
3241 - Lower North White Mahogany-Spotted Gum Moist Forest	18.90	1.01	0.21	20.12
3242 - Lower North Ranges Turpentine Moist Forest	20.87	18.16	0.15	39.18
3244 - Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	2.73	0.31	0.00	3.04
3250 - Northern Foothills Blackbutt Grassy Forest	5.92	0.00	0.00	5.92
3263 - Watagan Range Turpentine-Mahogany Grassy Forest	50.40	8.79	0.19	59.38
3314 - Central Hunter Slopes Grey Box Forest	110.05	17.55	0.00	127.60
3315 - Central Hunter Ironbark-Spotted Gum Forest	22.96	4.06	0.00	27.02
3328 - Lower Hunter Red Gum-Paperbark Riverflat Forest	0.91	0.17	0.00	1.08
3431 - Central Hunter Ironbark Grassy Woodland	129.47	44.94	0.00	174.41
3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	2.00	0.00	0.00	2.00
3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub	0.43	0.00	0.00	0.43
3438 - Hunter Escarpment Footslopes Ironbark Forest	4.70	4.04	0.02	8.76
3444 - Lower Hunter Spotted Gum-Ironbark Forest	26.01	18.67	0.00	44.68
3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest	0.45	0.68	0.00	1.13
3489 - Hunter Escarpment Grey Box Forest	4.04	0.70	0.00	4.74
3581 - Hunter Coast Foothills Apple Forest	0.67	0.00	0.00	0.67
3582 - Hunter Coast Lowland Apple-Bloodwood Forest	11.09	0.00	0.00	11.09

Plant community type	Disturbance area (hectares)			
	A	B	HZ	Total
3583 - Hunter Coast Lowland Scribbly Gum Forest	8.43	0.00	0.00	8.43
3599 - Blue Mountains Peppermint Shrub Forest	8.54	0.01	0.00	8.55
3605 - Hunter Range Ironbark Forest	48.79	13.46	0.14	62.39
3617 - Sydney Hinterland Peppermint-Apple Forest	31.16	4.88	0.13	36.17
3621 - Sydney Hinterland Turpentine-Apple Gully Forest	2.36	2.30	0.00	4.66
4015 - Central Hunter Swamp Oak Riparian Forest	8.10	2.49	0.00	10.59
4039 - Hunter Range Creekflat Apple-Red Gum Forest	0.85	0.31	0.00	1.16
4042 - Lower North Riverflat Eucalypt-Paperbark Forest	0.94	0.00	0.00	0.94
4044 - Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	0.39	0.00	0.00	0.39
4072 - Hunter River Oak Mesic Forest	0.37	0.00	0.00	0.37
4089 - Namoi-Upper Hunter River Red Gum Forest	9.46	3.12	0.00	12.58
Total	**734.88**	**209.21**	**1.15**	**945.24**

Threatened ecological communities

Construction of the amended project would result in direct impacts to seven TECs listed under the BC Act and three TECs listed under the EPBC Act based on the amended disturbance area as detailed in Table 5.8.

The overall direct impacts to TECs listed under the BC Act is around 228.23 hectares. The largest portion of direct impacts is to the Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions EEC, with impacts to around 165.92 hectares of thinned, poor or planted native vegetation. Across all TECs, direct impacts are primarily associated with disturbance area A, with around 138.72 hectares expected to be cleared to ground level.

Based on the condition of the associated PCTs, only a portion of the PCTs meet the criteria for listing under the BC Act and/or EPBC Act.

One is also a potential serious and irreversible impact (SAII) entity: Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions EEC.

Table 5.8 Summary of potential direct impacts on TECs

TEC	Conservation status[1]		SAII entity	Disturbance area (ha)			
	BC Act	EPBC Act		A	B	HZ	Total
Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	E	CE [2]	No	103.42	62.49	0.00	165.92
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	E	-	No	5.50	4.06	0.00	9.56
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	E	-	Yes	1.19	3.12	0.00	4.31
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	E	-	No	0.45	0.68	0.00	1.13
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	E	-	No	26.01	18.67	0.00	44.68
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	CE	No	1.76	0.48	0.00	2.24
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	E [2]	No	0.39	0.00	0.00	0.39
Total impact				**138.72**	**89.50**	**0.00**	**228.23**

1: 'CE' denotes critically endangered under the EPBC Act and 'E' denotes endangered under the BC Act and EPBC Act

2: Only part of the BC Act listed TEC is listed under the EPBC Act (164.19 hectares of Central Hunter Valley eucalypt forest and woodland and 0.12 hectares of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland)

Threatened flora

The amended project has the potential for residual direct impacts on 38 threatened flora species. Of these, 13 species were recorded during field surveys and 25 species were conservatively assumed present based on suitable habitat within the amended disturbance area where targeted surveys were not sufficient to exclude the species. The threatened flora species comprised:

- 24 species listed under the BC Act and EPBC Act (seven recorded during survey, 17 assumed present)
- 12 species listed under the BC Act only (five recorded during survey, seven assumed present)

- two species listed under the EPBC Act only (one recorded during survey, one assumed present).

Table 5.9 summarises the direct impacts on threatened flora species listed under the BC Act and EPBC Act, including whether they were recorded within the amended disturbance area or assumed present, along with their potential status as a SAII entity. Table 5.9 also identifies the species credit liability generated under the BAM-C for each flora species.

Table 5.9 Summary of potential direct impacts on threatened flora species

Scientific name/common name	Conservation status		Potential SAII	Impact (ha or individual)			Species credit liability
	BC Act[1]	EPBC Act[2]		Known	Assumed	Total	
Acacia bynoeana/ Bynoe's Wattle	E	V	–	0.00	5.79	5.79	174
Angophora inopina/ Charmhaven Apple	V	V	–	0.00	3.70	3.70	142
Asperula asthenes/ Trailing Woodruff	V	V	–	0.00	2.75	2.75	100
Brachyscome brownii	-	CE	-	12.85	0.00	12.85	TBD
Corybas dowlingii/ Red Helmet Orchid	E	–	–	0.00	37.01	37.01	1,379
Cryptostylis hunteriana / Leafless Tongue Orchid	V	V	-	0.00	7.13	7.13	117
Cymbidium canaliculatum – endangered population in the Hunter Catchment	EP	–	–	1 individual	4 individuals	5 individuals	10
Cynanchum elegans/ White-flowered Wax Plant	E	E	–	0.00	2.67	2.67	100
Dendrobium tetragonum var. melaleucaphilum / Spider Orchid	E	–	–	0.00	0.17	0.17	6
Diuris tricolor/ Pine Donkey Orchid	V	–	–	0.00	41.15	41.15	337
Epacris purpurascens var. purpurascens	V	–	–	0.00	14 individuals	14 individuals	21
Eucalyptus camaldulensis/ *Eucalyptus camaldulensis* population in the Hunter catchment	EP	–	–	6.10	0.00	6.10	96
Eucalyptus fracta/Broken Back Ironbark	E	–	Yes	4.62	8.48	13.10	677

Scientific name/common name	Conservation status		Potential SAII	Impact (ha or individual)			Species credit liability
	BC Act[1]	EPBC Act[2]		Known	Assumed	Total	
Eucalyptus glaucina/ Slaty Red Gum	V	V	-	0.00	34 individuals	34 individuals	68
Genoplesium branwhiteorum Syn. *Corunastylis* sp. Charmhaven / Charmhaven Midge Orchid	CE	CE	Yes	0.00	6.12	6.12	205
Genoplesium insigne / Variable Midge Orchid	CE	CE	Yes	4.25	6.42	10.67	389
Grammitis stenophylla/Narrow-leaf Finger Fern	E	–	–	0.00	8.12	8.12	270
Grevillea parviflora subsp. *Parviflora*/Small-flower Grevillea	V	V	–	6.74	5.13	11.87	280
Melaleuca biconvexa/Biconvex Paperbark	V	V	–	0.00	6.05	6.05	203
Melaleuca groveana/Grove's Paperbark	V	–	–	196 individuals	39 individuals	235 individuals	470
Olearia cordata	V	V	–	0.00	2.24	2.24	83
Ozothamnus tesselatus	V	V	–	0.00	0.65	0.65	16
Pomaderris queenslandica/Scant Pomaderris	E	–	–	0.00	0.65	0.65	19
Prasophyllum petilum/Tarengo Leek Orchid	E	E	–	0.00	11.82	11.82	375
Prasophyllum sp. Wybong	–	CE	–	0.00	11.82	11.82	561
Prostanthera cineolifera/Singleton Mint Bush	V	V	–	47.34	18.54	65.88	2,452
Pterostylis chaetophora	V	–	–	0	16.49	16.49	544
Pterostylis gibbosa/Illawarra Greenhood	E	E	–	4.98	8.64	13.62	463
Rhizanthella slateri/Eastern Australian Underground Orchid	V	E	Yes	0.00	81.37	81.37	3,988

Scientific name/common name	Conservation status		Potential SAII	Impact (ha or individual)			Species credit liability
	BC Act[1]	EPBC Act[2]		Known	Assumed	Total	
Rhodamnia rubescens/Scrub Turpentine	CE	CE	Yes	1,430 individuals	98 individuals	1,528 individuals	4,584
Rhodomyrtus psidioides/Native Guava	CE	CE	Yes	1.80	16.07	17.87	1,080
Rutidosis heterogama/Heath Wrinklewort	V	V	–	0.00	0.66	0.66	15
Senna acclinis/Rainforest Cassia	E	–	–	2.69	16.55	19.24	789
Syzygium paniculatum/ Magenta Lilly Pilly	V	V	-	0.00	61 individuals	61 individuals	122
Tetratheca juncea/Black-eyed Susan	V	V	–	3.35	11.33	14.68	417
Thelymitra adorate / Wyong Sun Orchid	CE	CE	Yes	0.00	0.79	0.79	21
Velleia perfoliata	V	V	–	0.00	2.24	2.24	75
Zieria involucrata	E	V	–	0.00	2.24	2.24	75

1: V = Vulnerable, E = Endangered, EP = Endangered Population, CE = Critically Endangered under the BC Act.

2: V = Vulnerable, E = Endangered, CE = Critically Endangered under the EPBC Act.

Threatened fauna

The amended project has the potential for residual direct impacts on 28 threatened fauna species. Of these, 26 species were recorded during field surveys and two species were conservatively assumed to be present based on suitable habitat within the amended disturbance area. All recorded and assumed threatened fauna species are listed under the BC Act, with 15 species also listed under the EPBC Act.

Table 5.10 summarises the direct impacts on threatened fauna species listed under the BC Act and EPBC Act, including whether they were recorded within the amended disturbance area or assumed present, along with their potential status as a SAII entity. Table 5.10 also identifies the species credit liability generated under the BAM-C for each fauna species.

Of the 28 threatened fauna species, six are also potential SAII entities that were recorded during field surveys.

Table 5.10 Summary of potential direct impacts on threatened fauna species

Scientific name/common name	Conservation status[1]		Potential SAII	Habitat impact (ha)			Species credit liability
	BC Act	EPBC Act		Recorded	Assumed	Total	
Anthochaera phrygia/Regent Honeyeater	CE	CE	Yes	96.91	0.00	96.91	5,172
Callocephalon fimbriatum/Gang-gang Cockatoo	E	E	–	9.83	31.88	41.71	1,515
Calyptorhynchus lathami lathami/South-eastern Glossy Black-Cockatoo	V	V	–	0.00	18.52	18.52	669
Cercartetus nanus/Eastern Pygmy-possum	V	–	–	5.78	415.85	421.73	14,772
Chalinolobus dwyeri/Large-eared Pied Bat	E	E	Yes	574.24	0.00	574.24	28,631
Delma vescolineata/Hunter Valley Delma	E	E	–	353.53	0.00	353.53	6,571
Heleioporus australiacus/Giant Burrowing Frog	V	E	–	25.31	48.31	73.62	2,123
Hoplocephalus bitorquatus/ Pale-headed Snake	V	-	-	0.00	3.60	3.60	117
Hoplocephalus stephensii/Stephens' Banded Snake	V	–	–	227.39	7.33	234.72	9,195
Lathamus discolor/Swift Parrot	E	CE	–	45.32	0.00	45.32	2,394
Litoria littlejohni/Littlejohn's Tree Frog	E	E	–	59.91	10.43	70.34	2,702
Mixophyes balbus/Stuttering Frog	E	V	Yes	184.28	7.71	191.99	11,133
Mixophyes iteratus/Giant Barred Frog	V	V	–	2.22	8.54	10.76	319
Myotis macropus/Southern Myotis	V	–	–	161.83	0.00	161.83	3,217
Ninox connivens/Barking Owl	V	–	–	16.51	3.51	20.02	739
Ninox strenua/Powerful Owl	V	–	–	132.22	3.51	135.73	5,029
Notamacropus parma/Parma Wallaby	V	V	–	27.72	363.02	390.74	13,386

Scientific name/common name	Conservation status[1]		Potential SAII	Habitat impact (ha)			Species credit liability
	BC Act	EPBC Act		Recorded	Assumed	Total	
Petauroides volans/Southern Greater Glider	E	E	–	533.42	26.97	560.39	21,081
Petaurus norfolcensis/Squirrel Glider	V	–	–	728.17	0.00	728.17	26,138
Petrogale penicillata/Brush-tailed Rock- wallaby	E	V	Yes	153.46	10.50	163.96	8,454
Phascogale tapoatafa/Brush-tailed Phascogale	V	–	–	105.31	547.18	652.49	23,027
Phascolarctos cinereus/Koala	E	E	–	625.71	0.00	625.71	23,314
Planigale maculata/Common Planigale	V	–	–	46.37	247.82	294.19	6,303
Potorous tridactylus/Long-nosed Potoroo	V	V	-	20.38	147.95	168.33	5,923
Pseudophryne australis/ Red-crowned Toadlet	V	–	–	47.17	17.18	64.35	1,853
Tyto novaehollandiae/Masked Owl	V	–	–	25.53	3.51	29.04	1,038
Tyto tenebricosa/Sooty Owl	V	–	Yes	239.43	0.00	239.43	13,472
Vespadelus troughtoni/Eastern Cave Bat	V	–	Yes	424.14	0.00	424.14	20,740

1: V = Vulnerable, E = Endangered, CE = Critically Endangered under the BC Act and EPBC Act.

Serious and irreversible impacts

Under Clause 6.7 of the *Biodiversity Conservation Regulation 2017*, an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct, based on four guiding principles relating to:

- risk of extinction due to rapid decline
- very small population size
- limited geographic distribution
- lack of potential to recover due to irreplaceability.

To assist the determining authority to evaluate the nature of an impact on a potential entity at risk of a serious and irreversible impact, a SAII assessment was undertaken in accordance with the criteria set out in the BAM and addresses the principles relevant for each SAII entity.

Eleven SAII entities are known to occur (one TEC, four threatened flora species andsix threatened fauna species) and three SAII entities are assumed to occur (three threatened flora species) in the

amended disturbance area based on the presence of suitable habitat. In addition, based on consultation with CPHR a further two threatened fauna species were assessed against SAII criteria. The majority of the impacted SAII entities are associated with the forested plateau section of the amended project impact area where extensive contiguous habitats exist.

Section 9.1 of the revised BDAR provides a detailed assessment for SAII on biodiversity values to assist the determining authority to evaluate the nature of an impact on a potential entity at risk of a SAII, including the relevant SAII principle/s that apply to each entity subject to assessment. Avoiding and minimising impacts on SAII entities has been prioritised during development of the amended project and will continue to be a focus of micro-siting during detailed design and implementation of management measures during construction.

Table 5.11 Summary of potential direct impacts to species and communities at risk of SAII

Species and communities at risk of SAII	Impact (ha or individual)		
	Known	Assumed	Total
Threatened ecological communities			
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions EEC	4.31	0	4.31
Threatened flora species habitat			
Eucalyptus fracta (Broken Back Ironbark)	4.62	8.48	13.10
Genoplesium branwhiteorum (Charmhaven Midge Orchid)	0.00	6.12	6.12 (assumed)
Genoplesium insigne (Variable Midge Orchid)	4.25	6.42	10.67
Rhizanthella slateri (Eastern Australian Underground Orchid)	0.00	81.37	81.37 (assumed)
Rhodamnia rubescens (Scrub Turpentine)	1,430 individuals	98 individuals	1,528 individuals
Rhodomyrtus psidioides (Native Guava)	1.80	16.07	17.87
Thelymitra adorate (Wyong Sun Orchid)	0.00	0.79	0.79 (assumed)
Threatened fauna habitat			
Anthochaera Phrygia (Regent Honeyeater)	96.91	0.00	96.91
Chalinolobus dwyeri (Large-eared Pied Bat)	574.24	0.00	574.24
Delma vescolineata (Hunter Valley Delma)	353.53	0.00	353.53
Lathamus discolor (Swift Parrot)	45.32	0.00	45.32
Litoria littlejohni (Littlejohn's Tree Frog)	59.91	10.43	70.34
Mixophyes balbus (Stuttering Frog)	184.28	7.71	191.99
Petrogale penicillata (Brush-tailed Rock- wallaby)	153.46	10.50	163.96
Tyto tenebricosa (Sooty Owl)	239.43	0.00	239.43

Aquatic ecology

Appendix L (Aquatic biodiversity impact statement) of the revised BDAR provides a detailed assessment of potential impacts on listed aquatic threatened species, populations or ecological communities.

Of the 19 named watercourses and 55 unnamed watercourses that contain mapped KFH, four were determined to contain mapped habitat for the Southern Purple Spotted Gudgeon (*Mogurnda adspersa*), which is listed as endangered under the FM Act. The FM Act listed endangered Hunter River population of Darling River Hardyhead (*Craterocephalus amniculus*) was also considered on a precautionary basis, despite the amended disturbance area being outside of its known distribution.

The likelihood of occurrence assessment completed for threatened fish species under the FM Act determined that the Southern Purple Spotted Gudgeon had a 'high' likelihood of occurrence, while the Darling River Hardyhead had a 'moderate' likelihood of occurrence (see Appendix L (Aquatic biodiversity impact assessment) of the revised BDAR).

It is anticipated that the likelihood of impacts to these species will be minimised through restriction of direct impacts to the watercourses which contain mapped species habitat. The proposed mitigation and management measures to manage impacts to fish habitat are likely to prevent any direct or indirect impacts to these watercourses and their habitats. It is considered unlikely that temporary impacts associated with the construction of the amended project would result in any long-term degradation of mapped key fish habitat areas. In the event additional watercourse crossings are required by the amended project, they will be designed in accordance with the relative guidelines.

Indirect impacts

Indirect impacts are impacts that occur when the project affects native vegetation and threatened species habitat beyond the amended disturbance area. Indirect impacts associated with the amended project may include:

- inadvertent impacts on adjacent habitat or vegetation including:
  - impact to habitat surrounding caves that are known or potential breeding habitat for threatened microbat species and Sooty Owl
  - impact to habitat surrounding known locations of Brush-tailed Rock Wallaby populations
  - impact to habitat surrounding known aquatic or gully locations of threatened frog species
  - impact to habitat near known locations of Hunter Valley Delma
- reduced viability of adjacent habitat due to edge effects
- reduced viability of adjacent habitat due to noise, dust or light spill
- transport of weeds, pests and pathogens from the site to adjacent vegetation
- increased risk of starvation, exposure and loss of shade or shelter
- loss of breeding habitats
- trampling of threatened flora species
- increased risk of fire

- increased risk of collision with lines and EMF impacts with new infrastructure
- increased risk of public access related impacts such as illegal dumping, firewood collection and sediment and erosion issues caused by illegal use of vehicles.

These indirect impacts identified in the revised BDAR for the amended project are generally the same as those identified in the exhibited BDAR, except for an additional consideration of indirect impacts from increased risk of public access.

Most indirect impacts have the potential to occur during construction and may persist at reduced intensity during operation. *Table 5.12* provides a consolidated summary of these indirect impacts across both phases. Indirect impacts that would predominantly occur during operation, such as the risk of fauna collision with transmission lines or EMF-related effects, are addressed separately in *section 5.2.5*.

Importantly, partial clearing of the transmission line easement is designed to minimise impacts on biodiversity values, including indirect impacts. The retention of vegetation up to a height of two metres within disturbance area B will create a natural transition between the fully cleared areas (disturbance area A, including the centreline) and the surrounding forest or woodland, avoiding an abrupt, hard edge.

Significant efforts have also been made to establish 'no clearing zones' to support habitat connectivity by avoiding impacts on gullies within State forests and nature reserves by stringing the lines at substantial distances and avoiding any clearing where possible.

Table 5.12 Summary of potential indirect impacts

Indirect impact	Potentially impacted entities	Duration	Likelihood and consequence
Inadvertent impacts on vegetation retention zones (disturbance areas B and HZ) or adjacent habitat or vegetation	All PCTs and TECs Threatened species (Brush-tailed Rock Wallaby, Large-eared Pied Bat, Eastern Cave Bat, Large Bent-winged Bat, Sooty Owl) Aquatic habitat	Short-term during construction	**Moderate** The amended disturbance area is within a 100 m buffer of rocky areas containing caves, crevices, cliffs, and escarpments, which may serve as breeding habitats for threatened microbat species and the Sooty Owl. Construction during the breeding season may impact breeding success. Construction could lead to sedimentation, erosion, and the mobilisation of contaminants, affecting native vegetation and aquatic habitats, particularly near rivers, creeks, and key fish habitats, with the potential to reduce the viability of habitat for aquatic and semi aquatic species (including frogs) temporarily. Mitigation measures include amending construction methodology or ceasing certain construction activities within 100 m of rocky areas containing caves, overhangs or crevices, cliffs or escarpments during breeding periods if species are present; micro-siting project infrastructure; implementing 'no go zones'; specific clearing controls in sensitive biodiversity areas; and pre-clearing surveys.
Reduced viability of adjacent habitat due to edge effects	All PCTs	Long-term during construction and operation	**Negligible** New habitat edges may alter vegetation composition, increase wind exposure, and create changes in microclimates, such as temperature, light, and moisture. There is potential for weed invasion and changes in species interactions, such as increased insect populations attracting more predators. While some habitat edges may degrade, others may benefit from improved light conditions, leading to mixed impacts. The data from survey plots adjacent to existing easements suggests that the vegetation and habitat adjacent to existing easements remains in moderate to good condition.

Indirect impact	Potentially impacted entities	Duration	Likelihood and consequence
Reduced viability of adjacent habitat due to noise, vibration, dust or light spill	Native vegetation and TECs Fauna	Short-term during construction and operation	**Negligible** Noise and dust from construction may temporarily disturb fauna, including woodland birds and small mammals. Dust deposition may reduce plant function but is expected to be highly localised to Disturbance area A. Night-time lighting at switching stations may affect nocturnal species such as microbats but will be limited in extent and duration. Lighting will be designed in accordance with the *National Light Pollution Guidelines for Wildlife* (Commonwealth DCCEEW 2023a) and localised to infrastructure only.
Transport of weeds, pests, and pathogens from the site to adjacent vegetation	Native vegetation Threatened flora species Threatened ecological communities Habitats: Native vegetation adjacent to construction zones	Long-term during construction and operation	**Negligible** Soil movement, machinery and vehicle traffic may introduce weeds or pest species such as foxes, cats or rabbits into remnant vegetation patches, particularly in sensitive biodiversity areas for *Rhodamnia rubescens* which is extremely susceptible to infection by Myrtle Rust. Weed spread risks are highest during earthworks and early operational years. Mitigation measures will be implemented to control weed and pest spread, vehicle and machinery hygiene protocols, limiting soil movement and maintaining vegetation buffers, and implementing weed control during and after construction. An amphibian management plan will be prepared to control the spread of Chytrid Fungus within the disturbance area and adjoining threatened amphibian habitat. Procedures for the management of Myrtle Rust on threatened plants (including *Rhodamnia rubescens*) will be developed to ensure the project is consistent with the objectives of FCNSW and NPWS myrtle rust management.

Indirect impact	Potentially impacted entities	Duration	Likelihood and consequence
Increased risk of starvation, exposure, and loss of shade or shelter	All fauna species	Short/ medium-term during construction	**Negligible** Fauna may be displaced due to vegetation clearing, losing access to food, shade, or shelter. Displacement of resident fauna species during native vegetation clearing is considered relatively low due to the expansive similar forested and agricultural environments surrounding the project impact area. The linear nature of the project and highly mobile nature of most fauna species means the overall the risk of starvation, exposure and loss of shade or shelter due to the project is considered low. Mitigation and management measures will further reduce this risk, including vegetation management to retain habitat patches, clearing limits, pre-clearing surveys and fauna relocation procedures.
Loss of breeding habitats	All fauna species	Long-term during construction and operation	**Moderate** The loss of breeding habitat (i.e. hollow bearing trees, nests, dreys and burrows and fallen timber) has the potential to affect native animals such as: • hollow-dependent bats • hollow-nesting and canopy-nesting birds • arboreal mammals • reptiles and amphibians • terrestrial fauna (burrow and fallen timber users) The loss of breeding habitats is unlikely to extend beyond the amended disturbance area. Impacts beyond this area would be avoided through mitigation and management measures, including a supplementary hollow and nest strategy, and other measures that aim to reduce the impacts on trees, breeding habitat, threatened species and communities.

Indirect impact	Potentially impacted entities	Duration	Likelihood and consequence
Trampling of threatened flora species	Threatened flora species and habitats	Short-term during construction and long-term during operation	**Low** Reduction in population extent and available habitat of threatened flora species that occur in the ground stratum could occur due to trampling or unauthorised material, storage, vehicle and plant equipment. Mitigation measures include protection for these areas and inadvertent impacts such as trampling is considered unlikely. All known threatened flora populations and associated habitat will be mapped and uploaded to GIS systems accessible to construction personnel and marked as 'no-go zones'. Operational activities will follow environmental protocols, including restricted access and environmental inductions for maintenance crews.
Increased risk of fire	Native vegetation All flora and fauna species	Long-term during construction and operation	**Moderate** Altered fire regimes can disrupt fire-sensitive vegetation communities and alter species composition. Fire suppression could also affect species adapted to specific fire regimes. The bushfire risk assessment undertaken for the amended project concluded that the risk of ignition and spreading of a bushfire from construction and operation of the project would be very low. Mitigation measures include design standards and vegetation clearing and maintenance controls. Vegetation maintenance will occur in accordance with the Network Operator's standard operational procedures, which were included in Disturbance area B impact assessment calculations.

Indirect impact	Potentially impacted entities	Duration	Likelihood and consequence
Increased risk of public access related indirect impacts such as illegal dumping, firewood collection and sediment and erosion issues caused by illegal use of vehicles *(additional indirect impact identified in the revised BDAR)*	Native vegetation All flora and fauna species	Long-term during construction and operation	**Moderate.** Public access has been considered as part of the amended project. It is likely that construction and operation of the amended project may result in an increase in public accessibility to the transmission easement, although this issue is usually managed through access management through locked gates, fencing, information signage and other security measures. Such measures will be implemented for the amended project, where feasible in consultation with landowners. The likelihood is moderate that such activities will occur, which may result in illegal dumping, firewood collection or erosion in certain higher risk locations such as the State Forests and particularly around the Watagans area. It should be noted that unlike traditional existing transmission easements, access to each tower will mostly be via individual tracks and not an easement track along the centreline, which should reduce the likelihood that the easement will be used for illegal recreational vehicles.

Prescribed impacts

Prescribed biodiversity impacts are those that may affect biodiversity values in addition to, or instead of, impacts from vegetation clearing and loss of habitat. These impacts may be difficult to quantify or offset as they often affect biodiversity values that are irreplaceable.

Most prescribed impacts have the potential to occur during construction and may persist at reduced intensity during operation. A summary of the relevant prescribed biodiversity impacts that may occur during construction of the amended project is provided below.

Prescribed impacts that would predominantly occur during operation, such potential impacts on habitat connectivity, are addressed separately in *section 5.2.5*.

Karst, caves, crevices, cliffs and other geological features of significance, or rocks

Karst, caves, crevices, cliffs, rocks, and other geological features of significance are absent from a large proportion of the amended disturbance area. However, the mountainous areas of Pokolbin, Corrabare, Watagan and Olney State forests contain caves and clifflines with suitable habitat for Brush-tailed Rock Wallaby and microbats such as Eastern Cave Bat, Large Bentwing Bat and Large-eared Pied Bat. This rocky environment would be minimally impacted (restricted to the ridgetop and not the actual caves and clifflines), and these habitats would remain post construction. Known Sooty Owl cave roosting habitat was purposefully avoided as part of the design of the project.

Human-made structures

No substantial human-made structures (such as old farm buildings, mine infrastructure, etc.) are present in the amended disturbance area that would provide known habitat for threatened fauna. Therefore, negligible impacts to human-made structures are expected during construction of the amended project.

Non-native vegetation

Areas of non-native vegetation (agricultural land and improved pastures dominated by exotic species) are present in the amended disturbance area. Areas of exotic-dominated vegetation would experience minor impacts, however, these are of comparatively minimal value for the native species and communities present within the amended disturbance area.

Waterbodies, water quality, and hydrological processes

The amended project crosses several waterbodies including Watagan Creek, Congewai Creek, Monkey Creek, Loder Creek and the Hunter River. These crossings have the potential to impact on water quality and hydrological processes that sustain threatened biodiversity. The extent of the impact is expected to be minor, however, given that the works would mostly be limited to aboveground construction, with appropriate ground disturbance and water management measures to be implemented. In addition, permanent disturbance areas would be located outside of core riparian zones and the many smaller gullies and creeks located in mountainous areas would be spanned by the amended project. The amended project is unlikely to result in any indirect impacts on GDEs.

Appendix Q of the revised BDAR provides additional detail compared to the exhibited BDAR on the erosion and sediment control measures (ERSED) that will be implemented to manage potential impacts on waterbodies and water quality that may affect threatened biodiversity.

Vehicle strike

During construction of the amended project, an increase in vehicle movements and increase in road use means vehicle strike to native fauna is likely to occur. Once construction is completed, vehicular movements are not expected to significantly increase compared to the existing situation and would be generally associated with ongoing inspection and maintenance.

The consequence of the predicted level of impact is expected to be minor. Mitigation measures, including an additional mitigation measure for vehicle strike proposed in the revised BDAR (mitigation measure B22), would be implemented to manage vehicle and animal interaction during construction of the amended project.

Conservation areas and nature reserves

As detailed in *section 7* of the revised BDAR, significant effort was made to avoid and minimise potential impacts on conservation areas and nature reserves. However, the amended project would result in unavoidable impacts on Jilliby State Conservation area (SCA) and Corrabare North Flora Reserve.

Native vegetation

The amended project would clear around 29.71 hectares of native vegetation within NPWS estate aligning with 11 PCTs, including:

- Jilliby SCA – around 11.10 hectares of native vegetation (seven PCTs)
- Corrabare North Flora Reserve – around 18.61 hectares (six PCTs).

The impacted areas of native vegetation within Jilliby SCA and Corrabare North Flora Reserve do not meet the criteria for listing as a TEC under the BC Act or EPBC Act.

Threatened species

Four threatened flora species and 20 threatened fauna species were confirmed or assumed present within NPWS Estate, including:

- Jilliby SCA – direct impacts on three threatened flora species (one recorded/two assumed) and 18 threatened fauna species (11 confirmed habitat/seven assumed)
- Corrabare North Flora Reserve – direct impacts on two threatened flora species (both recorded) and habitat for 11 threatened fauna species (seven confirmed habitat/four assumed).

Matters of national environmental significance

The HTP was determined a controlled action by Commonwealth DCCEEW on 5 February 2025, due to impacts on listed threatened species and ecological communities (sections 18 and 18A of the EPBC Act) and Commonwealth land (sections 26 and 27A of the EPBC Act). The HTP will be assessed under a bilateral agreement between the Australian Government and the State of New South Wales (in accordance with section 45 of the EPBC Act).

EPBC Act listed threatened species and ecological communities

Appendix C (Matters of national environmental significance) of the revised BDAR provides a detailed assessment of potential impacts to EPBC listed threatened species and ecological communities from the amended project in accordance with the *Significant Impact Guideline 1.1 - Matters of National Environmental Significance* (Department of the Environment, 2013a).

Ten EPBC Act listed TECs are known or predicted to occur within 10 kilometres of the amended project impact area. Of these, three TECs were recorded within the amended disturbance area and would be directly impacted by the amended project (refer to Table 5.13).

Table 5.13 EPBC Act listed TECs likely to be impacted within the amended disturbance area

TEC	EPBC Act status [1]	Associated PCTs and vegetation zones within the amended disturbance area	Area (ha)	Ecosystem credits required
Central Hunter Valley eucalypt forest and woodland	CE	3314_Thinned (50.02 ha) 3315_Thinned (9.56 ha) 3431_Thinned (71.14ha) 3431_Poor (8.40 ha) 3431_Plantation (15.18 ha) 3438_Mod-good (8.76 ha) 3446 Mod-good (1.13 ha)	164.19	5,087
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	4044_Mod-good (0.12 ha)	0.12	6
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	CE	3328_Mod-good (1.08 ha) 4039_Mod-good (1.16 ha)	2.24	67
		Total	**166.55**	**5,160**

1. E = Endangered and CE = Critically Endangered under the EPBC Act

75 threatened flora species and 70 threatened fauna species listed under the EPBC Act are known or likely to occur within the amended disturbance area or surrounding locality (10-kilometre buffer area). Of these, eight flora species and 19 fauna and/or migratory species were recorded within the amended disturbance area. An additional 18 flora species and eight fauna and/or migratory species were determined to have a moderate to high likelihood of occurrence within the amended disturbance area.

Under the EPBC Act where a project is likely to have a significant residual impact on a listed threatened species and/or community, the impacts must be compensated. Based on the assessment of significance, the amended project would result in significant residual impacts to two TECs (Central Hunter Valley eucalypt forest and woodland and River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria) and 35 threatened species.

Table 5.14 identifies the EPBC Act listed threatened species requiring ecosystem or species credits to offset the residual impact. Not all species requiring species credits were determined to have a significant residual impact under the EPBC Act. In addition, some species under the NSW BOS will require ecosystem credits. Ecosystem credits will also account for those species that are only listed under the EPBC Act, as the ecosystem credits aims to offset the PCTs/habitat for the species.

Table 5.14 EPBC Act listed species requiring ecosystem credits or species credits

EPBC Act listed species	EPBC Act status	Impact area (hectares) or individuals	Ecosystem or species credit
Ecosystem credits required			
Botaurus poiciloptilus (Australasian Bittern)	E	26.03	528
Brachyscome brownii	CE	12.85	3,256
Climacteris picumnus victoriae (Brown Treecreeper (eastern subspecies))	V	877.19	19,320
Dasyurus maculatus (Spotted-tail Quoll)	E	871.78	19,298
Grantiella picta (Painted Honeyeater)	V	255.72	6,660
Hirundapus Caudacutus (White-throated Needletail)	V, M	900.56	19,660
Melanodryas cucullata cucullata (South-eastern Hooded Robin)	E	255.72	6,660
Nyctophilus corbeni (Corben's Long-eared Bat)	V	36.94	812
Petaurus australis (Yellow-Bellied Glider)	V	521.47	13,342
Pseudomys novaehollandiae (New Holland Mouse)	V	59.73	1,187
Pteropus poliocephalus (Grey-headed Flying fox)	V	775.27	17,976
Pycnoptilus floccosus (Pilotbird)	V	227.91	5,757
Rostratula australis (Australian Painted Snipe)	E	26.03	528
Stagonopleura guttata (Diamond Firetail)	V	571.85	11,257
Species credits required			
Acacia bynoeana/Bynoe's Wattle	V	5.79	174
Angophora inopina/Charmhaven Apple	V	3.70	142
Anthochaera phrygia/Regent Honeyeater	CE	96.91	5,172
Asperula asthenes/Trailing Woodruff	V	2.75	100
Callocephalon fimbriatum/Gang-gang Cockatoo	E	41.71	1,515
Calyptorhynchus lathami lathami/South-eastern Glossy Black-Cockatoo	V	18.52	669
Chalinolobus dwyeri/Large-eared Pied Bat	E	574.24	28,631
Cryptostylis hunteriana/Leafless Tongue Orchid	V	7.13	117

EPBC Act listed species	EPBC Act status	Impact area (hectares) or individuals	Ecosystem or species credit
Cynanchum elegans/White-flowered Wax Plant	E	2.67	100
Delma vescolineata/Hunter Valley Delma	E	353.53	6,571
Eucalyptus glaucina /Slaty Red Gum	V	34 individuals	68
Genoplesium branwhiteorum/Charmhaven Midge Orchid	CE	6.12	208
Genoplesium insigne/ Variable Midge Orchid	CE	10.67	389
Grevillea parviflora subsp. Parviflora / Small-flower Grevillea	V	11.87	280
Heleioporus australiacus/Giant Burrowing Frog	V	73.62	2,123
Lathamus discolor/Swift Parrot	CE	45.32	2,394
Litoria littlejohni/Littlejohn's Tree Frog	E	70.34	2,702
Melaleuca biconvexa/Biconvex Paperbark	V	6.05	203
Mixophyes balbus/Stuttering Frog	V	191.99	11,133
Mixophyes iteratus/Giant Barred Frog	V	10.76	319
Notamacropus parma/Parma Wallaby	V	390.74	13,386
Olearia cordata	V	2.24	83
Ozothamnus tesselatus	V	0.65	16
Petauroides volans/Southern Greater Glider	E	560.39	21,081
Petrogale penicillata/Brush-tailed Rock- wallaby	V	163.96	8,454
Phascolarctos cinereus/Koala	E	625.71	23,314
Potorous tridactylus/Long-nosed Potoroo	V	168.33	5,923
Prasophyllum petilum/Tarengo Leek Orchid	E	11.82	375
Prasophyllum sp. Wybong/Leek Orchid	CE	11.82	561
Prostanthera cineolifera/Singleton Mint Bush	V	65.88	2,452
Pterostylis gibbosa/Illawarra Greenhood	E	13.62	463
Rhizanthella slateri/Eastern Australian Underground Orchid	E	81.37	3,988
Rhodamnia rubescens/Scrub Turpentine	CE	1,528 individuals	4,479
Rhodomyrtus psidioides/Native Guava	CE	17.87	1,080
Rutidosis heterogama/ Heath Wrinklewort	V	0.66	15
Syzygium paniculatum /Magenta Lilly Pilly	V	61 individuals	122
Tetratheca juncea/Black Eyed Susan	V	14.68	417
Thelymitra adorate/Wyong Sun Orchid	CE	0.79	21

EPBC Act listed species	EPBC Act status	Impact area (hectares) or individuals	Ecosystem or species credit
Velleia perfoliata	V	2.24	75
Zieria involucrata	V	2.24	75

Commonwealth land

The amended project would cross the Singleton Military Area, which is Commonwealth land under the EPBC Act. Under the EPBC Act the assessment on Commonwealth land must consider the environment on Commonwealth Land. The EPBC Act defines environment to include:

a. ecosystems and their constituent parts, including people and communities
b. natural and physical resources
c. the qualities and characteristics of locations, places and areas
d. heritage values of places
e. the social, economic and cultural aspects of a thing mentioned in (a), (b), or (c).

The amended project would reduce the habitat for threatened species within the amended disturbance area within the Singleton Military Area. Therefore, the amended project would result in a significant residual impact on a component (plants and animals) of the environment on Commonwealth Land. Compensation for the loss of vegetation and habitat for plants and animals on Commonwealth land will be offset through species and ecosystem credits under the NSW BOS.

Appendix C (Matters of national environmental significance) of the revised BDAR provides a detailed assessment of potential impacts to common plants and animals, threatened species and ecological communities listed under the BC Act and the EPBC Act on Commonwealth land (Singleton Military Area) in accordance with the *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land and actions by Commonwealth agencies* (Department of the Environment, 2013b). The potential impacts of the amended project include:

- BC Act communities
  - Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions
  - Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions
  - Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions
  - Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions
  - River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- EPBC Act communities
  - Central Hunter Valley eucalypt forest and woodland
  - River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria

- Threatened flora
  - Two threatened plant species were recorded within the Singleton Military Area and one endangered population listed under the BC Act. Based on the database searches and ecological surveys, a further eight species were assumed present based on associated PCTs
- Threatened fauna
  - Eighteen threatened fauna species were recorded within the Singleton Military Area during the ecological surveys, including nine mammal species, eight bird species and one reptile species. An additional 22 species were predicted as likely to occur based on database records and observations from fieldwork (i.e. presences of habitat features, habitat condition and connectivity).

The Singleton Military Area has been mapped as important habitat area for the critically endangered Regent Honeyeater and Swift Parrot. Neither species were recorded during the ecological surveys.

5.2.5 Potential impacts – operation

Direct impacts

Potential direct impacts on native vegetation and threatened species habitat during operation of the amended project would occur through ongoing vegetation management to ensure vegetation clearance requirements and APZs are maintained. Potential direct impacts on native vegetation, TECs and threatened species habitat during operation have been included in the clearing estimates in *section 5.2.4.*

Indirect impacts

Some indirect impacts associated with construction of the amended project may also occur during operation, including:

- reduced viability of adjacent habitat due to edge effects, as the presence of new habitat edges is maintained during operation
- reduced viability of adjacent habitat due to light spill from substations and occasional noise, vibration or dust from maintenance activities
- transport of weeds, pests, and pathogens as a result of ongoing access and maintenance activities
- loss of breeding habitats due to ongoing vegetation maintenance may result in impacts nests, dreys or burrows
- trampling of threatened flora species during periodic maintenance activities
- increased risk of fire linked to vegetation maintenance and infrastructure faults
- increased risk of public access related impacts such as illegal dumping, firewood collection and sediment and erosion issues caused by illegal use of vehicles.

The measures proposed to manage the residual risk of potential indirect impacts are provided in *section 5.2.7*.

In addition to these, operation of the amended project may result in risk of fauna collision with power lines and potential effects from electromagnetic fields (EMF). Species most at risk include large, high-flying birds such as raptors, cockatoos and waterbirds, as well as microbat species such as the Large-eared Pied Bat and Eastern Cave Bat. The revised BDAR states that Grey-headed Flying Fox also has a moderate likelihood of being affected by electrocution from powerlines, although as identified in the National Recovery Plan for this species "they are prone to electrocution on power lines, particularly in urban areas, and increasing urbanisation exposes larger numbers of animals to electrocution." This is because this species tends to interact with powerlines more often in urban areas. As such, while there is some risk it is not likely to be substantial.

A fauna strike risk assessment is provided in Appendix I (Powerline impacts on birds and ameliorative measures) of the revised BDAR, which identifies the following threatened species as a high risk of collision with powerline infrastructure:

- Callocephalon fimbriatum (Gang-gang Cockatoo)
- *Calyptorhynchus lathami lathami* (South-eastern Glossy Black-Cockatoo)
- *Ninox strenua* (Powerful Owl)
- Tyto tenebricosa (Sooty Owl).

Although EMF-related impacts on bird physiology are not well understood and vary by species, the potential for localised effects is acknowledged. Mitigation measures that would be implemented include tower designs that discourage nesting and installation of bird diverters in high-risk areas.

Prescribed impacts

Prescribed impacts primarily occur during construction of the amended project but may persist to a lesser extent during operation.

Operation of the amended project has potential to impact regional habitat connectivity, which is a prescribed impact, especially in State forests where the transmission line corridor intersects native vegetation and habitat used by threatened species. Habitat connectivity has been identified to be important for threatened and protected native species including arboreal mammal, terrestrial mammal, terrestrial frog, terrestrial reptile, terrestrial bird and aquatic fauna species. Appendix J (Examination of regional terrestrial habitat connectivity) of the revised BDAR provides an assessment of the regional habitat connectivity relevant to the amended disturbance area.

Partial clearing of the transmission line easement (ie retention of the understorey habitat up to two metres within disturbance area B) is designed to minimise impacts on biodiversity values, including habitat connectivity. A gradual transition would be used between the cleared easement and the surrounding forest or woodland, rather than an abrupt, hard edge. Significant efforts have been made to establish no clearing zones by avoiding impacts on gullies within State forests, waterways and nature reserves by stringing the lines at substantial distances and avoiding any clearing, where possible. The no clearing zones that are located continuously along the alignment within Wyong and Yengo IBRA subregions will facilitate undisturbed contiguous corridors of wildlife connectivity for all fauna species. These are located primarily within Olney, Watagan, Pokolbin and Corrabare State Forests but also within Corrabare North Flora Reserve and private properties.

A Connectivity Strategy will be developed and implemented to avoid and minimise impacts to connectivity for terrestrial species. The Connectivity Strategy would focus on identified habitat and connectivity locations for recorded or assumed fauna species within the amended disturbance area as identified in the revised BDAR, including for:

- *Cercartetus nanus* (Eastern Pygmy Possum)
- *Delma vescolineata* (Hunter Valley Delma)
- Heleioporus australiacus (Giant Burrowing Frog)
- Hoplocephalus bitorquatus (Pale-headed Snake)
- *Hoplocephalus stephensii* (Stephens' Banded Snake)
- *Litoria littlejohni* (Littlejohn's Tree Frog)
- *Mixophyes balbus* (Stuttering Frog)
- *Mixophyes iteratus* (Giant Barred Frog)
- Notamacropus parma (Parma Wallaby)
- *Petauroides volans* (Southern Greater Glider)
- Petaurus norfolkensis (Squirrel Glider)
- *Petrogale penicillata* (Brush-tailed Rock-wallaby)
- *Phascogale tapoatafa* (Brush-tailed Phascogale)
- Phascolarctos cinereus (Koala)
- *Planigale maculata* (Common Planigale)
- *Potorous tridactylus* (Long-nosed Potoroo)
- *Pseudophryne australis* (Red-crowned Toadlet).

During operation, other prescribed impacts of the amended project are considered to be negligible.

5.2.6 Biodiversity offsets

The potential direct impacts of the amended project on native vegetation, TECs and threatened species would generate a total of credits, including: 21,119 ecosystem credits and 279,750 species credits (20,723 flora and 259,027 fauna). In addition, 26 ecosystem credits are required for impacts to scattered trees.

The revised BDAR presents adjusted methodologies to account for indirect impacts related to bird strike and EMF and prescribed impacts related to habitat connectivity. This means that the additional species offsets as outlined in *sections 8.2.3, 8.2.4, 8.3.4* of the exhibited BDAR are no longer proposed.

EnergyCo intends to enter into a Strategic Offset Delivery Agreement (SODA) with the Secretary of NSW DCCEEW for the HTP. Under this agreement, responsibility for delivering biodiversity offsets will be transferred to the Department with commensurate funding. Biodiversity offsets secured under the SODA will constitute either the retirement of like-for-like credits or conservation actions that are targeted at impacted entities.

Offset selection will be guided by the Hunter Conservation Investment Strategy (NSW DCCEEW, 2025), which has been finalised and published since exhibition of the EIS. The Hunter Conservation Investment Strategy has been developed to:

- integrate conservation programs and priorities to optimise delivery of regional conservation outcomes
- protect regionally significant conservation values
- improve ecological connectivity and resilience to climate change
- restore degraded ecosystems and habitats
- contribute to a comprehensive, adequate and representative protected area system
- deliver social benefits for the region.

5.2.7 Updated or additional mitigation measures

Residual impacts to biodiversity values will be minimised through the application of mitigation and management measures and the implementation of a biodiversity management plan (BMP) as outlined in *section 8.7.1* of EIS. *Sections 8.4 and 8.5* of the revised BDAR provide further detail on the proposed management approach for biodiversity impacts, including an adaptive management strategy for uncertain impacts.

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential impacts on biodiversity are listed in Table 5.15. The changes are presented in **bold** text (for new text) or ~~strikethrough text~~ (for deleted text). The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.15 Updated mitigation measures – biodiversity

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B1	Biodiversity impacts	A biodiversity management plan (BMP) will be prepared and implemented for the duration of construction. The BMP will include (as a minimum): • the location and extent of areas of vegetation clearance and habitat disturbance, and how these will be suitably demarcated on-site • the location and extent of areas to be protected (e.g. retained vegetation, hollow-bearing trees, nests, burrows and other habitat features, including applicable buffers to habitat features) located inside the construction impact area or in close proximity to clearing areas • **measures for retained vegetation protection, including plant types to be retained in disturbance areas B and HZ** • pre-clearing survey procedures • two-phase clearing process to allow fauna to move into adjoining habitat • measures to be implemented on site to clearly demarcate areas to be retained as 'no go areas' • a threatened species unexpected finds protocol	Detailed design Construction	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• revegetation/rehabilitation plan (including seed collection where appropriate) • monitoring **vegetation integrity of** partial clearance **(disturbance area B)** • controlling erosion (unless separate ERSED) • bushfire management • salvage of **beneficial** resources **(vegetative and soil resources)** • fauna handling and rescue procedure • education of construction teams • **measures to avoid and minimise prescribed and indirect impacts** • adaptive management procedures (including triggers) • monitoring, evaluation reporting and compliance. 'No go area' demarcation ~~devices~~ must be established prior to the commencement of clearing works in each construction area and be maintained throughout the construction phase		

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B2	Avoidance of threatened species, threatened ecological communities and SAII entities	The locations of threatened ecological communities and habitat for threatened species and SAII entities will be considered, and potential impacts avoided or minimised to the greatest extent practicable during finalisation of the detailed design and construction methodology. This will include: • micro-siting of transmission line infrastructure within the HTP corridor • prioritising disturbance in areas with a Vegetation Integrity score <17 **or <15 for EEC and CEECs** as per section 9 of the NSW Biodiversity Assessment Method (2020) • sensitive biodiversity areas to be avoided (including species polygons, buffered threatened species locations, areas of threatened ecological communities, relevant SAII entities and matters of national environmental significance). • As part of this measure a hierarchy of biodiversity constraints will be developed and mapped to provide an overarching avoidance prioritisation framework to inform detailed design and the BMP.	Detailed design Construction	Identified sensitive biodiversity areas Avoidance micro-siting areas Regent honeyeater and Swift parrot important areas Applicable locations identified in Figure 14.21 of ~~*Technical Report 1 – Biodiversity development assessment report*~~ ***Appendix E (Revised biodiversity development assessment report)*** **of the Amendment Report**

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B3	Avoidance of threatened species and threatened ecological communities	Prior to construction activities taking place within 100 metres of rocky areas containing caves, overhangs or crevices, cliffs or escarpments and during the breeding season for the Large-eared Pied Bat, Eastern Cave Bat (November to February), Large Bent-winged Bat, Little Bent-winged Bat (December to February) **and Sooty Owl (June to August)**, an ecologist will be engaged to determine if the species are present. If present, an assessment of the proposed activities will be completed to determine what, if any, activities can take place within the 100 m, and what mitigation measures need to be implemented. Measures may include cessation of certain activities, amending the construction methodology including selecting alternative plant or equipment. Any requirements for a management plan could also be determined at that time.	Detailed design Construction	Within 100 m of rocky areas containing caves, or overhangs or crevices, cliffs or escarpments Applicable locations identified in Figure 14.3 of ~~*Technical Report 1 – Biodiversity development assessment report*~~ ***Appendix E (Revised biodiversity development assessment report)*** **of the Amendment Report**

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B4	Micro-siting of associated works and access tracks	Micro-siting of temporary construction infrastructure (including construction support sites, laydowns areas and access tracks), will be undertaken to minimise vegetation clearing and disturbance of watercourses within the biodiversity study area. This will include: • prioritising areas of low biodiversity value • utilising existing access tracks, where feasible • locating watercourse crossings at narrow width locations • **avoiding or minimising impact to amphibian breeding habitats** • minimising the quantity of cut and fill activities.	Detailed design Construction	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B5	Connectivity corridors	A connectivity strategy will be developed and implemented to avoid and minimise impacts to connectivity for threatened species. **All potential corridors identified in the biodiversity development assessment report will be included in the strategy, with final locations to be agreed with CPHR as the detailed design progresses.** ~~The exact location and detailed design of under-transmission line glider poles, retained tall tree stumps and/or rope bridges will be nominated as part of the connectivity strategy guided by the locations of habitat connectivity identified in Figure 14.17 and 14.18 of the biodiversity development assessment report.~~ Connectivity measures will consider ~~corridors, in the form of~~ installation of under-transmission line glider poles (in accordance with clearance requirements for transmission lines and infrastructure) where the construction area will impact habitat connectivity for arboreal species (see Appendix J – Examination of regional and terrestrial habitat connectivity of the biodiversity development assessment report). ~~will be investigated and installed in appropriate locations. Key BC Act target species are Squirrel Glider, Yellow-bellied Glider and Greater Glider~~	Detailed design Construction Operation	Relevant habitat connectivity locations (Figure 14.17 and 14.18 **of *Appendix E (Revised biodiversity development assessment report)* of the Amendment Report**)

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		The strategy will be developed for all relevant threatened species **at each location within the disturbance area depending on the local habitats and recorded species and their connectivity requirements**. This strategy will require ongoing management of connectivity corridors.		
B6	Compensatory habitat methodology	A supplementary hollow and nest strategy will be developed and implemented for the installation of nest boxes, or other hollow creation methods, to provide alternative roosting and/or nesting habitat for threatened fauna displaced during clearing. Nest box/chainsaw-type hollows will be installed prior to commencement of clearing works in each construction area where practicable. Where supplementary hollows are proposed to be established on land adjacent to the easement, these will be subject to landowner agreement and captured in any property management plan.	Detailed design Construction	Relevant locations
B7	Biosecurity impacts	A biosecurity management plan will be prepared **for the project** ~~in accordance with EIS mitigation measure AG3~~. This will be prepared to cover biosecurity aspects such as weed and pathogen introduction (**including myrtle rust)** and **their** management. The plan will form a sub-plan to the BMP.	Detailed design Construction	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B8	Tree protection measures	Tree protection measures are to be installed and maintained for trees to be retained within the hazard zone, in accordance with *AS 4970-2009 – Protection of Trees in Development Sites* throughout construction.	Construction	Applicable trees within the hazard tree zone (Disturbance area HZ) **at discrete sites (laydown areas, construction support sites, switching stations etc.)**
B9	Pre-clearing surveys	Pre-clearing surveys will be guided by the biodiversity management plan and completed prior to clearing at each location by a suitability qualified ecologist. The proposed clearing extents will be marked out on-site prior to the pre-clearing surveys. Pre-clearing surveys will be carried out prior to the commencement of clearing works. During the surveys, the ecologist will: • survey the proposed clearing extent (including confirmed clearing extents within the assumed habitat of SAII entities) • identify any fauna that will require relocation prior to clearing, including inspection of any built structures and wooden fence posts to be demolished • confirm if occupied habitats need to remain until fledging/movement of young can occur • confirm that biodiversity exclusion zones are demarcated	Detailed design Construction	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• confirm that hollow-bearing trees within and adjacent to the clearing extents are prominently marked/tagged • confirm that nest boxes are in place (where required) in suitable locations adjacent to areas to be cleared, or suitable locations for installation have been identified.		
B10	Ecology inductions, toolbox talks, targeted training	All relevant project personnel, including relevant sub-contractors will be trained on biodiversity management protocols and requirements for the project, through inductions, toolbox talks and targeted training, and provided with sensitive biodiversity area maps (showing clearing boundaries and exclusion zones) and updates as required. Inductions and training will be completed prior to commencement of work for all relevant personnel.	Construction	All locations
B11	Retention of understorey vegetation in riparian areas	Understorey vegetation will be protected within vegetated riparian zones where reasonable and feasible (within the definition of the NSW *Water Management Act 2000*). Vegetation clearing will be limited to the tree stratum and shrubs above 2 metres in height only, with root systems and trunk bases being retained in-situ.	Construction Operation	Riparian environments disturbed ~~as part of~~ **during** construction

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B12	Rehabilitation of riparian areas	A riparian vegetation management plan (RVMP) will be developed and implemented for the project to manage activities within vegetated riparian zones to minimise impacts to aquatic environments. The plan will be prepared prior to and implemented during any disturbance to a riparian area. The plan will identify the measures to be implemented to minimise impacts from construction activities (such as temporary and permanent watercourse crossings) within riparian and aquatic environments. A schedule of works will be stipulated within the approved RVMP. Riparian areas subject to disturbance will be progressively stabilised and rehabilitated. The RVMP will form a sub-plan to the BMP.	Detailed design Construction	Riparian environments disturbed during construction
B13	Installation of bird diverters	Bird diverters will be installed on transmission lines at appropriate locations to reduce impacts on aerial fauna species from collision with transmission lines and infrastructure. The exact position and diverter model will be finalised during detailed design by a qualified ecologist in consultation with CPHR. Installation of the bird diverters will occur within 2 weeks of transmission line installation or as soon as practical and will remain in place and/or replaced as required.	Detailed design Construction Operation	Relevant locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B14	Vegetation offsets requirements	The predicted clearing of native vegetation identified in the biodiversity development assessment report will be monitored against the recorded clearing. A revised Biodiversity Assessment Method (BAM-C) calculation based on the project's final disturbance to biodiversity post construction will be completed. Any additional (or reduced) credit liability identified will be met as part of the biodiversity offset scheme requirements and secured under the SODA.	Construction	Disturbance area
B15	Unexpected finds	A species unexpected finds protocol will be implemented if threatened ecological communities or flora and fauna species, not assessed in the biodiversity assessment, are identified in the disturbance area.	Construction	Disturbance area
B16	Water quality, watercourse geomorphology and aquatic habitat	Watercourse crossings (especially but not only to key fish habitat) will be designed to minimise disturbance and harm within riparian corridors and aquatic habitat will be rehabilitated where practicable, in accordance with the following guidelines: • *Guidelines for controlled activities on waterfront land* (NRA 2018) • *Why do fish need to cross the road? Fish passage requirements for waterway crossings* (Fairfull and Witheridge 2003)	Detailed design Construction	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• *Policy and guidelines for fish habitat conservation and management* (DPI 2013).		
B17	Operational guidelines and procedures	Guidelines and procedures will be developed and implemented for maintenance of the project during operation as part of the network operator's environmental management system. These guidelines and procedures will cover the following: • vegetation clearing and maintenance commitments in the biodiversity development assessment report, environmental impact statement **and Amendment Report** • avoiding access and disturbance in areas of high biodiversity conservation significance; outside of the areas required for construction • avoiding maintenance of vegetation that does not need to be maintained during operation • **measures specific to this project, as required.** **An Operational Biodiversity Management Plan (or similar) will be prepared to assist with the above operational biodiversity management requirements.**	Operation	Operation impact area
B18	Minimise indirect impacts from light spill	Lighting designs to be in accordance with the *National Light Pollution Guidelines for Wildlife* (Commonwealth DCCEEW 2023).	Detailed design Operation	Operation impact area

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B19	Minimise indirect impacts on threatened amphibians	**Prior to impacts to threatened amphibian habitat,** an amphibian management plan will be prepared **for threatened amphibians** and implemented for the duration of construction. The plan is to include (as a minimum): • the location and extent of ~~areas of threatened amphibians breeding habitats, and how these will be suitably demarcated on-site~~ **areas to be protected e.g. retained vegetation and other habitat features (including applicable buffers to habitat features) located inside the construction area or in close proximity to the clearing areas, including the retained UoN breeding ponds "S14P1" and "S14P3" within Disturbance area B** • ~~the location and extent of areas to be protected (e.g. retained vegetation and other habitat features, (including applicable buffers to habitat features) located inside the construction area or in close proximity to the clearing areas~~ • measures to **prevent** ~~control~~ the spread of Chytrid Fungus **to/from** ~~within~~ the disturbance area and adjoining threatened amphibian habitat **where accessible** • **location and design of proposed supplementary breeding ponds and/or connectivity measures**	Detailed design Construction	**Identified threatened amphibian habitat within the disturbance area (Figure 14.15 Threatened Fauna – Amphibians of *Appendix E (Revised biodiversity development assessment report)*)** ~~Disturbance area~~

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		within Disturbance area B and Olney switching station APZ • **location and design of specific erosion and sediment control measures (ERSED) maintaining existing water quality and preventing sedimentation of potential breeding habitats during construction** • monitoring requirements to ensure effective control • measures to be implemented on-site to clearly demarcate areas to be retained as 'no go areas'. 'No go area' demarcation devices will be established prior to **impacts to** ~~the commencement of clearing works in the location and extent of~~ areas of threatened amphibians breeding habitats. This plan will form a sub-plan to the BMP.		
B20	Minimise indirect impacts of Myrtle Rust on threatened plants	A Myrtle Rust procedure will be developed to ensure the project is consistent with the objectives of FCNSW and NPWS Myrtle Rust management.	Detailed design Construction	Disturbance area
B21	Minimise impacts to biodiversity as a result of vegetation clearing	Implement the clearing procedures, control measures and post- construction restoration measures to ensure-biodiversity values are retained as assessed in the biodiversity development assessment report.	Detailed design Construction Operation	Disturbance area A (including centreline) Disturbance area B Disturbance area HZ

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B22	Minimise impacts to biodiversity as a result of vehicle strike	Implement the following controls during the construction and operation phases within forested areas: • detailed design of access routes to avoid areas of key habitat • implementation of road signs identifying native fauna occurrence • implementation of speed limits • driver training for the project is to include training on local fauna and awareness when driving for the project through forested areas.	Detailed design Construction Operation	All forested locations
B23	Biodiversity impact monitoring and adaptive management	A biodiversity impact monitoring program (BIMP) will be prepared and implemented for the project to consolidate the requirements for biodiversity impact monitoring, guide and report on biodiversity impacts during construction and operation phases. The BIMP will include (as a minimum): • a three-year monitoring program, including 1 year monitoring during construction and 2 years post-construction monitoring and reporting • annual reporting at the end of each of the three years • consolidated monitoring outcomes of: – amphibian presence and water quality within amphibian breeding habitats	Detailed design Construction Operation	All locations

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		– presence of Chytrid Fungus – pests, predator and weed monitoring – microbat occupation and construction noise and vibration activity at identified breeding caves within 100m of project disturbance – Brush-tailed Rock Wallaby occupation and use of identified important habitat features (caves/cliffs lines) within proximity of construction – bird collision and EMF monitoring framework and implementation – vehicle strike and native animal interactions throughout construction • adaptive management procedures to address observed issues during the monitoring program.		
B24	Minimise public access to the project impact area to minimise activities such as firewood collection, vehicle access and illegal dumping	In consultation with landowners, the network operator will investigate options to restrict public access to sensitive biodiversity areas.	Construction Operation	Sensitive biodiversity areas

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B25	Minimise indirect impacts on threatened terrestrial mammals	A terrestrial mammal sub-plan will be prepared and implemented for the duration of construction. The plan is to include (as a minimum): • species including Brush-tailed Rock Wallaby, Parma Wallaby and Long-nosed Potoroo • predator monitoring, control and management • preventative measures to reduce the effects of pest and weed species within identified habitat areas and construction; including rubbish controls • controls for reduced vehicle strike within construction including information signs and speed control measures • monitoring program of species occupation and use of identified important habitat features (caves/cliffs lines) within proximity of construction. This plan will form a sub-plan to the BMP.	Detailed design Construction	Disturbance area

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
B26	Minimise indirect impacts on threatened Microbat breeding habitats	A Microbat sub-plan will be prepared and implemented for the duration of construction. The plan is to include (as a minimum): • species including Large-eared Pied Bat, Eastern Cave Bat, Large Bent-winged Bat and Little Bent-winged Bat • monitoring of known breeding caves occur within 100m of project disturbance • monitoring of noise and vibration within 100m buffers of identified breeding caves • where possible minimise construction activity during breeding seasons within 100m buffer of identified breeding caves • consideration of cave exclusion measures where required. This plan will form a sub-plan to the BMP.	Detailed design Construction	Disturbance area

5.3 Aboriginal heritage

Chapter 9 (Aboriginal heritage) and *Technical Report 2 – Aboriginal cultural heritage assessment* of the EIS assessed the potential impacts from construction and operation of the exhibited project on Aboriginal heritage.

Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential Aboriginal heritage impacts identified in the EIS, and to respond to feedback received during exhibition of the EIS.

An Aboriginal cultural heritage assessment (ACHA) addendum has been prepared to support this Amendment Report, and is provided in *Appendix F (Aboriginal cultural heritage assessment addendum)*. The findings of the ACHA addendum are described in this section.

5.3.1 Assessment approach

The ACHA addendum was undertaken in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (NSW Office of Environment and Heritage (OEH) 2011) and *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (NSW Department of Environment, Climate Change and Water (DECCW) 2010).

Key steps in the assessment of Aboriginal cultural heritage as part of the ACHA addendum included:

- re-interrogation of the archaeological assemblage of the project in response to feedback received during exhibition of the EIS
- additional field investigation and test excavations
- additional consultation
- a revised significance assessment of the archaeological assemblage to incorporate additional Aboriginal objects, sites and places identified as part of the ACHA addendum
- a revised assessment of the potential impacts (direct and indirect) to Aboriginal objects, sites and places that form the updated archaeological assemblage of the amended project
- review of existing mitigation measures and inclusion of additional mitigation measures in response to additional assessment and further consultation.

Adjustments to the ACHA assessment methodology in response to feedback received during exhibition of the EIS

Feedback received on the exhibited ACHA during exhibition of the EIS has resulted in changes to how the archaeological assemblage of the project impact area has been determined, and required a more detailed assessment of potential indirect impacts to Aboriginal heritage.

Changes to how the archaeological assemblage of the project impact area has been determined included:

- inclusion of Aboriginal objects, sites and places identified in the EIS as being destroyed after not being able to be located during field surveys as part of the archaeological assemblage assessed in the ACHA addendum (with the exception of sites identified in the AHIMS database as being destroyed).
- inclusion of Aboriginal objects, sites and places that were identified in the EIS as being located outside of but immediately adjacent to the exhibited project impact area as part of the archaeological assemblage and assessment of potential impacts
- inclusion of cultural materials some distance beyond the amended project impact area, but which would potentially be affected through the implementation of the cultural values mitigation strategy (refer to mitigation measure AH07) which proposes Aboriginal led research that may include investigation and recovery of cultural materials
- separation of the sites identified in the EIS as forming part of a broader background scatter into individual items so that each identified site is presented, assessed and managed separately.

The archaeological assemblage for the amended project impact area presented in *section 5.3.2* also includes the findings of additional field investigations carried out as part of the ACHA addendum.

A more detailed assessment of potential indirect impacts has been included as part of the ACHA addendum for Aboriginal objects, sites and places located outside of, but within 55 metres of, the amended project impact area. This additional assessment was undertaken in response to feedback that potential impacts could arise beyond the construction impact area due to some elements of constructions that may give rise to vibration impacts extending up to 55 metres from the construction site.

Study area

The study area assessed in the addendum ACHA is unchanged from the exhibited ACHA (refer to *Figure 9.1* of *section 9.1* of the EIS).

Additional field investigations and test excavations

Field investigations

Additional field investigations were also undertaken as part of the ACHA addendum, which were carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) and included archaeological field survey and test excavations.

Archaeological field survey involved the physical, non-invasive inspection of the amended project impact area by a team of archaeologists and Aboriginal participants. Field surveys extended over four weeks of investigation between 29 September 2025 and 31 October 2025, and included survey of areas of the amended project impact area that had not been surveyed as part of the EIS due to access constraints, as well as field survey of the project amendments.

The field survey achieved an 82.5 per cent of coverage of the amended project impact area, an increase from 72 per cent of the exhibited project impact area as documented in the exhibited

ACHA. The total survey coverage leaves only ~418 hectares of the amended project impact area (around 17.5 per cent) remaining unsurveyed, which is primarily located within areas pending access agreements (11 per cent), as well areas of steep and/or rugged terrain (three per cent) or sealed roads and tracks that would be used for construction but would be subject to limited (if any) additional ground disturbance (four per cent).

Test excavations

Archaeological test excavations were undertaken at 17 locations between 12 May 2025 and 24 July 2025. Test excavations were undertaken in areas identified as requiring test excavations as part of the exhibited project, but which could not be investigated at the time due to access constraints. The test excavations used the same methodology that was followed for test excavations completed during the preparation of the EIS.

Further detail on the completed and outstanding test excavation locations for the project are included in *Appendix E (Post approval requirements – updated guiding principles)* of the ACHA addendum.

Consultation

Additional Aboriginal consultation has been undertaken as part of the development of the ACHA addendum in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents* 2010 (DECCW 2010), including:

- briefing registered Aboriginal parties (RAPs) about the amended project and the scope of additional Aboriginal heritage assessment and investigations (undertaken through written correspondence)
- discussion of potential impacts to cultural materials and mitigation options with the RAPs prior to the development of the ACHA addendum (including through in-person and online meetings)
- provision of the draft ACHA addendum to the RAPs to allow for review and comment on the report to contribute to the overall findings, significance and management of cultural heritage.

In addition to the regulatory consultation requirements, the following additional consultation activities have been undertaken as part of the exhibited ACHA in accordance with the project-specific engagement strategy:

- face-to-face meetings – Aboriginal focus group meetings were held to promote two-way dialogue, allow for project flexibility and to maintain regular interaction with locally based Traditional Owners
- regular meetings and a local base of operations – EnergyCo's locally based community liaison officer routinely liaised with locally based Aboriginal individuals and organisations as part of the broader project. This enabled ongoing consultation that has extended throughout the exhibited ACHA and ACHA addendum processes. This consultation has and will continue to extend beyond the remit of the exhibited ACHA and the ACHA addendum
- field investigation participation – locally based Traditional Owners were offered the opportunity to attend a range of field survey and test excavation activities carried out across the amended project impact area, with seven Traditional Owners ultimately participating in survey activities.

Records of all additional Aboriginal heritage consultation completed as part of the ACHA addendum are included in *Appendix F (Aboriginal cultural heritage assessment addendum)* of this Amendment Report.

Assessment of impacts

Consistent with the EIS, rather than assume direct impacts to all Aboriginal objects, sites and places within the amended project impact area, the ACHA addendum has considered the categories of disturbance area (defined in *section 7.3 (Use of disturbance area)* of the EIS) in line with that used in the biodiversity assessment (refer to *Appendix E (Revised biodiversity development assessment report)*. This was undertaken to provide a more accurate estimation of the likely impacts to the archaeological assemblage and avoid a substantial overestimation of the likely Aboriginal heritage impacts of the project.

It is expected that the detailed design and final construction methodology for the project would result in impacts that are similar or less than those identified in the ACHA addendum due to the detailed design process continuing to refine and reduce the disturbance area for the project.

5.3.2 Existing environment

This section describes the existing Aboriginal heritage environment of the amended project impact area, including the results of additional field investigations and the updated approach to how the archaeological assemblage has been defined as part of the ACHA addendum. The ethnographic context, archaeological context, cultural values mapping and predictive model described in *section 9.2* of the EIS remain applicable to the amended project impact area.

Results of additional field investigations and test excavations

The archaeological field survey identified 13 additional Aboriginal objects, sites and places within the amended project impact area. These were dominated by isolated and low-density artefacts and a culturally modified tree.

An additional 20 discrete sites were identified through test excavations, with the highest densities of artefacts encountered within locations on the banks of Wollombi Brook. The 20 sites included:

- high densities of stone artefacts and/or the presence of extremely old cultural material
- low density artefact scatters with cultural deposits
- isolated stone artefacts with cultural deposits.

The findings of additional test excavations align with predictions of the distribution of the Warkworth Sands system included in the exhibited ACHA, and suggest that around 117 hectares (increased from 88 hectares in for the exhibited project) of the deposit are located within the amended project impact area.

Archaeological assemblage of the amended project impact area

The exhibited ACHA identified 32 discrete Aboriginal objects, sites and places within the exhibited project impact area, including a continuous and complex background scatter of surface and shallowly buried stone artefacts distributed across the exhibited project impact area that combined

191 discrete site listings. A further 379 objects, sites and places were documented outside but within 200 metres of the exhibited project impact area.

In response to comments on the exhibited ACHA, the cultural assemblage was reviewed, including further consideration of Aboriginal objects, sites and places: 1) identified as previously destroyed; 2) outside but on the periphery of the project impact area; 3) increasing detail of those outside, but within 55 metres of the project impact area where indirect impacts may occur; 4) the separation of the background scatter sites that amalgamated discrete listings and to rather present them separately; and 5) inclusion of cultural materials some distance beyond the project impact area, but potentially affected through the project mitigation measures.

The revised archaeological assemblage of the amended project impact area now consists of 452 Aboriginal objects, sites and places (refer to *Chaptersix (The archaeological resource)* of the ACHA addendum), including:

- 303 Aboriginal objects, sites and places within the amended project impact area, including 13 rockshelters, six grinding grooves, eight cultural places, three culturally modified trees, three stone arrangements, nine high density stone artefact scatters, eleven moderate density stone artefact scatters, eight subsurface cultural deposits, 121 low density artefact scatters and 121 isolated stone artefacts
- 146 Aboriginal objects, sites and places outside of but within 55 metres of the amended project impact area, including five rockshelters, seven grinding grooves, three resource and gathering sites, four culturally modified trees, two stone arrangements, five high density stone artefact scatters, ten moderate density stone artefact scatters, one hearth, 50 low density artefact scatters and 59 isolated stone artefacts
- three rockshelters located outside the amended project impact area, but which may be impacted through the implementation of the cultural values mitigation strategy (refer to Appendix D (Updated mitigation measures)).

The archaeological assemblage of the amended project impact area is outlined in *Figure 6.2* of the ACHA addendum.

Significance assessment

All of the Aboriginal objects, sites and places referenced in the significance assessment for the exhibited ACHA continue to be located within the amended project impact area, meaning their significance remains relevant to the amended project. The additional sites within the archaeological assemblage of the amended project as a result of changes to the presentation of the archaeological assemblage and the incorporation of additional sites following additional field surveys and test excavations have been incorporated into the significance categories outlined in *Chapter 11 (Significance assessment)* of the exhibited ACHA and presented in *Chapter 7 (Significance assessment)* of the ACHA addendum.

Overall, when considering the significance of all Aboriginal objects, sites and places within the archaeological assemblage of the amended project, 23 Aboriginal objects, sites and places considered of high significance are located within the amended project impact area. These are dominated by rockshelters, grinding grooves, stone arrangements and cultural places. This also includes some of the cultural deposits encountered through the test excavations.

Eighty-one moderate significant Aboriginal objects, sites and places are documented within the amended project impact area, which include a range of stone artefact materials as well as other site types with potentially limited research potential and/or that were in poor condition.

The remaining 199 Aboriginal objects, sites and places within the amended project area were considered of low significance, and are dominated by surface isolated or low-density stone artefacts.

When considering areas outside but within 55 metres of the amended project impact area, 17 highly significant Aboriginal objects, sites and places, are present, as well as 27 of moderate significance and 102 of low significance.

A summary of the significance of each Aboriginal object, site and place within and within 55 metres of the amended project impact area is provided in *Appendix D.2 (Significance assessment – additional information and tables)* of the ACHA addendum.

5.3.3 Assessment of potential impacts

Construction impacts

Avoidance of impacts

Consistent with the EIS, the project is committed to avoiding a number of high and moderately significant Aboriginal objects, sites and places. The focus of this avoidance has been towards site types that are typically rarer in the region and more prone to impacts by the project, including rockshelters, stone arrangements and grinding grooves within or near the amended project impact area. Commitments made in the EIS for the avoidance of five sites of high and moderate significance within and near the project impact area remain in place.

The project continues to commit avoidance to a large number of Aboriginal objects, sites and places of high and/or moderate significance within and/or within 55 metres of the amended project impact area. This has increased from five previously proposed in the exhibited ACHA to 20 in the ACHA addendum. These sites would be avoided in accordance with mitigation measure AH02 as provided in Table 5.16.

Sites to be avoided include:

- sites within the amended project impact area, including:
  - one rockshelter (DEEP CK MOTHER SWA)
  - one cultural place (Flat Rock Lookout (HTP-C-CP01))
  - one stone arrangement (HTP-C-CVM08)
  - two grinding grooves (TRGG GRINDING GROOVE SITE and Monkey Place Creek/Broken Back Trail)
- sites within no-clearing areas, within the amended project impact area, and outside but within 55 metres of the amended project impact area, including:
  - two rockshelters (CABANS RD CLIFF SWA, SWEETMANS CK OCHRE BOULDERS SWA)
  - four stone arrangements (HTP-C-SA01, HTP-C-SA02, HTP-C-SA03, HTP-C-SA04)

- nine grinding grooves (Corrobare State Forest, cnr of Langdans Road, HTP-C-GG01, HTP-C-GG03, HTP-C-GG04, HTP-GG-05, HTP-S-GG01, Null Road 2, Olney CPT 75/76 Douglas Pt GDG, Pokolbin SF_C-345 AGG).

Potential impacts

Consistent with the EIS, the project would result in localised ground disturbance and vegetation clearance within the amended project impact area. As outlined in *section 5.3.1*, the disturbance area from *Appendix E (Revised biodiversity development assessment report)* has been adopted as part of the ACHA addendum to align potential impacts more closely with areas proposed to be disturbed within the amended construction impact area. Applying this approach to the updated archaeological assemblage of the amended project, the project would potentially:

- completely or partially impact 217 Aboriginal objects, sites and places located within the disturbance area. This includes five rockshelters of moderate significance, five cultural sites (primarily resource and gathering), two culturally modified trees, two grinding grooves, 29 surface and sub surface stone artefact sites of moderate to high density, and 174 low density artefact scatters and isolated finds
- impact 12 Aboriginal objects, sites and places within or within 55 m of the amended project impact area but outside of the disturbance areas which have the potential to be indirectly affected by vibration or other activities
- partially impact three rockshelters located outside the amended project impact area (more than 55 metres) as a result of Aboriginal led research conducted as part of the proposed cultural values mitigation strategy (even though there would be no loss of heritage value from these activities) (refer to mitigation measure AH07).

The project is unlikely to impact the remaining 69 Aboriginal objects, sites and places located within the amended project impact area but outside the disturbance area and 131 Aboriginal objects, sites and places located outside but within 55 metres of the amended project impact area.

In addition, of the 117 hectares of predicted Warkworth Sands system within the amended project impact area, around 50 hectares (43 per cent) of the system is located outside the disturbance area and would not be impacted by the construction of the project.

Impacts to cultural landscapes and to viewlines and viewscapes within or in the vicinity of the amended construction impact area would be consistent with those outlined in the EIS due to project amendments and refinements not being at a scale to result in additional impacts to these landscapes or viewlines.

Impacts to each site in the updated archaeological assemblage are further outlined in Figure 8.1 and *Appendix D.3 (Potential impacts – additional information and tables)* of the ACHA addendum.

Operation impacts

Impacts to Aboriginal objects, sites and places during operation of the amended project would be consistent with those outlined in *section 9.4* of the EIS.

5.3.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential impacts on Aboriginal heritage are listed in *Table 5.16*. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text). The Aboriginal heritage mitigation measures included in *Table 5.16* are generally consistent with those outlined in *section 9.5* of the EIS. Changes to these mitigation measures largely involve refinements to wording and the inclusion of references to guiding principles in the ACHA addendum, and as such these measures should be read in conjunction with *Appendix E (Post approval requirements – updated guiding principles)* of the ACHA addendum. The Aboriginal heritage mitigation measures have also been reordered in *Table 5.16* to align with changes made in the ACHA addendum. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.16 Updated mitigation measures - Aboriginal heritage

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
AH01	Impact avoidance and minimisation	All potential impacts to Aboriginal objects, sites and places will be reviewed once a final project design is available. Any validated sites and/or cultural materials will be avoided or impacts minimised during construction planning, wherever practicable. The findings of this review will be provided to the registered Aboriginal parties and Heritage NSW. Management of these sites will be integrated into mitigation measures AH02, AH03 and AH04, with approaches and methods in broad accordance with Appendix E (Post approval requirements – updated guiding principles) of the ACHA addendum.	Detailed design	All Aboriginal objects, sites and places within the amended project impact area and within 55 metres of the amended project impact area
~~AH03~~ AH02	~~Aboriginal objects of high significance~~ Impact avoidance and minimisation	Direct and indirect impacts to all highly significant identified Aboriginal objects, ~~and~~ sites **and places** and their immediate environment (~~at least 55 m~~) within **the amended project impact area** and ~~in the vicinity~~ **within 55 metres** of the **amended** project impact area will be avoided. Some guiding principles for avoidance of Aboriginal objects, sites and places are presented in Appendix E (Post approval requirements – updated guiding principles) of the ACHA addendum. Any site-specific avoidance measures developed to address this commitment would be integrated into mitigation measure AH04.	Detailed design Construction Operation	• DEEP CK MOTHER SWA (rock shelter) • Flat Rock lookout HTP-C-CP01 (cultural place) • HTP-C-CVM08 (cultural place) • HTP-C-GG03 (grinding groove) • HTP-C-GG05 (grinding groove) • TRGG GRINDING GROOVE SITE (grinding groove) • Monkey Place Creek/Broken Back Trail (grinding groove) • CABANS RD CLIFF SWA (rockshelter) • SWEETMANS CK OCHRE BOULDERS SWA (rockshelter) • HTP-C-SA01 (stone arrangement) • HTP-C-SA02 (stone arrangement)

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
				• HTP-C-SA03 (stone arrangement) • HTP-C-SA04 (stone arrangement) • Corrobare State Forest, cnr of Langdans Road (grinding groove) • HTP-C-GG01 (grinding groove) • HTP-C-GG04 (grinding groove) • HTP-S-GG01 (grinding groove) • Null Road 2 (grinding groove) • Olney CPT 75/76 Douglas Pt GDG (grinding groove) • Pokolbin SF_C-345 AGG (grinding groove) ~~Identified significant sites outside the impact area referenced in Table G.2 of *Technical Report 2 – Aboriginal cultural heritage assessment*~~
~~AH04~~ AH03	Impact avoidance and minimisation	The project will investigate the micro-siting of project infrastructure and ~~optimisation of~~ construction activities in consultation with an Aboriginal heritage specialist **and Wonnarua, Awabakal and Darkinjung Traditional Owners (as outlined in Appendix B.3 (List of key registered Aboriginal parties for the project) of the ACHA addendum)** to avoid or minimise impacts to all identified Aboriginal objects, ~~and~~ sites **and places** within the project impact area. Some guiding principles for ~~consideration of~~ avoidance of Aboriginal **objects,** sites and ~~objects~~ **places** during construction of the project **are outlined in *Appendix E (Post***	Detailed design Construction	All identified Aboriginal **objects,** sites and ~~objects~~ **places** presented in ***Chapter 6 (The archaeological resource)*** **of the ACHA addendum** ~~Table 10.1 of *Technical Report 2 – Aboriginal cultural heritage assessment*~~

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		approval requirements – updated guiding principles) of the ACHA addendum. Any site-specific avoidance measures developed to address this commitment will be integrated into mitigation measure AH04.~~. include (but are not limited to):~~ ~~• incorporation of the sites, cultural deposits, curtilages, and obligations for their protection into cultural inductions for the construction workforce~~ ~~• establishment of fencing and/or signage during works in and around identified sites and cultural deposits, which will be implemented in consultation with an Aboriginal heritage specialist and/or RAPs~~ ~~• where necessary, establishment of surface protection such as heavy-duty ground protection mats, or equivalent, which will be implemented in consultation with an Aboriginal heritage specialist and/or RAPs.~~ ~~Any site-specific avoidance measures developed to address this commitment will be integrated into AH01.~~		
~~AH01~~ AH04	Cultural heritage management	An ACHMP will be developed by an Aboriginal heritage specialist, co-designed with Wonnarua, Awabakal and Darkinjung Traditional Owners (as outlined in *Appendix B.3 (List of key registered Aboriginal parties)* of the ACHA addendum), and in consultation with Forestry Corporation of NSW and NSW National Parks and Wildlife Service. ~~in consultation with the RAPs to~~ The ACHMP will provide the post-approval framework for managing and mitigating impacts to identified, potential and unexpected Aboriginal objects, sites and places during	Detailed design Construction	All identified Aboriginal objects, sites and places within the amended project impact area as identified in Chapter 6 (The archaeological resource), and HTP-C-RS14 (#45-3-5013), HTP-C-RS02 (#37-6-4492), HTP-C-RS03 (#37-6-4679), HTP-C-RS15 (#37-6-4557), HTP-C-RS16 (#37-6-4558), HTP-C-RS17 (#37-6-4562), HTP-C-RS44 (#37-6-4554), HTP-C-RS45 (#37-6-4674), HTP-S-RS19 (#45-3-5008), HTP-S-RS20 (#45-3-5004), Shamrock

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		detailed design, construction and operation of the project. The ACHMP will be developed following guiding principles in *Appendix E (Post approval requirements – updated guiding principles)* of the ACHA addendum, and will include direction on Aboriginal consultation, avoidance and impact minimisation processes, methods and mitigation measures for adversely affected cultural materials (including the wishing well [HTP-S-CS01], test excavation locations within the HTP corridor not assessed by the exhibited ACHA or ACHA addendum and predicted Warkworth Sands system deposits), unexpected find and ancestral remain protocols, and long term cultural material curation, analysis and reporting. ~~archaeological mitigation and Aboriginal heritage within the project impact area. The ACHMP will consider guiding principles presented in the ACHA and will address the following~~: • ~~processes, timing, communication methods and~~ • ~~project involvement (e.g. on-site activities) for maintaining Aboriginal community consultation and participation through the remainder of the project. This will include a grievance mechanism that is readily available and designed for use by the local Aboriginal community~~		Hill (#38-4-0221), Watagan Creek ACD (#45-3-4623), Corrabare State Forest Road 2 (#45-3-3582), Corrabare State Forest Western Side of Langans Rd SWA (#45-3-3583), and Corrabare (#45-3-2140) ~~Project impact area, and all identified Aboriginal objects, sites and deposits identified in the ACHA that will be adversely impacted by the project~~

		• ~~descriptions and methods to avoid any inadvertent impacts to identified Aboriginal objects and sites and areas of archaeological sensitivity outside of the construction impact area. A suitable regime of monitoring these activities will also be outlined, including locations, methods, personnel and timing descriptions and methods of any additional investigative actions that may be required prior to construction works commencing or during the project for sites that are to be adversely impacted. Activities should include suitable archival recording and cultural material recovery (e.g. relocation of key components, surface collection and/or archaeological excavations). These should include opportunity descriptions and methods of any additional investigative actions that may be required prior to construction works commencing or during the project for sites that are to be adversely impacted. Activities should include suitable archival recording and cultural material recovery (e.g. relocation of key components, surface collection and/or archaeological excavations). These should include opportunity for Aboriginal participants to recover and relocate culturally important flora species at HTP-C-AR01 and HTP-C-AR02. For these activities, details of locations, methods, personnel, and timing will be included description and methods for undertaking further Aboriginal cultural heritage assessment, investigation and mitigation of any areas of the project that have changed following completion of the ACHA or during the final design and construction of the project description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the~~		

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		~~ACHMP. For excavations, these will include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples reinforcement of how the cultural landscape is to be considered throughout the project's construction and detail the rehabilitation of the construction impact area. Assessment of rehabilitation of areas where infrastructure is not remaining after construction of the project will be undertaken to determine suitable ecological communities and other factors in returning the cultural landscape as close to its current state as feasible procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human ancestral remains during the projects procedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the projects processes for reviewing, monitoring, and updating the ACHMP as the project progresses procedures for the long-term management of cultural materials that remain within the operational impact area following construction activities. For these activities, details of locations, methods, personnel, and timing will be included description and methods for undertaking further Aboriginal cultural heritage assessment, investigation and mitigation of any areas of the project that have changed following completion of the ACHA or during the final design and construction of the project~~		

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• ~~description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP. For excavations, these will include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samplesgreinforcement of how the cultural landscape is to be considered throughout the project's construction and detail the rehabilitation of the construction impact area. Assessment of rehabilitation of areas where infrastructure is not remaining after construction of the project will be undertaken to determine suitable ecological communities and other factors in returning the cultural landscape as close to its current state as feasiblegprocedures for managing the unexpected discovery of Aboriginal objects, sites and/or human ancestral remains during the projectsprocedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the projects~~ • ~~processes for reviewing, monitoring, and updating the ACHMP as the project progresses~~ • ~~suitable knowledge transfer procedures for personnel changes between project planning and delivery to minimise loss or mistranslation of the intent of the information, findings and future steps for heritage management.~~		

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
AH05	Cultural heritage management	Prior to **the commencement of any** construction impact **and with consent of relevant landowners**, archaeological test excavations **will be undertaken at sites** ~~of investigation areas~~ **not completed during the exhibited ACHA or ACHA addendum and presented in Figure E.1 of the ACHA addendum** ~~will be carried out. in areas where ground disturbance to areas of high cultural significance would occur during construction on the remaining sites noted in section 9.3 of the ACHA~~. Test excavations will adopt approaches and methods outlined in ***Appendix C.2.1 (Archaeological research design)*** **of the ACHA addendum** ~~the ACHA.~~	Detailed design	**Incomplete test pits outlined in Figure E.1 of the ACHA addendum** ~~Areas of high cultural significance, including areas predicted to contain Warkworth Sand system deposits~~
~~AH02~~ **AH06**	Aboriginal objects outside the project impact area	Additional assessment will occur in accordance with **approaches and investigative methods developed in mitigation measure AH04** ~~the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (DECCW 2010)~~ for areas where ground disturbing activities are required in locations outside of the previously assessed area. Where required, additional heritage surveys will be carried out with the RAPs prior to ground disturbing activities occurring in any such areas (including areas where only visual inspection has been undertaken). If no Aboriginal objects, **sites and places** are found or if Aboriginal objects, **sites and places** are found and they would not be **adversely** impacted, then a letter report will be prepared by an **Aboriginal heritage specialist** ~~archaeologist~~ that documents the findings and gives clearance to proceed. **This would be provided to the RAPs for their information and records. Any identified Aboriginal objects, sites and places**	Construction Operation	Activities outside of the **amended** project impact area

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		will be integrated and managed in mitigation measure AH04 and associated guiding principles presented in *Appendix E (Post approval requirements – updated guiding principles)* of the ACHA addendum.		
~~AH06~~ **AH07**	Cultural heritage management	A cultural values mitigation strategy will be developed in consultation with the Awabakal **and Wonnarua** Elders and key knowledge-holders who participated in the cultural values mapping study for the project. This will be undertaken to explore mitigations for the perceived social and cultural impacts to important viewlines and viewscapes between major promontories in HTP Central, and localised cultural landscapes at Trig Road, Flat Rock, Dora Creek and the Dora pinnacles. The strategy will include, but not be limited to: • implementation of Aboriginal-led cultural inductions throughout the project impact area • support for cultural monitoring of development activities through the Trig Road cultural landscape, Flat Rock cultural landscape, and within 200 m of the Dora pinnacles and Dora Creek. This will include approaches and methods for cultural monitors to be able to relay concerns to the project for consideration and subsequent management • **undertaking traditional ecological knowledge investigations through Pokolbin State Forest and Corrabare North Flora Reserve**	Construction	Flat Rock cultural landscape, Trig Road cultural landscape, Dora Creek, Dora pinnacles**, HTP-C-RS14 (#45-3-5-5013), Corrabare State Forest Road 2 (#45-3-3582), Corrabare State Forest Western Side of Langans Rd SWA (#45-3-3583), and Corrabare (#45-3-2140)**

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• support for an Aboriginal-led research program to investigate cultural areas of interest and associated Aboriginal sites and places at Trig Road cultural landscape and Flat Rock cultural landscape. This will include but not be limited to: HTP-C-RS14 (#45-3-5-5013), Corrabare State Forest Road 2 (#45-3-3582), Corrabare State Forest Western Side of Langans Rd SWA (#45-3-3583), and Corrabare (#45-3-2140). **Some guiding principles are provided in Appendix E (Post approval requirements – updated guiding principles) of the ACHA addendum to provide further direction on the development of this strategy and potential methods for research activities that may adversely affect Aboriginal object, sites and places.**		
~~AH07~~ AH08	Cultural heritage management	Where possible, the clearing of vegetation between significant cultural viewing locations and the project impact area will be minimised in discussion with Awabakal Traditional Owners. Where practicable, any intervening vegetation will be protected to reduce the potential for views of the project from Flat Rock lookout, including the view from the top of the rock as well as the setting and access track.	Detailed design **Construction**	Flat Rock Lookout (HTP-C-CP01 [#45-3-5504]) Other important cultural viewlines and viewscapes, including but not limited to SL5 and SL8
~~AH08~~ AH09	Cultural heritage management	Where practicable, project elements will be positioned to maximise the distance from and/or minimise their visibility within culturally important view-lines, notably SL5, in consultation with the Awabakal Traditional Owners.	Detailed design Construction	Important cultural viewlines and viewscapes, including but not limited to SL5

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
~~AH12~~ **AH10**	~~Operation~~ **Cultural heritage management**	Following construction of the project, all Aboriginal sites and objects unharmed and/or partially impacted will be subject to a site condition assessment (including mapping and recording in GIS systems) by a heritage specialist in consultation with the RAPs. The site condition assessment will identify management requirements for the future conservation and protection of all documented cultural materials in the context of future operation and maintenance of the operation impact area. This will include consideration of increased access to Aboriginal sites and places as a result of the establishment and maintenance of the transmission easement.	Construction Operation	**Within the amended project impact area and within 55 metres of the amended project impact area, and all identified Aboriginal objects, sites and places identified in *Chapter 6 (The archaeological resource)* of the ACHA addendum that will be adversely impacted by the project** ~~Project impact area~~
~~AH09~~ **AH11**	Heritage interpretation	A heritage interpretation strategy will be developed by a heritage specialist to identify the Aboriginal heritage values throughout the project impact area, and to provide direction for potential interpretive opportunities for the project or off-site (e.g. at Broke, Cessnock or Martinsville). This strategy will be **undertaken in consultation with** ~~made available for consultation and feedback with~~ the Wonnarua, Awabakal and Darkinjung Traditional Owners **(as outlined in *Appendix B.3 (List of key registered Aboriginal parties)* of the ACHA addendum).** Following consultation and feedback on the strategy, a heritage interpretation plan will refine the strategy with content (visual and textual) and design details in order to allow the implementation of the plan.	**Detailed design** Construction ~~Operation~~	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		Some guiding principles are provided in Appendix E (Post approval requirements – updated guiding principles) of the ACHA addendum to provide further direction on the development and content of this strategy. ~~The interpretation strategy and interpretation plan will be co-designed and closely developed with local Wonnarua, Awabakal and Darkinjung Traditional Owners. This includes identification of initial aims and ideas, content and structure.~~ ~~Content should include, but not be limited to:~~ • ~~the ethnographic and historical record, which includes post contact and contemporary associations with the site and immediate environs~~ • ~~consultation and input from the Wonnarua, Awabakal and Darkinjung Traditional Owners~~ • ~~information obtained from the archaeological excavations and findings undertaken for the project.~~		
~~AH10~~ **AH12**	Consultation	The Aboriginal community consultation process for this project will continue throughout detailed design and construction.	Detailed design Construction	N/A
~~AH11~~ **AH13**	Consultation	A copy of the ACHA and all relevant Aboriginal heritage information management system (AHIMS) site recording forms and information for the project will be lodged with Heritage NSW and provided to each of the RAPs, as relevant.	Detailed design	N/A

5.4 Landscape and visual

Chapter 10 (Landscape and visual) and *Technical Report 3 – Landscape character and visual impact assessment* of the EIS included an assessment of potential impacts of construction and operation of the project to landscape character and visual amenity.

Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential landscape character and visual amenity impacts identified in the EIS. The findings of the additional assessment are described in this section. An addendum landscape character and visual impact assessment has been prepared to support this Amendment Report and has been provided as *Appendix G (Landscape character and visual impact assessment addendum)*.

5.4.1 Assessment approach

Legislation, policies, plans and guidelines

The landscape character and visual impact assessment addendum (LCVIA addendum) prepared to assess the amended project (refer to *Appendix G (Landscape character and visual impact assessment addendum)*) was prepared in accordance with consistent legislation and guidelines as the exhibited LCVIA, including the *Transmission Guideline, Technical supplement for landscape character and visual assessment*, as updated in April 2025 (the technical supplement) (DPHI 2025a).

Study area

The study area used for the LCVIA addendum has been determined in accordance with the technical supplement and is consistent with what was assessed in the EIS. It includes different study areas for landscape character and visual impacts, including:

- the landscape character assessment study area, including all areas within five kilometres of the amended HTP corridor
- the visual assessment study area, including all areas within 1.625 kilometres of the amended HTP corridor (based on a maximum tower height of 85 metres).

The Hebden Road construction support site and Freemans Drive construction support site are located outside of the LCVIA study area of the exhibited LCVIA, however were assessed for construction landscape character and visual impacts only as they would be removed post-construction. An assessment of the potential changes to impacts to landscape character and visual amenity from the use of the Hebden Road construction support site and Freemans Drive construction support site during construction have also been considered as part of the Amendment Report.

Assessment methodology

Since the completion of the exhibited LCVIA, additional site inspections have been carried out, which occurred on 16 October 2025 and 17 October 2025. These additional site inspections were undertaken at locations where access was previously not possible and/or at additional locations relevant to amendments and refinements to the project.

The methodologies used for the landscape character impact assessment, the visual impact assessment, and the preparation of 3D renders, modelled views and photomontages as part of the LCVIA addendum are consistent with those used for the preparation of the exhibited LCVIA.

5.4.2 Existing environment

The existing environment described in the exhibited LCVIA remains applicable to the amended project.

5.4.3 Assessment of potential impacts

Construction impacts

Consistent with the EIS, construction of the amended project would result in temporary changes to the landscape character and visual amenity of the study area, which would impact residents, tourists and road users.

Visual impacts – public viewpoints

Daytime

Ten public viewpoints were selected to represent views to the exhibited project. These viewpoints include a State highway and other public roads, a village and a lookout. Due to the relatively minor nature of the amendments and refinements to the project, no additional public viewpoints were assessed as part of the LCVIA addendum. A review of the daytime construction impacts to public viewpoints assessed as part of the EIS was undertaken to identify any potential changes to the impacts as a result of the amended project.

Additional potential visual impacts compared to the EIS would occur at public viewpoints 08 and 09 on Wollombi Road, west of Millfield, as a result of the inclusion of the temporary worker accommodation at the Wollombi Road construction support site which would result in an increase in the amount of site infrastructure during construction, including additional buildings.

The temporary worker accommodation would be clearly visible and would be close to public road users. The activities within the construction support site and temporary worker accommodation would substantially contrast with the existing view. Visual impacts as a result of the addition of the temporary worker accommodation would be temporary, with the facility and the entire construction support site to be decommissioned and rehabilitated as required following construction.

Nighttime

The amended project would result in additional nighttime visual impacts at public viewpoints 08 and 09 on Wollombi Road, west of Millfield, compared to the EIS, as a result of the inclusion of the temporary worker accommodation at the Wollombi Road construction support site, which would be operational 24/7 and would require the use of nighttime lighting. The introduction of nighttime lighting would contrast with the existing low brightness rural setting. These impacts would occur for a short period for vehicles travelling past the construction support site and temporary worker accommodation for the duration of construction only.

Visual impacts – private viewpoints

Daytime

The level of impact to private views during construction would vary according to their visibility of, and distance from, the HTP corridor, proposed construction support sites and construction activities. Visual impacts at private viewpoints from views of the HTP corridor, construction support sites and construction activities would be consistent with those described in the EIS, with the exception of the Wollombi Road construction support site, where there may be changes to the daytime private viewpoint impacts as a result of the inclusion of the temporary worker accommodation at this construction support site. While the HTP corridor at Mount Thorley and Gouldsville would move closer to and further from some private views, the visual impacts would be largely consistent with the EIS.

The Wollombi Road construction support site would be located around 500 metres from the nearest rural dwelling, however it is likely direct views of the site from nearby rural dwellings would be screened by dense vegetation surrounding these dwellings. Dwellings with a more direct view (although still filtered by existing vegetation) are around one kilometre away. Their view would change throughout construction to include the construction support site with its associated site offices, stockpiles and vehicle movements. Some residents would see the temporary worker accommodation and activities at the construction support site daily during construction as they travel along Wollombi Road to access their property. The view would be temporary and brief, while in transit alongside the construction support site. These impacts are slightly increased compared to those described for the exhibited project. The amended project would result in an increase in built form / structures, which would slightly increase the impact as identified in the EIS. The views, however, would be temporary and brief while residents are in transit alongside the construction support site.

Nighttime

The exhibited project identified potential temporary nighttime visual impacts during construction from the introduction of lighting and 24/7 operation of construction support sites with temporary worker accommodations (Hebden Road, Gouldsville Road and Freemans Drive construction support sites).

The inclusion of temporary worker accommodation at the Wollombi Road construction support site has the potential for additional nighttime visual impacts to private viewpoints. The nearest residential dwellings to the Wollombi Road construction support site are around 500 metres away, however there are intervening trees which provide some screening from views to the Wollombi Road

construction support site. The lighting at this construction support site may be visible from the nearest dwellings, however they would be relatively distant, temporary and would not substantially change the existing nighttime view.

Landscape character impacts – daytime

Amendments and refinements to the project would occur within the following five landscape character zones (LCZs) identified in the EIS:

- LCZ1 (Mining and energy)
- LCZ4 (Hunter River (Maison Dieu) rural valley)
- LCZ8 (Forested Hills)
- LCZ11 (Narrow rural valley)
- LCZ12 (Managed forestry).

The sensitivity of each LCZ for the amended project is consistent with the sensitivities assigned to these LCZs for the exhibited project. The amended project would not result in any changes to the potential daytime landscape character impact ratings for LCZ1, LCZ4 and LCZ8.

The impact of construction activities within the HTP corridor on landscape character would be consistent with the EIS.

The temporary worker accommodation at the Wollombi Road construction support site would increase the magnitude of change within LCZ 11 (Narrow rural valley) as a result of daytime construction activities from high to very high. The temporary worker accommodation and additional plant and equipment would result in an increase in the magnitude of impact which would result in an increase in the potential daytime landscape character impact in this LCZ from moderate to high.

Changes to access tracks and laydown areas in the State forests, which are contained within LCZ 12 (Managed forestry), would increase the magnitude of change during construction from low to moderate, however, the overall landscape character impact would remain low, consistent with the assessment provided in the EIS for this LCZ.

The assessment of landscape character impacts has also considered locations beyond the landscape character assessment study area presented in the EIS, including Eraring substation, Hebden Road construction support site and Freemans Drive construction support site.

Changes to the types of construction plant and equipment at the Hebden Road and Freemans Drive construction support sites would not change the assessed magnitude of change in the EIS and as a result, there would be no changes to the landscape character impact at these construction support sites as a result of the amended project.

A justification for the daytime landscape character impacts to the abovementioned four LCZs as a result of the amended project is included in Table 5.17.

Assessment of the daytime construction impacts of the amended project for LCZs identified as potentially changing and for additional project elements considered in the landscape character assessment study area is included in Table 5.17.

Table 5.17 Landscape character impact during construction of the amended project (daytime)

		Exhibited project		Amended project	
Landscape character zone	Landscape sensitivity	Magnitude of change	Landscape character impact	Magnitude of change	Landscape character impact
LCZs with potential impact rating changes as a result of the amended project					
LCZ11 (Narrow rural valley)	Moderate	High	Moderate	Very high • The temporary worker accommodation to be located within the Wollombi Road construction support site would have capacity to house up to 300 construction workers and would operate 24/7. The temporary worker accommodation would increase the number and extent of pre-fabricated modular buildings across the construction support site. Areas for parking would also increase, and light vehicle movements in and out of the construction support site would increase. The temporary worker accommodation would occupy a relatively large area in the context of the narrow valley (around 1.5 ha), would be prominent close to Wollombi Road, and would be uncharacteristic of the rural landscape.tAdditional plant and equipment at the Wollombi Road construction support site, including diesel generators, crushing and screening plant and washdown facilities would be large and noticeable in the landscape.	High
LCZ12 (Managed forestry)	Low	Low	Low	Moderate • Upgrades would be carried out for additional forestry access tracks for use during construction to access the HTP corridor and to existing transmission lines and towers for upgrades. Access tracks throughout the LCZ are used by heavy equipment and vehicles for forestry harvesting and hauling. The upgrading of access tracks for construction traffic would not be uncharacteristic within the managed forestry LCZ.	Low

		Exhibited project		Amended project	
Landscape character zone	Landscape sensitivity	Magnitude of change	Landscape character impact	Magnitude of change	Landscape character impact
				• Two laydown areas that were assessed in the EIS would be removed from the LCZ and two new laydown areas would be included within the LCZ. Although the location of two of the exhibited laydown areas would change, there would still be five laydown areas within State forest (consistent with the exhibited project). Clearing and proposed use of these locations is consistent with the characteristics of managed forestry. • Reconfiguration of the emergency helicopter landing area at Flick Road within State forest would result in increased clearing of vegetation, however the proposed use of the location is consistent with the characteristics of managed forestry. • There would be no direct impact on recreational areas (campgrounds, picnic areas, walking tracks or lookouts), however there would be construction vehicles travelling along forestry roads that are also used by recreational users. There would be some temporary landscape character impacts experienced by recreational road users in these areas.	
Locations beyond the exhibited landscape character assessment study area					
Eraring substation	Very low	Not assessed	Not assessed	Very low • Construction at Eraring substation to install new poles, connections and parking would occur within a larger construction footprint than was assessed in the EIS. Construction activities would occur within a highly modified landscape used for energy generation and transmission, and would therefore not be uncharacteristic.	Very low

Landscape character impacts – nighttime

The only changes to nighttime construction lighting would occur at the Wollombi Road construction support site as a result of the addition of the temporary worker accommodation in LCZ11 (Narrow rural valleys).

The amended project includes a temporary worker accommodation within the Wollombi Road construction support site which would be operational 24 hours, seven days per week. It would include external lighting of access roads, car parks and pathways, as well as a greater number of vehicle movements to and from the construction support site compared to the exhibited project. The temporary worker accommodation would introduce a new source of nighttime light to the LCZ. Lights would be spread across the 1.5-hectare temporary worker accommodation area, and would be prominent adjacent to Wollombi Road. As such, the magnitude of change in LCZ 11 (Narrow rural valleys) would increase from negligible to very high and the landscape character impact would increase from negligible to high.

Operation impacts

Visual impacts – public viewpoints

Due to the relatively minor nature of the alignment adjustments included for the amended project, no additional public viewpoints were selected for this assessment.

Each viewpoint was reviewed and there were no changes to the alignment or tower positions within these representative viewpoints. As such, there would be no change to daytime visual impacts from public viewpoints during operation compared to impacts identified in the exhibited LCVIA.

Additionally, the amended project does not propose any additional lighting that would be seen from any of the representative public viewpoints at nighttime during operation. Therefore, the assessment of nighttime visual impacts for the amended project is unchanged from the exhibited project.

Visual impacts – private viewpoints

<u>Daytime</u>

The amended project would result in potential changes to the visual impacts of private property views in the vicinity of the realignment of the transmission line at Mount Thorley and Gouldsville.

Rural setback

In accordance with the technical supplement, the setback for an 85-metre-high transmission tower is 400 metres in rural areas. Any dwelling within the rural set back area is identified as having a high potential visual impact and must be assessed against high-impact performance criteria unless there is an exemption. If exempt, a proportionate visual assessment is followed.

There are no dwellings within the rural setback in the vicinity of the proposed realignment of the transmission line at Mount Thorley.

Five dwellings are within the setback in the vicinity of the realignment of the transmission line at Gouldsville (ID2928, ID2929, ID2930, ID2931 and ID2932). All five dwellings were in the rural setback for the exhibited project. The dwellings are located on one landholding and are clustered together. ID2931 is the closest dwelling to the amended project impact area. For the amended project, the HTP corridor would be around 250 metres away from this dwelling at its closest point (compared to 310 metres for the exhibited project). However, the view in the direction of the HTP corridor remains densely vegetated and is likely to be screened partly by vegetation. The HTP corridor when viewed from the other four dwellings would be mostly screened by intervening vegetation. As such, all five dwellings are exempt from the setback, in accordance with the technical supplement, and have been included in the proportional visual assessment below. This includes an updated detailed assessment and photomontages for the two most affected dwellings (ID2929 and 2928 which are 320 metres and 350 metres from the nearest tower, respectively), to confirm the effectiveness of this intervening vegetation (refer to Appendix I of the LCVIA addendum).

Simple visual assessment

The simple assessment has been revised for 11 dwellings assessed for the exhibited project that are in the vicinity of the realignment of the transmission line at Mount Thorley. However, during a site visit as a part of the detailed assessment for the LCVIA addendum, a secondary dwelling was identified (ID3525) at 896 Putty Road, Mount Thorley, which is 830 metres from the nearest tower. This dwelling has been added to the simple assessment, meaning 12 dwellings have been considered in this simple assessment.

For this simple assessment, all views from dwellings are assumed to be primary views (that is, the highest sensitivity apart from listed heritage homes), and scenic quality is based on conservative assumptions of existing landscape character within each LCZ. This assessment has identified:

- four private viewpoints with a potential high visual impact
- no private viewpoints with a potential moderate visual impact
- four private viewpoints with a potential low visual impact.

Four dwellings were assessed as having no visual impact as they are now outside the visual study area.

In accordance with the technical supplement, those viewpoints with a potential low visual impact are eliminated from further assessment. An intermediate assessment is carried out for the viewpoints identified as having a potential high visual impact.

Intermediate visual assessment

An intermediate assessment has been undertaken for those dwellings identified as having the potential for high visual impact within the visual study area near the realignment of the transmission line at Mount Thorley. For the intermediate assessment, a 3D generated bare earth render of the project has been prepared to more accurately determine the magnitude of impacts. The bare earth render is a modelled view of the project within the landform, however it does not include existing trees or other existing structures that could limit the view of the project (refer to Appendix H of the LCVIA addendum for the bare earth renders and intermediate assessment).

The intermediate assessment has identified:

- no private viewpoints with a potential high visual impact
- four private viewpoints with a potential moderate visual impact.

Those private viewpoints with a moderate potential visual impact rating have been carried through to the detailed assessment.

Detailed visual assessment

A detailed assessment has been carried out for private viewpoints near the realignment of the transmission line at Mount Thorley identified as having a potential moderate visual impact, and for private viewpoints near the realignment of the transmission line at Gouldsville that are within the rural setback. The detailed assessment was based on the analysis of photomontages and field validation of scenic quality.

During the field investigations, the ratings of viewpoint sensitivity and scenic quality of individual views can be re-evaluated and adjusted if required. For this detailed assessment no changes were made.

For the private viewpoints near the realignment of the transmission line at Mount Thorley which have been carried forward from the intermediate visual assessment, the detailed assessment has identified:

- one private viewpoint with a moderate visual impact
- three private viewpoints with a low visual impact.

A summary of the detailed assessment for private viewpoints near the realignment of the transmission line at Mount Thorley is included in *Table 5.18.*

Table 5.18 Summary of updated detailed assessment for the realignment of the transmission line at Mount Thorley

ID	Address	Sensitivity	Exhibited project			Amended project		
			Occupied cells	Potential magnitude	Potential visual impact rating	Occupied cells	Potential magnitude	Potential visual impact rating
251	478 Putty Road, Mount Thorley	High	6	Very low	Low	4	Very low	Low
277	896 Putty Road, Mount Thorley	Moderate	13	Low	Low	4	Very low	Low
2920	887 Putty Road, Mount Thorley	Moderate	17	Moderate	Moderate	28	High	Moderate
3525	896 Putty Road, Mount Thorley (secondary dwelling)	Moderate	-	-	-	7	Very low	Low

The moderate visual impact for ID2920 is consistent with the visual impact rating for this dwelling in the exhibited project.

For the private viewpoints near the realignment of the transmission line at Gouldsville, a revised detailed assessment has been carried out for ID2928 and ID2929. The detailed assessment identified a moderate visual impact for ID2928 and a low visual impact for ID2929.

A summary of the detailed assessment for private viewpoints near the realignment of the transmission line at Gouldsville is included in *Table 5.19*.

Table 5.19 Summary of updated detailed assessment for the realignment of the transmission line at Gouldsville

ID	Address	Sensitivity	Exhibited project			Amended project		
			Occupied cells	Potential magnitude	Potential visual impact rating	Occupied cells	Potential magnitude	Potential visual impact rating
2928	16 Long Point Road East, Gouldsville	Moderate	22	Moderate	Moderate	17	Moderate	Moderate
2929	16 Long Point Road East, Gouldsville	Moderate	0	None	None	7	Very low	Low

Nighttime

There is no additional permanent lighting proposed as part of the amended project that would be seen from private residential viewpoints at nighttime during operation. The assessment of nighttime visual impacts during operation is consistent with the EIS.

Landscape character impacts – daytime

An assessment of the impact of the amended project on landscape character during the day throughout operation was completed. While there would potentially be slightly less vegetation within the vicinity of the transmission line in LCZs 8, 11 and 12, overall the impacts would be consistent to those identified in the EIS. There would be no change in the remaining LCZs from the EIS.

Landscape character impacts – nighttime

An assessment of the impact of the amended project on landscape character during the nighttime throughout operation was completed. There is no additional permanent lighting proposed as part of the amended project and therefore there are no changes to the operational landscape character impacts at nighttime compared to those identified in the EIS.

5.4.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential impacts on Aboriginal heritage are listed in *Table 5.20*. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text). The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.20 Updated mitigation measures – landscape and visual

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
LV1	Landscape character and visual impacts	A landscape character visual impact management plan (LCVIMP) will be prepared as part of the project environmental management strategy. The LCVIMP would include mitigation measures to manage: • potential impacts on landscape character during the day during construction and operation • potential impacts on landscape character at night during construction and operation • potential impacts on views from the public domain during construction and operation where there is a moderate or higher potential visual impact • potential impacts on views from private dwellings, that are not associated with property that is hosting project infrastructure, and that have a predicted moderate or higher potential visual impact during construction and operation • details regarding the installation and maintenance of any proposed on-site mitigation measures such as vegetation for screening.	Detailed design Construction	All
~~LV1~~ LV2	Vegetation retention	Vegetation clearance for the project will be limited to the minimum extent necessary for construction and operation to maximise existing visual screening and retention of the existing landscape character. Retained vegetation will be clearly demarcated on site as 'no-go zones' prior to the commencement of construction **in the area**. Construction personnel will be made aware of no-go zones as part of environmental site induction(s).	Detailed design Construction Operation	All locations
~~LV2~~ LV3	Construction lighting	Lighting at construction support sites will be designed and operated in accordance with *AS 4282 2019 Control of the obtrusive effects of outdoor lighting.*	**Detailed design** Construction	Construction support sites

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
~~LV3~~ LV4	Visual changes near residences	For private properties assessed as having a moderate or higher visual impact **(ID465, 466, 467, 2920 and 2928),** screening options will be agreed with the landowners. Screening options may include vegetation that will be installed and established by a contractor. Any screening vegetation will be installed in accordance with ~~a plan and specification prepared~~ **advice provided** by a qualified Landscape Architect or designer.	Construction	Private dwellings assessed as having a moderate or higher visual impact
~~LV4~~ LV5	Visual changes near residences	Opportunities will be investigated to reduce the height of the transmission towers visible from those dwellings with a moderate visual impact in the vicinity of Cessnock Road, Broke.	Detailed design	Private dwellings assessed as having a moderate or higher visual impact near Cessnock Road, Broke.
LV6	Visual changes due to the temporary workers accommodation facility on Wollombi Road	The visual prominence of the temporary workers accommodation facility will be minimised, including: • Structures visible from surrounding areas (including buildings, fences storage containers etc.) will have a non-reflective and neutral grey finish (or similar) to reduce their prominence. • Signage will be limited to what is required for identification and safety purposes to avoid visual clutter. • Temporary screen planting and mounding will be investigated and implemented where appropriate, to obstruct views from the most affected residents. If appropriate, screening vegetation will incorporate fast growing natives. • Where feasible and reasonable, the elements within construction sites would be located to minimise visual impacts, for example storage and machinery would be stored behind fencing or screened by the temporary worker accommodation buildings.	Construction	Wollombi temporary workers accommodation facility

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		Where suitable, site fencing to incorporate fabric screen-printed mesh banners to obstruct views from residents and road users. A pattern to create a camouflage effect or community artwork would be considered if appropriate e.g. along Wollombi Road.		
LV7	Visual impacts	All screening vegetation will be installed in accordance with advice provided by a qualified Landscape Architect or designer. The vegetation will comprise appropriate local plant species at a suitable density and layout to achieve screening over time. This vegetation will be established by the contractor and should be self-sustaining.	Detail design Construction	Moderately and highly impacted dwellings
LV8	Visual impacts	Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction and remain for the duration of the construction period.	Detail design Construction	All locations identified in *Appendix G (Landscape character and visual impact assessment addendum)* of the Amendment Report
-	Cultural heritage management	The clearing of vegetation between significant cultural viewing locations will be managed in accordance with Aboriginal heritage mitigation measure AH08.	Detailed design Construction	Flat Rock Lookout (HTP-C-CP01 45-3-5003) Other important cultural viewlines and viewscapes, including but not limited to SL5 and SL8
-	Cultural heritage management	The positioning of project elements to minimise their visibility within culturally important view-lines will be managed in accordance with Aboriginal heritage mitigation measure AH08.	Detailed design Construction	Important cultural viewlines and viewscapes, including but not limited to SL5

5.5 Traffic and transport

Chapter 11 (Traffic and transport) and *Technical Report 4 – Traffic and transport impact assessment* of the EIS assessed the potential impacts from construction and operation of the exhibited project on traffic and transport.

Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential traffic and transport impacts identified in the EIS and to respond to feedback received during exhibition of the EIS. A revised traffic and transport impact assessment (TTIA) has been prepared to support this Amendment Report, and is provided in *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report. The findings of the revised TTIA are described in this section.

5.5.1 Assessment approach

Legislation, policies, plans and guidelines

The revised TTIA prepared to assess the potential traffic and transport impacts of the amended project was prepared with consideration of the same legislation, policies, plans and guidelines as the exhibited TTIA.

Study area

The study area used for the revised TTIA to assess the potential traffic and transport impacts of the amended project was prepared with consideration of the same study area used for the exhibited TTIA.

Assessment methodology

The assessment methodology adopted for the revised TTIA was largely consistent with the assessment methodology used in the exhibited TTIA. Adjustments to the traffic and transport impact assessment methodology have been made in response to feedback received during exhibition of the EIS relating to:

- updates to the data used in the crash analysis (2020 – 2024)
- collection of additional traffic data for some intersections
- assessment of the network AM and PM peak hours with the HTP peak hour volumes for the expected peak construction year (2028), except where the network AM peak occurs before 6 am. The exhibited TTIA had assessed the HTP peak hour (6-7am and 5-6pm), which did not always correspond to the network peak.
- revised turn warrant, Safe Intersection Sight Distance (SISD) and swept path analysis at intersections on construction access routes
- additional swept path analysis for OSOM movements.

Other changes to the traffic and transport assessment methodology incorporated into the revised TTIA include:

- changes to light vehicle movements during construction to reflect the inclusion of temporary worker accommodation at the Wollombi Road construction support site. The revised assessment has not accounted for the removal of temporary worker accommodation at the Gouldsville Road construction support site, and therefore presents a worse-case scenario for potential traffic impacts
- amendments to the proposed construction access routes and access tracks
- revised turn warrant, SISD and swept path analysis at some locations, or new access track intersections with the public road network as a result of the amended project were undertaken.

Changes to the access requirements and proposed upgrades to public roads and intersections are provided in *section A.3.5* of the updated project description, provided as *Appendix A (Updated project description)* of this Amendment Report.

5.5.2 Existing environment

Road network and performance

S*ection 11.2.1* of the EIS described the existing road network across the study area, noting that it consists of a combination of National, State, regional, local and forest roads. The National, State, regional, local and forest roads to be used as part of the amended project are largely consistent with those described in the EIS and are shown in Figure A.10 in the updated project description (refer to *Appendix A (Updated project description)*), with some roads removed.

The existing (2024) road network performance described in the EIS is consistent with the existing road network performance described in the revised TTIA, with almost all assessed roads in the study area currently operating at a level of service (LoS) A during the network peak hour under existing traffic conditions, with the exception of the New England Highway (west of Lemington Road in Ravensworth), the Golden Highway (east of Gouldsville Road in Gouldsville), Broke Road (east of McDonalds Road in Pokolbin), and Freemans Drive (south of Martinsville Road in Cooranbong). The assessment indicates that the road network operates at an acceptable LoS D or better in existing network peak hours.

As such, consistent with the exhibited project, the existing road network for the amended project currently performs at an acceptable level of service or better during network peak and HTP peak hours.

Intersection performance

Consistent with the EIS, existing (2024) intersection performance for intersections proposed to be used for construction of the amended project varies between LoS A and LoS F during road network and HTP peak hours, with most intersections performing at LoS A. Those performing at a LoS of E or F during the AM and/or PM network peak are New England Highway / Lemington Road, Putty Road/Broke Road, Golden Highway / Range Road and Wine Country Drive / Broke Road.

Heavy vehicle route restrictions

The heavy vehicle route restrictions described in *section 11.2.1* of the EIS are applicable to the amended project. OSOM routes to be used during construction of the amended project are shown in Figure A.10 of the updated project description (refer to *Appendix A (Updated project description)*). Further detail, including an assessment of the proposed OSOM routes, has been included in *Appendix H (Revised traffic and transport impact assessment)*.

Road safety

Crash history data along proposed construction access routes was analysed as part of this EIS to understand crash severity and to provide a safety overview of road network conditions within the study area. This analysis has been revised to include more recent crash history data (2020 to 2024) in response to submissions.

The number of crashes recorded between 2020 and 2024 for National, State and regional roads identified as construction routes for the amended project are outlined in Table 5.21. A breakdown of crashes, including the number of fatal or serious injury crashes, is included in *Appendix H (Revised traffic and transport impact assessment)*.

Table 5.21 Crash history between 2020 and 2024

Road category	Road name	Number of crashes
State	New England Highway	104
	Golden Highway	36
	Wine Country Drive	34
	Wangi Road	49
Regional	Broke Road	4
	Cessnock Road	13
	Wollombi Road	62

Public transport

The existing public transport network described in *section 11.2.2* of the EIS is applicable to the amended project.

Active transport

The existing active transport network described in *section 11.2.3* of the EIS, including the use of forest roads by recreational users of State forests, is applicable to the amended project.

Rail network (freight)

The existing freight rail network described in *section 11.2.4* of the EIS is applicable to the amended project.

5.5.3 Assessment of potential impacts

Construction impacts

The following amendments and refinements have resulted in changes to the exhibited traffic impact assessment:

- changes to access tracks – this resulted in a new access location off Putty Road and Jerry Plains Road (southbound ramp), which was included in the detailed assessment of intersections
- changes to access tracks at Bulga to minimise impacts to mining operations – this resulted in reduced traffic and transport impacts due to the removal of an access on Broke Road. An access on Putty Road would also not proceed as a result of the revised traffic assessment
- Wollombi Road construction support site reconfiguration – this resulted in a change to traffic and transport impacts with the Wollombi Road construction support site now including temporary worker accommodation. The updated traffic generation as a result of this amendment was included in the detailed assessment of intersections.

Road network impacts

Traffic generation and distribution

Table 5.22 shows the maximum vehicle movements generated from the construction support sites during the HTP peak hours. Changes to project traffic generation would occur as a result of the changes to the temporary worker accommodation strategy. These changes are highlighted through bold and strikethrough text in *Table 5.22*.

Table 5.22 Maximum HTP peak hour traffic generation during peak construction (2028)

Construction support site	Traffic movements per hour			Traffic movements per hour – PM peak (5pm to 6pm)		
	Light vehicle	Heavy vehicle	Total	Light vehicle	Heavy vehicle	Total
Hebden Road	60	43	103	50	36	86
Pikes Gully Road	50	35	85	40	30	70
Gouldsville Road	**~~60~~50**	38	**~~98~~88**	**~~50~~40**	36	**~~86~~76**
Wollombi Road	**~~50~~60**	35	**~~85~~95**	**~~40~~50**	30	**~~70~~80**
Freemans Drive	80	50	130	60	40	100

1. The traffic assessment has not included the reduction in light vehicles as a result of the removal of the temporary worker accommodation facility at the Gouldsville Road construction support site, noting this is such a minor update there is unlikely to be any change in assessment outcomes at this location.

Road capacity and efficiency

The road capacity (mid-block) assessment presented in the EIS found that almost all roads used for construction would operate at a LoS A in 2028 during the HTP peak construction period except for the New England Highway (west of Lemington Road) and Freemans Drive in Martinsville.

An updated road capacity (mid-block) assessment was undertaken to assess the potential impacts of construction traffic on road network performance during peak construction (expected to be in

2028) as outlined in *section 5.5.1*. Most roads were assessed to operate at LoS A or LoS B during the network peak hours in 2028 with and without construction traffic, with the exception of New England Highway (west of Lemington Road),Freemans Drive in Martinsville and Broke Road (east of McDonalds Road).

A comparison of these roads during the HTP peak and network peak is presented in *Table 5.23*.

Table 5.23 Mid-block level of service for future (2028) base traffic volumes without and with construction traffic with a level of service of C or lower

Midblock	Peak period [1]	Level of service (2028)	
		Without project	With project
New England Highway (west of Lemington Road)	HTP AM Peak – NB/WB	LoS B	LoS C
	HTP PM Peak – NB/WB	Los B	LoS C
	Network PM peak – SB/EB	LoS B	LoS C
Freemans Drive (south of Martinsville Road, Martinsville)	HTP AM Peak – NB/WB and SB/EB	LoS A and LoS B	LoS B
	HTP PM Peak – NB/WB and SB/EB	LoS D and LoS C	LoS D
	Network AM Peak - NB/WB and SB/WB	LoS C and LoS D	LoS D
	Network PM Peak - NB/WB and SB/WB	LoS D	LoS D
Broke Road (east of McDonalds Road)	HTP PM Peak – NB/WB and SB/EB [2]	-	-
	Network PM Peak - NB/WB and SB/EB	LoS A and LoS B	LoS B and LoS C

1. NB/WB – northbound/westbound, SB/WB – southbound/eastbound)
2. The Broke Road (east of McDonalds Road) mid-block performance was not reported in the exhibited Technical paper 4 – Traffic and transport impact assessment

Although the construction of the project would potentially result in changes to the LoS at some locations, construction traffic would not result in any roads along the construction access routes for the project operating at an unacceptable LoS (i.e. LoS E or LoS F).

These results indicate that the road network would continue to perform at acceptable levels of service during the peak construction period of the amended project (2028).

Intersection performance

An updated intersection performance assessment was undertaken adopting the approach to peak period selection outlined in *section 5.5.1* of this Amendment Report to assess potential impacts of construction traffic on intersection performance during peak construction of the project (expected

to be in the year 2028). This approach has resulted in additional intersections being forecast to perform at an unsatisfactory LoS in 2028 without construction traffic.

With the addition to the HTP peak hour volume, the assessment concluded that most existing intersections would continue to perform at an acceptable level of service, except for the intersections outlined in *Table 5.24*.

Intersections denoted in **bold** in *Table 5.24* were not assessed as performing at an unsatisfactory level or requiring mitigation to minimise impacts from construction of the project in the exhibited TTIA. Changes to level of service from the exhibited project based on updated traffic modelling are highlighted in bold and strikethrough text. These changes are the result of the revised assessment methodology, and are not the result of the proposed amendments or refinements.

Table 5.24 Intersections with an unsatisfactory level of service for future (2028) base traffic volumes with construction traffic

Intersection	Peak period	Level of service (2028)	
		Without project	With project
New England Highway / Hebden Road	HTP AM peak hour	LoS F	LoS F
	Network PM peak hour	LoS F	LoS F
New England Highway / Lemington Road	Network PM peak hour	LoS B	**~~LoS D~~ LoS E**
New England Highway / Pikes Gully Road	HTP AM peak hour	LoS D	**~~LoS D~~ LoS E**
Golden Highway / Range Road	HTP AM peak hour	LoS F	LoS F
	Network PM peak hour	LoS F	LoS F
Wine Country Drive / Broke Road	Network PM peak hour	**~~LoS C~~ LoS F**	**~~LoS D~~ LoS F**
Mandalong Road / Freemans Drive / Wyee Road	Network AM peak hour	LoS F	LoS F
	Network PM peak hour	LoS F	LoS F
Putty Road / new access	Network PM peak hour	-	LoS F
Wollombi Road / West Avenue	Network PM peak hour	**~~LoS D~~ LoS C**	**~~LoS D~~ LoS E**
Freemans Drive / Martinsville Road	Network AM peak	**~~LoS A~~ LoS C**	**~~LoS A~~ LoS F**
	Network PM peak	**~~LoS C~~ LoS E**	**~~LoS C~~ LoS E**

To address these impacts, construction traffic would be prohibited from using these intersections during the assessed peak hour, with implementation of variable message signs to communicate potential network delays to other road users. The exception is at:

- Wine Country Drive / Broke Road intersection, which is an important intersection on the construction access routes for heavy vehicles. In this instance and in addition to variable message signs, project-related heavy vehicles would be minimised and light vehicles would be directed to use the other assessed construction access routes to access sections of the HTP corridor (specifically Mount View Road, Oakey Creek Road and McDonalds Road)

- Mandalong Road / Freemans Drive / Wyee Road intersection, which is important in providing access to and from the construction impact area, particularly the Eraring substation and HTP corridor. TfNSW is proposing to upgrade this intersection to signals, which would result in an LoS C without and with construction traffic. To minimise pressure on this intersection in the event this intersection is not upgraded to signals, alternative construction access routes to/from the Freemans Drive construction support site are available to enable construction traffic to avoid this intersection (being traffic travelling to/from the construction impact area west of the M1 Motorway)
- Putty Road / new access, which, upon review of the performance and sight distance constraints, would not be used for the project.

The Wollombi Road / West Avenue intersection would worsen to LoS E during the PM peak hour due to increased westbound traffic along Wollombi Road, resulting in delays for vehicles turning out of West Avenue. However, Cessnock City Council is planning to upgrade this intersection to signals as part of the Wollombi Road Upgrade project. This upgrade would reduce the delays for vehicles turning out of West Avenue, meaning upgrades or mitigations for this intersection are not required as part of the project. During detailed design, consultation with Cessnock City Council will continue to confirm the timing of this upgrade.

For the Freemans Drive / Martinsville Road intersection, analysis of the intersection performance in the hours either side of the network AM peak hour indicate that construction vehicles could be accommodated and operate at LoS C, meaning construction traffic would be minimised during the network AM peak hour. For the network PM peak hour, the movement forecast to operate at LoS E (right turn out of Martinsville Road) would operate with the same level of service with or without the construction vehicles. The construction traffic would not therefore contribute to the turning movements that cause the intersection to operate at LoS E under the future base conditions, and would have negligible impact on the intersection during the PM peak hour.

<u>Turn warrant assessment and swept path analysis</u>

Revised turn warrant and swept path assessments were carried out at existing intersections to assess the intersection's ability to safely accommodate the required turning movements for construction vehicles.

Based on this assessment, the following intersections are identified for an upgrade or widening to meet the relevant standards for safe turning movements (upgrade details are provided in sec*tion A.3.5* of *Appendix A (Updated project description)* with designs provided in *Appendix D* of *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.:

- Golden Highway / Lemington Road
- Golden Highway / Unknown Road (east of Lemington Road)
- Golden Highway / Comleroi Road
- Golden Highway / Gouldsville Road
- Putty Road / access track
- Golden Highway / Existing access across rail track at Mount Thorley
- Wollombi Road / Mount View Road Millfield
- Wollombi Road / Hayes Road

- Cessnock Road / Oakley Lane
- Freemans Drive / Martinsville Road
- Martinsville Road / Watagan Road
- Freemans Drive / Mount Faulk Road
- Freemans Drive / Mount Nelinda Road
- Intersections associated with existing accesses on the following local or regional roads: Broke Road, Cessnock Road, Jerrys Plains Road (southbound ramp), Long Point Road West, Lemington Road and Archerfield Road
- Lemington Road / Old Lemington Road.

The upgrades nominated above would improve safety at these intersections by providing additional turning lanes as well as acceleration and deceleration lanes, where required, or providing for the swept path of the largest expected construction vehicles. These works are in addition to the new access intersections proposed as part of the project, such as new accesses to construction support sites or the HTP corridor.

Consultation would continue with TfNSW and the relevant councils for these intersection upgrades as well as new accesses.

Further information on the turn warrant assessments undertaken and the proposed intersection upgrades are found in *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.

Sight distance

The suitability of intersection locations based on sight distances was also assessed, with revisions to the criteria applied to the analysis. This considers the ability of a driver on a major road to observe, react and decelerate sufficiently to avoid a crash if a vehicle enters from a minor road and moves into a potential conflict point causing collision. The assessment shows that most existing and proposed intersection locations are compliant except for the following proposed accesses:

- Golden Highway / Lemington Road
- Golden Highway / Gouldsville Road
- Putty Road / Mitchell Line of Road
- Golden Highway / Range Road
- Wine Country Drive / Broke Road
- Cessnock Road / Oakley Lane
- Martinsville Road / Watagan Road
- Martinsville Road / Pringles Road
- Watagan Forest Road / Martinsville Hill Road
- Freemans Drive / Martinsville Road
- Freemans Drive / Newport Road
- Freemans Drive / Mount Nellinda
- new or existing accesses to construction support sites for Wollombi Road, Gouldsville Road and Freemans Drive

- new or existing accesses connecting to Cessnock Road, Broke Road, Long Point Road West, Cessnock Road, Jerrys Plains Road (southbound ramp) and Wollombi Road.

To improve driver sight distances at these intersections, additional advance warning signs, reduced temporary speed limits and/or trimming of vegetation would be implemented as required. Further information about treatments for sight distances at these intersections is included in *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.

Road safety

Impacts on road safety during construction of the amended project would be consistent with those identified for the exhibited project.

The EIS identified the need to provide passing bays and road upgrades along certain roads where existing roads are only suitable for one lane movement of heavy vehicles. These, alongside traffic control for heavy vehicles movements, would minimise risks associated with construction traffic on these roads. Further discussion is provided in this section (refer to the discussion on property access below).

Road condition

Impacts on road condition during construction of the amended project would be consistent with those identified in the EIS.

Stringing of the transmission line across roads

There are no additional locations where the transmission line would be required to be strung over a road compared to the roads identified in the exhibited TTIA. The methodology for stringing of the transmission line across roads would be consistent with the exhibited project, including for the Pacific Motorway. Traffic control measures would be implemented where required, and consultation would continue to be carried out with the relevant road authority during detailed design. The impacts described in *section 11.3.1* of the EIS and *section 5.3.5* of *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report in relation to the stringing of the transmission line across roads are applicable to the amended project. Further detail on stringing methodologies over State roads is provided in *section 8.11 (Transport for NSW)* of the Amendment Report.

Property access

Impacts to property access described in *section 11.3.1* of the EIS are largely applicable to the amended project. The project is expected to have some impact to property accesses during construction particularly on roads only wide enough for one heavy vehicle to pass. These are typically unsealed roads in the Pokolbin, Mount View and Millfield areas, as well as the State forest roads in Pokolbin, Corrabare and Olney.

Feedback received during the public exhibition of the EIS highlighted that property access impacts would likely be felt by properties located along these typically unsealed roads. It is acknowledged that these roads often provide access to rural residential properties, as well as to businesses and to recreational areas in the State forests.

As detailed in section A.3.5 of *Appendix A (Updated project description)* of this Amendment Report, road upgrades are proposed along the following local public roads in the Cessnock and Lake

Macquarie LGAs where roads require localised widening in addition to passing bays to accommodate a 19 metre articulated vehicle – Oakley Lane, Pokolbin Mountains Road, Mf1 Road, Mount Baker Road, Mount View Road and Hayes Road.

Traffic controllers would still be required to be present at passing bays along these roads to ensure the roads are only operating under one-way conditions to prevent mid-block passing. Additional mitigation measures have been included in *section 5.5.4* to manage property access impacts for residents and businesses along these roads. These measures would be developed in consultation with landowners along these roads, and may include the provision of a contact number for residents and businesses with driveway access between two passing bays for access issues and emergencies, commitments concerning maximum wait times (which are established in traffic management plans), and minimum notification periods for any road closures, road works or detours.

Roads where the proposed mitigation measures would be implemented include:

- Pokolbin Mountains Road: this road services rural residential properties and businesses (such as cellar doors and short-term accommodation), most of which are located between two proposed passing bays closest to Oakey Creek Road. Several passing bays are proposed at a range of 2–2.5 kilometres further along Pokolbin Mountains Road. The location of the passing bays would be confirmed during detailed design
- Mount View Road and Mount Baker Road: these roads provide access to rural residential properties and businesses (such as cellar doors or short-term accommodation). Mount View Road is sealed and sufficient for two-way traffic closer to Wollombi Road but becomes narrower and is unsealed with constrained geometry as it approaches Mount Baker Road. The intersection of Mount Baker Road/Mount View Road is a sharp turn that further constrains the travel lane and is only able to accommodate one-way traffic, particularly during construction. Passing bays are proposed on Mount Baker Road. Given limited road width on Mount View Road on the approach and at the intersection with Mount Baker Road, there is likely to be a need for additional traffic control at either end of the intersection. This would allow construction vehicle movements to be safely managed through this section
- Mf1 Road and Trig Road, south of Hayes Road: these roads service residential properties and passing bays are proposed intermittently throughout the road. The roads within the Corrabare State Forest are narrow and are only generally suitable for one way traffic. Though the demand on this road may be low, traffic management would be needed to ensure access for residents is adequately managed
- Watagan Road, Watagan Forest Road and Martinsville Hill Road: these roads service the Watagan and Olney State forests, providing access to recreational camping grounds and work areas within the State forests. Passing bays are proposed at regular spacing for vehicles entering the State forest from Martinsville Road. One-way operation managed by traffic controls would be implemented through the State forest roads for construction vehicles (including proposed OSOM vehicles) to negotiate through the constrained road bends and minimise the likelihood of mid-block passing.

OSOM deliveries

The OSOM deliveries required for construction of the amended project would be consistent with those described for the exhibited project. Further swept path analysis has been completed to demonstrate how the largest OSOM vehicle would be accommodated, or what temporary adjustments may be required. These requirements are consistent with those described in the EIS.

Construction of the amended project would require consistent approvals and arrangements for the delivery of OSOM components as was described in *section 11.3.1* of the EIS.

Public transport

The impacts on public transport as a result of the construction of the amended project would be consistent with those identified for the exhibited project outlined in *section 11.3.2* of the EIS.

Active transport

The impacts on active transport as a result of the construction of the amended project would be consistent with those identified for the exhibited project outlined in *section 11.3.3* of the EIS.

Rail network

Impacts to the rail network as a result of the construction of the amended project, including as a result of stringing over rail lines, would be consistent with impacts described in *section 11.3.4* of the EIS.

Operation impacts

Consistent with the exhibited project, operational traffic and transport impacts would be limited to routine maintenance of the transmission line and switching stations as required. The traffic and transport impacts associated with the operation of the amended project would be consistent with those outlined in *section 11.4* of the EIS, including negligible impacts on road capacity and efficiency, intersection performance, road safety, road condition, property access, public and active transport, and the rail network.

5.5.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential impacts on traffic and transport are listed in *Table 5.25*. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text). The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.25 Updated mitigation measures - traffic and transport

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
TT1	Construction traffic impacts	A traffic management plan (TMP) will be prepared as part of the project environmental management strategy. The TMP will be developed in consultation with the relevant road/rail authorities and will include as a minimum: • confirmation of construction routes • measures to maintain access to local roads and properties • driver safety measures, including a driver code of conduct, requirements for in-vehicle monitoring systems, a driver fatigue management plan and the locations of rest areas along construction routes • site specific traffic control measures (including signage) to manage and regulate traffic movement prepared in consultation with the relevant road authorities and implemented by licenced traffic management contractors • measures to maintain pedestrian and cyclist access • requirements and methods to consult and inform the local community of impacts on the local road network • coordination with TfNSW and councils for road and intersection works and road crossings • coordination with ARTC for rail line crossings • requirements to obtain relevant approvals, including road occupancy licence(s), for any potential works in the road corridor and access by restricted access vehicles or OSOM vehicles required for the project. Where feasible, temporary road closures will be planned to occur outside of the traffic peak periods to minimise impacts to the road network • access to construction sites including entry and exit locations and measures to prevent construction vehicles queueing on public roads	Detailed design Construction	Construction routes, access tracks, construction support sites and temporary worker accommodation accesses

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• maintenance and safety measures required along access tracks and at access points to construction support sites, including appropriate line marking and signage and wheel cleaning facilities as required • **monitoring systems and auditing processes for the implementation of traffic management controls, and mechanisms to review the effectiveness of monitoring systems, and the frequency of monitoring or auditing requirements** • a response plan for any construction traffic incident, or complaints management process • requirements for routine inspections of construction routes • consideration of other developments that may be under construction to minimise cumulative impacts.		
TT2	Road and intersection upgrades	Upgrades will be carried out for **roads and** intersections ~~where turn warrant assessments have determined that works are required for construction vehicles to carry out safe turning movements. Intersections will be upgraded~~ in line with the required works outlined in ~~*Chapter 4 (Project description)*~~***Appendix A (Updated project description)*** **of the Amendment Report**. In addition, safety measures will be implemented as required at intersections assessed as being non-compliant with safe intersection sight distance criteria, including the provision of additional advance warning signs, temporary reductions in speed limits and/or clearing of vegetation in consultation with the relevant road authority. Safety measures will be implemented in line with the required works outlined in ~~*Chapter 4 (Project description)*~~***Appendix A (Updated project description)*** **of the Amendment Report**.	Construction	Intersections identified in ***Appendix A (Updated project description)*** ~~*Chapter 4 (Project description)*~~ as requiring upgrades for turn warrant treatment or safe intersection sight distance **Roads identified in *Appendix A (Updated project description)***

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
TT3	Intersection performance impacts	~~Ongoing investigation will be carried out to determine appropriate measures at the New England Highway/Hebden Road intersection to minimise impacts of right turning construction traffic from Hebden Road onto the New England Highway in the AM and PM peaks. Measures to minimise intersection performance impacts as a result of construction traffic will be investigated in consultation with relevant stakeholders.~~ To minimise intersection performance impacts as a result of construction traffic, the following restrictions will be imposed on construction vehicles during the specified times: • New England Highway / Hebden Road intersection (I-01a): No construction traffic during the HTP AM peak hour (6-7am) except for left out from Hebden Road and no construction traffic during the PM network peak (4.45-5.45pm) except for right into Hebden Road) • New England Highway/Lemington Road intersection (I-02): No construction traffic before 7am and no construction traffic during the PM network peak (4.45 and 5.45pm) • New England Highway/Pikes Gully Road (I-02a): No construction traffic during the HTP AM Peak hour (6 – 7am) except for left out from Pikes Gully Road • Golden Highway (Putty Road) / Broke Road intersection (I-09): No construction traffic before 7am • Putty Road / Mitchell Line of Road intersection (I-10): No construction traffic during the PM peak (between 4-5pm) • Golden Highway / Range Road intersection (I-10b): No construction traffic before 7am and during the PM network peak (4-5pm).	Detailed design Construction	Identified intersections ~~New England Highway/Hebden Road intersection~~

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• Wine Country Drive / Broke Road intersection (I-14): Minimise heavy vehicle movements during the PM network peak (3.15-4.15pm). Light vehicles directed to use alternative route (Mount View Road, Oakey Creek Road, McDonalds Road). • Freemans Drive / Martinsville Road intersection (I-23): Minimise construction traffic in the AM network peak (8.15-9.15am). Compliance with the above restrictions will be monitored and audited in accordance with the TMP. In addition to these restrictions, variable message signs to communicate possible delays will be installed at the Golden Highway / Range Road intersection (I-10b), Wine Country Drive / Broke Road intersection (I-14), and at any other location agreed with Transport for NSW. Putty Road / New site access (I-52) will not proceed.		
~~TT4~~	~~Intersection performance impacts~~	~~Ongoing investigation will be carried out to determine appropriate measures at the Golden Highway/Range Road intersection to minimise the impacts of through and right turning movements in the AM peak, Measures to minimise intersection performance impacts as a result of construction traffic will be investigated in consultation with relevant stakeholders.~~	~~Detailed design~~ ~~Construction~~	~~Golden Highway/Range Road intersection~~
TT4	Construction traffic impacts	Where practicable to do so, shuttle buses will be used to transport construction workers to and from work sites and temporary worker accommodation facilities.	Detailed design	Temporary worker accommodation at Hebden Road, Freemans Drive and Wollombi Road construction support sites

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
TT5	Road safety – design related	All accesses will be designed to accommodate the required construction vehicle(s) in line with the TTIA and in accordance with relevant Austroads guidelines (where applicable).	Detailed design	Construction routes, access tracks, construction support sites and temporary worker accommodation accesses
TT6	Road condition	Pre-construction road dilapidation surveys and routine inspections will be completed along all nominated construction routes on local roads. Where rectification works are required due to project impacts, consultation with the appropriate road authority will be undertaken to confirm the scope of the work required.	Detailed design Construction	Local roads
TT7	Access to properties	Access to properties will be maintained throughout construction, where feasible. Where that is not feasible, temporary alternative access arrangements will be provided following consultation with affected landowners and in accordance with the requirements of the construction communication and engagement plan **or in accordance with the property access sub plan to the TMP provided in mitigation measure TT14**. **Except as provided in the mitigation measure TT14,** disruptions to property access and traffic will be notified to landowners at least 5 business days prior and in accordance with the relevant community consultation processes outlined in the EMS.	Construction	Construction impact area

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
TT8	Pedestrian and cyclist access	Ongoing consultation will be carried out with local bicycle groups where available and with Forest Corporation NSW for walking and biking trails in State forests. Safe pedestrian and cyclist access will be maintained where the project interacts with existing pedestrian or bicycle facilities on public roads. Where this is not feasible, temporary alternative access arrangements will be provided following consultation with affected stakeholders and the relevant roads authority.	Construction	Construction impact area
TT9	OSOM vehicle access	Ongoing consultation will be undertaken with TfNSW regarding the use of State roads for OSOM vehicle routes and appropriate permits will be obtained from the National Heavy Vehicle Regulator for OSOM movements.	Detailed design Construction	OSOM routes
TT10	Cumulative impact with Hunter Valley Operations (HVO) Continuation Projects	~~Further analysis and~~ Coordination with HVO would be undertaken during detailed design and construction planning regarding works required ~~in the vicinity of Lemington Road~~ and any associated staging/timing to minimise adverse performance and road safety impact **on the road network along** ~~Lemington Road and at its intersections with~~ the New England Highway and Golden Highway.	Detailed design Construction	~~Lemington Road and~~ **The** surrounding roads near HVO in the northern section of the **amended** project impact area
TT11	**Access interfaces with operations at HVO and Bulga mining complex**	**A project co-ordination group will be established with Glencore, EnergyCo, the network operator and the design and construct contractors to manage critical interfaces between construction and mine operations, such as construction access and shared use of haulage roads.**	**Detailed design**	**HVO and Bulga mining complex**
~~TT11~~ **TT12**	Cumulative impact of the Mandalong Road upgrade works by TfNSW	~~Further analysis and~~ Coordination with TfNSW would be undertaken during detailed design and construction planning on the proposed construction activities requiring access on Mandalong Road and associated staging/timing to minimise adverse performance and road safety impacts at the Mandalong Road/Freemans Drive/Wyee Road intersection. ~~Alternative routes will be used should use of this intersection not be possible.~~	Detailed design Construction	Mandalong Road and surrounding areas in the southern portion of the project impact area

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
TT13	Interface with Lake Macquarie City Council's upgrade of the Martinsville Road/Freemans Drive intersection	The HTP intersection upgrade to Martinsville Road/Freemans Drive intersection will be delivered in coordination with Lake Macquarie City Council to ensure HTP intersection upgrade works do not preclude the ultimate delivery of Lake Macquarie City Council's planned safety improvements at this intersection.	Detailed design Construction	Martinsville Road/Freemans Drive intersection
TT14	Property access impacts	A property access sub plan to the TMP will be prepared for Pokolbin Mountains Road, parts of Mount View Road and Mount Baker Road, to manage property access impacts during construction. This sub plan will outline measures to maintain property access (unless otherwise agreed with property owner(s)) and road user safety along these roads during road upgrade works (where identified) and general use by construction vehicles. The sub plan will include but not be limited to, unless otherwise agreed with property owners: • a temporary reduction in the posted speed limit and installation of additional signage as needed • details on how access to properties is maintained during construction, including a maximum wait time under temporary traffic arrangements as per Transport for NSW 'Traffic control at work sites Technical Manual' (the maximum wait time will be 10-15 minutes) • minimum notification periods for any road works or disruptions, and a direct communication system (SMS/email) for registered residents and businesses • provision of a 24/7 contact number for access issues and emergencies • restriction of construction traffic movements to weekdays and standard working hours, except in consultation with property owners to accommodate construction vehicle movements outside standard working hours	Detailed design Construction	Properties located along Pokolbin Mountains Road, parts of Mount View Road and Mount Baker Road

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• commitment to avoid morning and/or afternoon peak periods in consultation with property owners (e.g. school peak times times of 8:30-9:30am and 2:30-3:30pm) • locations for passing bays and temporary traffic management • details of any ongoing works required to maintain a suitable level of usability of the road during construction (e.g. drainage at upgrade locations and clearing any impediments to road drainage along Pokolbin Mountains Road, where practicable). Compliance with the implemented traffic management controls will be monitored and audited in accordance with the TMP.		
TT15	Coordination of stringing activities over the Golden Highway	The methodology and program of stringing activities over the Golden Highway for HTP will be coordinated with TfNSW and Ausgrid with consideration of the Hunter-Central Coast REZ transmission project works, scheduled OSOM movements that pass this location and other scheduled road works along the Golden Highway.	Detailed design Construction	Golden Highway (Putty Road)

5.6 Land use and property

Chapter 12 (Land use and property) of the EIS assessed the potential impacts of the construction and operation of the exhibited project on land use and property. Additional assessment has been undertaken to identify changes to potential land use and property impacts associated with the amended project. The findings of the additional assessment are described in this section.

5.6.1 Assessment approach

The methodology for the assessment of land use and property impacts of the proposed amendments and refinements is consistent with the methodology detailed in *section 12.1* of the EIS. No changes to the assessment of land use and property impacts were required in response to submissions received following exhibition of the EIS. The assessment of potential changes to land use and property impacts has been focused on amendments to the project which result in changes to the project impact area.

5.6.2 Existing environment

The proposed amendments and refinements to the project have resulted in some minor changes to the existing environment of the project as it relates to property and land use when compared to the existing environment described in *section 12.2* of the EIS. Changes to the existing environment are detailed in this section.

Land zoning

Land zoning for the amended project remains consistent with the description of land zoning in *section 12.1* of the EIS. Land zoning within which the project amendments and refinements are located include:

- SP2 – Infrastructure, for changes to substation infrastructure at Eraring, the minor changes at Bayswater substation, some access track changes and some areas of localised easement widening for conductor swing
- RU1 – Primary production, for the realignment of the transmission line at Mount Thorley and Gouldsville and some access track changes
- RU2 – Rural landscape, for the reconfiguration of the Wollombi Road construction support site and some areas of localised easement widening for conductor swing
- RU3 – Forestry, for changes to laydown area locations within State forests, reconfiguration of the Flick Road emergency helicopter landing area, access track changes in State forests, most areas of localised easement widening for conductor swing, removal of the stringing site and changes to the disturbance area in Olney State Forest.

Land use

There are minor adjustments to the mapped land use of the amended project impact area compared to the exhibited project impact area. Land use within the amended project impact area is detailed in *Table 5.26*. Changes compared to the exhibited project impact area are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~ text.

Table 5.26 Land use within the amended project impact area

Land use	Area within the amended project impact area (ha)	Proportion of project impact area (%)
Production native forestry	~~685~~ **688**	~~29.1~~ **29.0**
Grazing native vegetation	~~557~~ **571**	~~23.7~~ **24.0**
Grazing modified pastures	~~258~~ **266**	~~11~~ **11.2**
Other minimal use	199	8.4
Utilities	~~128~~ **147**	~~5.4~~ **6.2**
Transport and communication	~~114~~ **119**	~~4.9~~ **5.0**
Services	108	4.6
Mining	~~97~~ **96**	~~4.1~~ **4.0**
Nature conservation	~~60~~ **61**	2.6
Grazing irrigated modified pastures	~~57~~ **38**	~~2.4~~ **1.6**
Plantation forests	43	1.8
Residential and farm infrastructure	~~27~~ **28**	~~1.1~~ **1.2**
River	~~9~~ **7**	<1
Reservoir/dam	7	<1
Other	~~2~~ **4**	<1

Property

Consistent with *section 12.2* of the EIS, the amended project impact area includes areas of freehold land, State forests, mining lands, land managed by NSW National Parks and Wildlife Service (NPWS), as well as land owned by councils, the NSW Government and the Australian Government.

There are minor adjustments to the land tenure areas of the amended project impact area when compared to the exhibited project impact area, as detailed in *Table 5.27*. Changes in *Table 5.27* are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~ text.

Table 5.27 Land tenure of the amended project impact area

Ownership	Area		Parcels of land	Landholdings
	Hectares	% of project impact area		
Freehold – mining and energy	~~910~~ 938	~~38.7~~ 39.4	~~188~~ 221	~~11~~ 12
NSW Government	~~826~~ 850	~~35.1~~ 35.7	N/A	~~1~~ 6
Australian Government	~~245~~ 243	~~10.4~~ 10.2	25	1
Freehold – private individuals	~~180~~ 172	~~7.7~~ 7.2	~~146~~ 147	~~110~~ 112
Freehold – private companies	~~120~~ 121	5.1	20	~~15~~ 14
Local government	~~35~~ 20	~~1.4~~ 0.9	~~52~~ 92	~~4~~ 3
Crown land	~~35~~ 31	~~1.5~~ 1.3	~~24~~ 64	~~1~~ 5

The landholdings within the amended project impact area owned by mining companies or related to energy infrastructure are associated with the same mining and energy companies described for the exhibited project.

A search of the National Native Title Tribunal on 18 December 2025 identified no known native title claims under the *Native Title Act 1993* (Commonwealth). Changes at Eraring substation as part of the amended project have resulted in an increased footprint that intersects with a registered Indigenous Land Use Agreement (NIA2000/001). Consultation would be carried out with the relevant parties to this agreement during detailed design.

Agriculture

Agricultural land within the amended project impact area covers around 877 hectares, representing 37 per cent of the amended project impact area (compared to 874 hectares or 37 per cent of the exhibited project impact area). Despite the minor change in the extent of agricultural land within the amended project impact area, the description of agricultural land in *section 12.2* of the EIS remains applicable.

State forests

Production native forestry remains the dominant land use within the amended project impact area. The amended project impact area includes around 774 hectares of land across four State forests managed by the Forestry Corporation of NSW (FCNSW) (compared to 764 hectares of land described in the EIS).

FCNSW use a classification system (Forest Management Zones 1-8) to identify how State forests are managed in NSW. The description of the forest management zones that intersect with the exhibited project impact area in *section 12.2.5* of the EIS are applicable to the amended project impact area.

Mining and exploration

Consistent with the exhibited project impact area, the amended project impact area intersects five coal mining complexes in the northern portion of the project impact area, including Mount Arthur Coal, Maxwell Underground Coal Mine, Hunter Valley Operations, Mount Thorley Warkworth and Bulga Coal Mine. The description of mining operations and these mining complexes within the EIS remains applicable to the amended project. The amended project impact area does not intersect any additional mineral exploration licence areas to those outlined in the EIS.

Mining complexes and mining leases within the amended project impact area are further detailed in Table 5.28. Changes are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~ text.

Table 5.28 Mining complexes and mining leases within and surrounding the amended project impact area

Mining complex	Mine owned land within the amended project impact area (ha)	Mine leases within the amended project impact area
Mount Arthur Coal Mine	52	ML1358, ML1593
Maxwell Underground Coal Mine	1	ML1820
Hunter Valley Operations	422	ML1705, ML1706, CCL755, ML1840, ML1841, ML1682, ML714, CCL714, CL359, CL360, CML4, ML1634, ML1324
Mount Thorley Warkworth	~~53~~ **51**	CCL753
Bulga Coal Mine	~~143~~ **136**	ML1717, CL224, ML1547
Centennial Coal/Newstan	32	CCL746, CCL762, ML1793
Others	~~2~~ **11**	ML1623, ML1533, CCL775, CCL752, ML1669

Commonwealth land

Around 243 hectares of the Singleton Military Area (1.8 per cent of its total 13,500 hectares) is located within the amended project impact area (compared to 245 hectares or 1.8 per cent of its total area in the exhibited project impact area).

National parks and other conservation land managed by NSW NPWS

The amended project impact area includes around 95 hectares of land managed by NSW NPWS (compared to 93 hectares in the exhibited project impact area). Land managed by NSW NPWS that is intersected by the amended project impact area includes the Corrabare North Flora Reserve and the Jilliby State Conservation Area and does not include the Corrabare South Flora Reserve or the Watagans National Park, consistent with the EIS.

The descriptions of the Corrabare North Flora Reserve and the Jilliby State Conservation Area included in *section 12.2* of the EIS remain applicable to the amended project impact area.

Crown land

The amended project impact area includes around 31 hectares of Crown land (compared to 35 hectares in the exhibited project impact area) and one hectare of land designated as travelling stock reserve (compared to 2 hectares in the exhibited project impact area).

Infrastructure and utilities

The interaction of the amended project impact area with transport infrastructure, power generation, electrical infrastructure and pipeline infrastructure is generally consistent with the description included in *section 12.2* of the EIS.

5.6.3 Assessment of potential impacts

Construction impacts

Land use changes

The assessment of the impacts of the construction of the project on land use changes is detailed in *section 12.3.1* of the EIS, which identified the requirement for the use of land temporarily for construction and then permanently for operation.

The amendments and refinements to the exhibited project would result in an overall change to the size of the construction impact area of around 28 hectares, from 2351 hectares to 2379 hectares (an increase of 1.2 per cent). As part of this change, the impacts to land use from individual project elements during construction have also changed, as outlined in *Table 5.29*. Changes to areas of impact compared to the exhibited project impact area are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~ text.

Table 5.29 Changes to construction land use impacts in the amended project impact area

Project element	Area of impact (ha)	Change in construction land use impacts compared to exhibited project impact area
HTP corridor, including new transmission line, towers and stringing sites	~~1700~~ **1699**	The realignment of the transmission line in Mount Thorley and Gouldsville along with the removal of the stringing site in the Olney State Forest has resulted in a minor reduction to the area of impact at these locations during construction. The construction land use impacts associated with the temporary exclusion of existing land and a change of land use is described in *section 12.3.1* of the EIS and the conclusions remain applicable to the amended HTP corridor.
Access tracks – new	~~102~~ **125**	The amendment to access tracks, including within State forests, the Bulga mining complex and at Mount Thorley, has resulted in minor changes to the area of impact of new access tracks. The construction of new access tracks as part of the amended project would include consistent construction activities as those outlined in *section 12.3.1* of the EIS. Land use at the locations of new access tracks would change from existing land uses, including agricultural, mining and forestry land uses, to an access track. New access tracks as part of the amended project may be required for permanent use by the network operator, which would be determined in consultation with relevant landholders.

Project element	Area of impact (ha)	Change in construction land use impacts compared to exhibited project impact area
Access tracks – upgrades (as well as road and intersection upgrades)	~~296~~ 312	The upgrade of additional access tracks, including in State forests, to access the upgrades to existing transmission lines that form part of the project, within the Bulga mining complex and to allow access to the realignment of the transmission line in Mount Thorley, as well as the addition of one upgraded intersection as part of the amended project has resulted in minor changes to the area of impact of upgraded access tracks and intersections. The upgrade of existing access tracks and intersections as part of the amended project would include consistent construction activities as those outlined in *section 12.3.1* of the EIS. Also consistent with the exhibited project, upgraded access tracks as part of the amended project may be required for permanent use by the network operator, which would be determined in consultation with relevant landholders. Upgrades to intersections would be permanent, unless otherwise agreed with the relevant road authority.
Access tracks – minor works	~~61~~ 42	Consistent with the EIS, there would be no change to the existing land use where minor works on existing access tracks are required. There may be some temporary disruption to the use of these areas during construction, however these would be managed in consultation with landowners. On completion of construction the previous land use can resume.
Access tracks - removed	19	Some access tracks have been removed as part of the amended project where these are no longer required, including near Bayswater to avoid an existing biodiversity offset area, near the realignment of the transmission line at Mount Thorley where some exhibited access tracks no longer provide access to the HTP corridor, and for access to upgrades to the existing transmission line. The construction activities outlined in *section 12.3.1* of the EIS no longer apply to locations where access tracks have been removed, meaning land use in these locations would remain consistent with existing conditions.
Construction support sites	70	The changes to construction support sites are contained within the construction impact area as assessed in the EIS. There is no change to the land use impacts as described in *section 12.3.1* of the EIS. Land used for construction support sites, including those with temporary worker accommodation would be returned to previous land uses following construction, in accordance with conditions of approval and any agreements with landowners.
Laydown areas	16	Changes to laydown areas within State forests has altered the location where land use impacts would occur. However, it has not resulted in a change to the overall area of impact of laydown areas compared to the exhibited project. Land use impacts for laydown areas that are outlined in *section 12.3.1* of the EIS now apply to the new laydown area locations at the Trig Road / Flick Road intersection in the Corrabare State Forest and the Watagan Creek Road / Burma Road intersection in the State Forest of the Watagan Mountains.

Project element	Area of impact (ha)	Change in construction land use impacts compared to exhibited project impact area
Substation upgrades	~~<1~~ **24**	Changes to the project impact area at Eraring substation to include the footprint of the existing substation have resulted in an increased footprint at this location. However, the construction works at this location would be consistent with the EIS and consistent with the existing land use (utilities) and there would be no change in land use during construction.
Switching stations	47	No change.
Adjustments and upgrades to existing transmission lines	327	No change.

Property impacts

The assessment of property impacts from construction of the project is detailed in *section 12.3.2* of the EIS. There have been minor adjustments to the number of properties requiring acquisition or leasing, as well as minor changes to the overall area required for acquisition and leasing as a result of ongoing consultation with affected landholders. The property impacts of the amended project would be consistent with those outlined in *section 12.3.2* of the EIS.

Adjustments to property infrastructure (such as agricultural sheds, fencing and gates) and the reconfiguration of cropping lands would still be required in some locations as part of the amended project, consistent with the EIS. However, as outlined in *section 12.3.2* of the EIS, any adjustments to fences, dams, access tracks or other property infrastructure required for the project would be undertaken in consultation with, and at no cost to, the landowner, and would be managed through property management plans (refer to mitigation measure LP2).

Agriculture

The description of impacts to agricultural land use in *section 12.3.3* of the EIS remains applicable to the amended project. Further details on the impacts of the amended project on agriculture are included in *section 5.7* of this Amendment Report.

State forests

As detailed in *section 12.3.4* of the EIS, construction of the project would result in temporary (and permanent) impacts to State forests, however on completion of construction, only the transmission line easement, new access tracks and the Olney switching station would be permanent, while the remainder of the construction impact area would return to its previous land use. A breakdown of construction impacts from the amended construction impact area is included in *Table 5.30*, including minor changes from the exhibited construction impact area. Changes to construction impacts to State forests in *Table 5.30* are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~

Table 5.30 Construction impacts within State forests

Project element	Construction impact areas within State forests (hectares)			
	Corrabare State Forest	Pokolbin State Forest	Watagan State Forest	Olney State Forest
HTP corridor	128	89	193	~~156~~ 158
Access road/track – new	~~6~~ 11	~~10~~ 7	~~5~~ 8	~~4~~ 6
Access road/track – upgrade	~~27~~ 33	~~32~~ 27	~~50~~ 52	~~44~~ 53
Access road/track – minor work	0	<1	~~<1~~ 1	~~8~~ 6
Construction support site	0	0	0	0
Laydown area	<1	2	~~1~~ 4	2
Switching station	0	0	0	20
Adjustments/upgrades to existing transmission lines	0	0	0	60
Percentage of State forest impacted by construction of the project	~~3.3~~ 3.1	~~0.9~~ 0.8	~~7.2~~ 6.2	1.4

Engagement with the Forestry Corporation of NSW is ongoing, including discussions surrounding the impacts to land use and opportunities for timber to be suitably harvested during construction for the commercial market.

Mining and exploration

Table 5.31 summarises minor changes to the potential impacts on mining complexes within the amended construction impact area following the assessment of the proposed amendments and refinements.

The impacts to mineral exploration and mine subsidence risks during construction described in *section 12.3.5* of the EIS remain applicable to the amended project.

Table 5.31 Changes to impacts on mining complexes within the amended construction impact area

Mining complex	Mining leases (ML) within the exhibited project impact area	Changes to impacts from amended construction impact area	Description of change
Mount Arthur Coal Mine	ML1358, ML1593	-	No change.
Maxwell Underground Coal Mine	ML1820	-	No change.
Hunter Valley Operations	ML1705, ML1706, CCL755, ML1840, ML1841, ML1682, ML714, CCL714, CL359, CL360, CML4, ML1634, ML1324	-	No change. As acknowledged in the EIS, the construction and operation of the project would interact with future extraction areas and future infrastructure associated with the HVO Continuation Project. To manage these interactions, an interface management plan has been included in the updated mitigation measures for the amended project (refer to *Appendix D (Updated mitigation measures)*).
Mount Thorley Warkworth	CCL753	✓	The amended project would intersect a slightly smaller portion of mine owned land associated with Mount Thorley Warkworth compared to the exhibited project from the realignment of the transmission line at Mount Thorley. Consistent with the EIS, most of the directly impacted areas are currently leased for agricultural purposes.
Bulga Coal Mine	ML1717, CL224, ML1547	✓	The amended project would intersect a smaller portion of mine owned land at the Bulga Coal Mine compared to the exhibited project as a result of changes to access tracks at Bulga, which were made in response to stakeholder feedback received during exhibition of the EIS. The changes in access tracks would avoid an existing clean water diversion, keep project access separate from Bulga mining complex operations and avoid existing biodiversity offset areas.

Mining complex	Mining leases (ML) within the exhibited project impact area	Changes to impacts from amended construction impact area	Description of change
Centennial Coal	CCL746, CCL762, ML1793	-	No change.

Commonwealth land

Although there has been a slight decrease in the area within the Singleton Military Area intersected by the amended project compared to the exhibited project, the description of impacts to Commonwealth land in *section 12.3.6* of the EIS remains applicable to the amended project due to impacts occurring within the same land use (services).

Conservation land managed by NSW NPWS

The amended project would increase the extent of impacts to the Corrabare North Flora Reserve by one hectare to a total of 31 hectares. This change would be a result of an additional access track in response to feedback received from Forestry Corporation of NSW. Impacts to Jilliby State Conservation Area (55 hectares) and other NPWS vested lands (eight hectares), would not change from the EIS. This would mean that around four per cent of the Corrabare North Flora Reserve (compared to 3.9 per cent for the exhibited project impact area) and 0.5 per cent of the Jilliby State Conservation Area (consistent with the exhibited project impact area) would be impacted by the construction of the amended project. The impacts to NPWS managed land would remain consistent with the impacts described in *section 12.3.7* of the EIS.

Crown land

The amended project impact area includes around 31 hectares of Crown land (compared to 35 hectares in the exhibited project impact area) and one hectare of land designated as travelling stock reserve (compared to two hectares in the exhibited project impact area).The nature of the impacts to Crown land from the amended project are consistent with those described in *section 12.3.8* of the EIS.

Infrastructure and utilities

The nature of the impacts of the amended project are consistent with the impacts to transport infrastructure, power generation, electrical infrastructure and other utilities described in *section 12.3.9* of the EIS.

Operation impacts

Land use changes

Consistent with the EIS, the operation of the amended project would result in permanent changes to the existing land use to include electrical infrastructure where switching stations and transmission lines are located. The EIS describes the final operational easement for the project being around 70 metres wide and extending for around 110 kilometres. As a result of the need to account for conductor swing during periods of high wind, the final operational easement of the amended project would be up to around 140 metres in some locations, with the majority of the transmission line easement remaining at around 70 metres in line with the description in *section 12.4.1* of the EIS. The locations of the widened operational transmission line easement are outlined in *section 3.2.1*.

The operation impact area would cover around 1371 hectares (compared to 1261 hectares for the exhibited operation impact area), and would include:

- 816 hectares for the transmission line easement (an increase of 39 hectares compared to 777 hectares for the exhibited operation impact area)

- 29 hectares for the Bayswater South and Olney switching stations (no change from the exhibited project)
- 247 hectares for access tracks (a reduction of two hectares compared to 249 hectares for the exhibited project impact area)
- 277 hectares associated with adjustments and upgrades to existing transmission lines (an increase of 15 hectares compared to 262 hectares for the exhibited project impact area, however the operation impact area associated with the existing transmission line easement has not changed as part of the amended project. The value presented in the EIS was in error. The correct value for the exhibited and amended project is 277 hectares).

There is some overlap in project elements, such as access tracks in instances where they are located within the permanent transmission line easement, which explains why the breakdown of impacts by project feature does not equal 1371 hectares.

Property impacts

Consistent with the EIS, operation of the project would require permanent alterations to property tenure and ownership. This would largely be consistent with the areas identified in the exhibited operation impact area, with the exception of the widened areas of the transmission line easement to account for conductor swing. As described in the EIS, permanent easements registered on land titles would provide a legal 'proprietary right' for operators to operate and maintain project infrastructure and other assets. These would be obtained either by agreement or by compulsory acquisition in accordance with the requirements of the NSW *Land Acquisition (Just Terms Compensation) Act 1991*.

Impacts to tenure and ownership as a result of the operation of the project are outlined in Table 5.32, with changes from the exhibited project highlighted in **bold** and ~~strikethrough~~ text.

Table 5.32 Tenure and ownership impacts within the amended operation impact area

Project element	Current ownership	Permanent property impact	Number of landowners impacted
HTP transmission line easement and access tracks	Freehold (private)	New easements would be established by agreement, where possible. Where agreement cannot be reached with the landowner, compulsory acquisition would be undertaken in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.	**18** **(5 whole of property acquisitions)** ~~16~~ ~~(7 whole of property acquisitions)~~
	Freehold (mining and energy generation)	New easements would be established by agreement, where possible. Where agreement cannot be reached with the landowner, compulsory acquisition would be undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*.	~~7~~ **8**
	Crown land	Formal easement application.	1

Project element	Current ownership	Permanent property impact	Number of landowners impacted
	NSW Government	New easement established with FCNSW and NPWS.	2
	Australian Government	New easement established within the Singleton Military Area.	1
Bayswater South switching station	AGL Macquarie	The land required for the Bayswater South switching station would be acquired from AGL (including the required asset protection zone (APZ)).	1
Existing Bayswater substation	Electrical Transmission Ministerial Holding Corporation	There would be no change to the tenure or property impact of the existing Bayswater substation. The substation would continue to operate and support the operation of the HTP.	1
Olney switching station	NSW Government	The land required for the Olney switching station (around ~~14ha~~ **17ha**) would be acquired from FCNSW (including the required APZ).	1
Existing Eraring substation	Electrical Transmission Ministerial Holding Corporation	There would be no change to the tenure or property impact of the existing Eraring substation. The substation would continue to operate and support the operation of the HTP.	1
Upgraded Eraring substation	Eraring Energy / Origin Energy	Prior to the commencement of construction, the land required for the upgrade at the Eraring substation would be acquired from Origin Energy.	1
Construction support sites	**Freehold (private)**	**Prior to the commencement of construction, the land required for construction support sites would be acquired.**	**2 whole of property**

Permitted activities within the permanent transmission line easement would remain consistent with the activities described in *section 12.4.2* of the EIS. Access to the transmission line easement would be via the access tracks established during the construction of the amended project, which includes changes to access tracks described in *section 3.2.3* of this Amendment Report. Access tracks as part of the amended project may be required for permanent use by the network operator, which would be determined in consultation with relevant landholders.

Agriculture

The description of impacts to agricultural land use in *section 12.4.3* of the EIS remains applicable to the amended project impact area. Further details on the impacts of the amended project on agriculture during operation are included in *section 5.7* of this Amendment Report.

State forests

The increase in the operation impact area within the State forests is a result of localised easement widening for conductor swing (refer to *section 3.2.1*) and changes to access tracks (refer to *section 3.2.3*). Some changes to access tracks within State forests have been made following consultation with the Forestry Corporation of NSW to provide a more suitable route for construction vehicles to access some of the transmission tower pads.

The amended operation impact area for the project within State forests would include:

- 63 hectares, or 0.44 per cent of land within the Pokolbin State Forest (an increase of 18 hectares compared to the exhibited operation impact area (45 hectares or 0.32 per cent))
- 91 hectares, or 1.7 per cent of land within the Corrabare State Forest (an increase of 26 hectares compared to the exhibited operation impact area (65 hectares, or 1.3 per cent))
- 127 hectares, or 3.3 per cent of land within the Watagan State Forest (an increase of 32 hectares compared to the exhibited operation impact area (95 hectares, or 2.94 per cent))
- 176 hectares, or 0.9 per cent of land within the Olney State Forest (an increase of 79 hectares compared to the exhibited operation impact area (97 hectares, or 0.55 per cent)).

Impacts to State forests from acquisition of land for the Olney switching station would be consistent with those described in the EIS.

Despite a 150 hectare increase in the area of State forests impacted by the operation of the amended project compared to the exhibited project, the amended project is not anticipated to have a significant impact on forestry operations across the wider State forest area during operation of the project, consistent with the assessment of potential impacts included in the exhibited project.

Mining and exploration

Impacts to mining operations and mineral exploration activities within the amended operation impact area would be consistent with those described in the EIS for the exhibited operation impact area.

Commonwealth land

The impacts described in *section 12.4.6* of the EIS in relation to the operation of the permanent transmission line easement and access tracks within the Singleton Military Area are applicable to the amended operation impact area.

Conservation land managed by NSW NPWS

The impacts described in *section 12.4.7* of the EIS in relation to the operation of the permanent transmission line easement and access tracks within the Jilliby State Conservation Area and the Corrabare North Flora Reserve are applicable to the amended operation impact area.

Crown land

The impacts described in *section 12.4.8* of the EIS in relation to the operation of the permanent transmission line easement and access tracks within Crown land and travelling stock reserves are applicable to the amended operation impact area.

Infrastructure and utilities

The impacts described in *section 12.4.9* of the EIS in relation to infrastructure and utilities during operation of the project are applicable to the amended project during operation.

5.6.4 Updated or additional mitigation measures

There are no changes to land use and property mitigation measures compared to the exhibited project. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

5.7 Agriculture

Chapter 13 (Agriculture) and *Technical Report 5 – Agriculture impact assessment* of the EIS assessed the potential impacts of the construction and operation of the exhibited project on agriculture. Additional assessment has been undertaken to identify changes to potential agriculture impacts associated with the amended project. The findings of the additional assessment are described in this section.

5.7.1 Assessment approach

The methodology for the assessment of the potential impacts of the construction and operation of the amended project on agriculture is consistent with the methodology detailed in *section 13.1* of the EIS.

5.7.2 Existing environment

The existing agricultural environment of the amended project impact area remains largely consistent with the existing environment described in *section 13.2* of the EIS, with around 98 per cent of agricultural lands that intersect the amended project impact area being located within the Singleton LGA. The existing agricultural environment of the amended project impact area is further described in this section.

A summary of the changes to the existing environment of the amended project impact area as it relates to agriculture is provided in Table 5.33 below. In addition, there is no change to the existing agricultural environment with regards to regional agricultural enterprise and a reduction in impacts to travelling stock reserves.

Table 5.33 Changes to the existing environment of the amended project impact area as it relates to agriculture

Feature	Exhibited project	Amended project
Agricultural land use (total)		
Total (ha)	874 ha	877 ha
Proportion of project impact area	37%	37%
Agricultural productivity		
Grazing[1]		
Estimated total land productivity (per annum)*	$317,863	$309,823
Irrigated lands	$47,207	$31,472
Dryland grazing lands	$270,656	$278,351
Beef cattle and dairy [2]		
Total (per annum)	$404,738	$352,878

Feature	Exhibited project	Amended project
Irrigated lands	$175,161	$116,774
Dryland grazing lands	$229,577	$236,104
Secondary productivity (related economic activity arising from agricultural enterprises)		
Total (per annum)	$881,843	$768,851
Agricultural land capability of the project impact area[3]		
very-low to moderate-low (%) (LSC class 5-7)	76%	77%
Moderate (%) (LSC 4)	11%	11%
High (%) (LSC3)	8%	7%

1 Productivity of land used for grazing estimated by applying the NSW DPI (2024) Gross Margin Budgets for Livestock

2 Estimated by applying the information presented in the last agricultural census of 2020-2021 NSW DPI

3 determined using the Land and Soil Capability Assessment Scheme (OEH 2012)

5.7.3 Assessment of potential impacts

Construction impacts

Loss of agricultural land

As described in the EIS, agricultural land within the amended construction impact area would be subject to varying levels of disturbance, including temporary broad restrictions for agricultural activities in areas subject to excavations and landform modifications as well as agricultural activity being able to continue in areas which would not be subject to direct surface disturbances (subject to the timing and location of planned construction activities). The extent of land being removed from agricultural production during construction of the amended project based on the project element and location of construction is outlined in *Table 5.34*.

Table 5.34 Loss of agricultural land during construction of the amended project

Project element	Agricultural land intersecting project element (ha)	Loss of agricultural land
HTP corridor	**760** ~~814~~	While not all of the HTP corridor width would be impacted, the HTP corridor has been conservatively assessed as being wholly impacted to allow for flexibility in the detailed design of the project and the actual impacts of the project would be considerably less than assessed. Disturbance within the HTP corridor would generally be localised and temporary during the construction phase. Due to the dispersed nature of the infrastructure proposed, and the transient manner in which transmission lines are constructed, the scale and intensity of construction activities vary within the footprint. Agricultural land uses, such as grazing of livestock, may continue where transmission lines are proposed to be constructed, subject to the timing and location of

Project element	Agricultural land intersecting project element (ha)	Loss of agricultural land
		planned construction activities. It is unlikely that agricultural production would be impacted across the entire HTP corridor and large extents would continue to be used for agricultural production during construction.
Switching stations	23	This land is to be permanently acquired and agricultural production would cease across the entire footprint of the Bayswater South switching station.
Construction support sites and laydown areas	52	Agricultural production would cease across the entirety of these project elements during construction, however these areas would be rehabilitated to their prior land uses following construction.
Access tracks	**97** ~~93~~	Agricultural production would cease for the establishment of additional and upgrade of existing access tracks. Any temporary access tracks would be rehabilitated to their prior land use following construction, unless otherwise agreed with the landowner.

Consistent with the EIS, impacts to agricultural land within the amended construction impact area but outside of the amended operation impact area are expected to be temporary and minimal, with agricultural land use expected to return following construction.

A summary of the potential temporary impacts to agricultural land during construction, as well as a comparison to the expected impacts identified in the EIS is provided in *Table 5.35* below. As noted in the EIS, these areas are considered conservative as disturbance is not anticipated to occur across the entire amended construction impact area at any one time.

Table 5.35 Summary of agricultural land type temporarily removed from agricultural production during construction

Agricultural land use	Exhibited project	Amended project
Dryland (total ha)	817	839
Proportion of the project impact area	35%	35%
Irrigated lands (total ha)	57	38
Proportion of the project impact area	2%	2%
Proportion of the study area	0.4%	0.4%

Agricultural productivity impacts

The estimated primary and secondary productivity impacts as a result of the construction of the amended project over the 2.5-year construction period would be largely consistent with those outlined in *section 13.3.2* of the EIS, with these still representing conservative values as construction activities would be intermittent and would not occur for the full construction of the amended project at any one location. A summary of the potential impacts of project construction on agricultural land

productivity, as well as a comparison to the expected impacts identified in the EIS is provided in Table 5.36.

Table 5.36 Estimated primary and secondary productivity impacts to agriculture during construction

Agricultural impact	Exhibited project	Amended project
Agricultural land productivity per annum	$404,738	$352,878
Gross value of agricultural land in the wider region (%)	0.1%	0.1%
Secondary productivity (related economic activity arising from agricultural enterprises) per annum	$881,843	$768,851

Impacts to agricultural operation

The impacts to agricultural operations of the amended project during construction, including restrictions to the movement of landowners, workers and livestock, restrictions on aerial agriculture operations, and impacts to travelling stock reserves, would be consistent with the impacts described in *section 13.3.3* of the EIS.

Impacts to land and soil capability

Impacts to land and soil capability associated with the construction of the amended project would be largely consistent with the impacts to land and soil capability of construction of the exhibited project described in *section 13.3.4* of the EIS. The amended project would not impact areas of land categorised as LSC Class 1 or 2 land, consistent with the exhibited project. A summary of impacts to land categorised as LSC Class 3 (high capability land) and biophysical strategic agricultural land (BSAL) during construction, as well as a comparison to the expected impacts identified in the EIS, is provided in Table 5.37.

Table 5.37 Impacts to high capability land and BSAL during construction

Feature	Exhibited project (ha)	Amended project (ha)
Biophysical Strategic Agricultural Land (BSAL)	213	190
High capability agricultural land (LSC 3)	182	159

Biosecurity

The potential biosecurity risks associated with the construction of the amended project would be consistent with those described in *section 13.3.5* of the EIS.

Operation impacts

Loss of agricultural land

Impacts to agricultural land within the amended operation impact area would be consistent with those described in *section 13.4.1* of the EIS. As is outlined in *section 3.2.1*, one private property in Millfield would be located within an area of widened transmission line easement for conductor swing. This property is located on existing agricultural land. While this area of the permanent transmission line easement would be widened beyond 70 metres to account for conductor swing

during periods of high wind (refer to *section 3.2.1*), this would not result in increased restrictions on agricultural land use. Restrictions to agricultural land use would not occur beyond the permanent removal of soils and land where transmission towers and access tracks are proposed in addition to restrictions on the use of tall machinery under transmission lines. Livestock grazing, cropping, irrigation and the planting or cultivation of trees or shrubs could continue.

A summary of the land permanently removed from agricultural production from operation of the project, as well as a comparison to the expected impacts identified in the EIS is provided in *Table 5.38.*

As outlined in the EIS, these areas are considered to be conservative as permanent removal of agricultural land is not anticipated to occur across the entire amended operation impact area, with grazing and cropping able to continue in areas such as under transmission lines and around permanent structures, subject to restrictions such as the height of farm machinery and exclusion zones around transmission towers.

Table 5.38 Land permanently removed from agricultural production during operation of the amended project

Land use	Exhibited project		Amended project	
	Area (ha)	% of the exhibited operation impact area	Area (ha)	% of the amended operation impact area
Dryland	176	14	198	15%
Irrigated	13	1	8	0.6%

Agricultural productivity impacts

The estimated impact of the operation of the amended project on the productivity of agricultural land based on the change in land during operation is estimated at around $80,222 per annum, representing around 0.03 per cent of the gross value of agriculture in the wider region. This is a decrease on impacts estimated for the exhibited project, where impacts were estimated at $88,937 per annum, or 0.03 per cent of the gross value of agriculture in the wider region. The estimated impact of the operation of the amended project on secondary productivity of agricultural land based on the change in land during operation is around $174,788 per annum, compared to $193,776 per annum for the exhibited project.

Impacts to agricultural operations

The impacts to agricultural operations from the operation of the amended project, including impacts from permanent infrastructure and impacts to electric fencing, cropping areas, aerial operations, travelling stock reserves and land and soil capability, would be consistent with those described in *section 13.4.3* of the EIS.

Biosecurity

The potential biosecurity risks associated with the operation of the amended project would be consistent with those described in *section 13.4.4* of the EIS.

5.7.4 Updated or additional mitigation measures

There are no changes to agriculture mitigation measures as a result of the amended project, however some changes to mitigation measures have been included with regards to the management of potential agriculture impacts in response to feedback received during exhibition of the EIS.

The consolidated list of mitigation measures for the amended project, including those changes made in response to feedback during exhibition of the EIS, are provided in *Appendix D (Updated mitigation measures)*.

5.8 Social

Chapter 14 (Social) and *Technical Report 6 – Social impact assessment* of the EIS assessed the potential social impacts of the construction and operation of the exhibited project. Additional assessment has been undertaken to identify changes to potential social impacts associated with the amended project, and to update the assessment to ensure it is consistent with the revised *Social Impact Assessment Guideline for State Significant Projects* (revised SIA Guideline) (DPHI 2025b).

A social impact assessment (SIA) addendum is provided in *Appendix I (Social impact assessment addendum)* of this Amendment Report. The findings of the SIA addendum are described in this section.

5.8.1 Assessment approach

Legislation, policies, plans and guidelines

The SIA addendum was prepared with consideration of the same legislation, policies, plans and guidelines as the exhibited SIA, and the same regional and local plans and policies as the exhibited SIA. The SIA addendum also considers relevant new local policies adopted since the exhibited SIA was prepared particularly relevant temporary worker accommodation policies.

Since the exhibition of the EIS, DPHI released revised SIA Guidelines. A review of the key revisions to the SIA Guidelines was carried out as part of the SIA addendum to determine the implications for the assessment of the social impacts of the amended project. Most refinements to the revised SIA Guideline did not result in changes to the methodology of the SIA addendum compared to the exhibited SIA, with the exception of a revised significance matrix that introduces a new 'negligible' rating for unlikely or minimal impacts, and changes two medium ratings to low. This resulted in the need to review the impact assessment against this revised significance matrix as part of the SIA addendum.

Social locality (study area)

The amendments and refinements to the project do not result in changes to the social localities described in *section 14.1.3* of the EIS. As such, the social locality for the exhibited project is applicable to the amended project.

Assessment methodology

The methodology used to assess the potential social impacts of the amended project in the SIA addendum is consistent with the methodology implemented for the exhibited SIA, with the exception of the revised significance matrix. The impact assessment followed the same process as that identified in the exhibited SIA, including assessing the likelihood of a benefit or impact occurring, the magnitude of the potential benefit or impact, and the significance level of benefits and impacts without and with mitigation, however, used the revised significance ratings outlined in *Table 5.39*. Changes to the significance matrix in the revised SIA Guideline are shown in **bold**, with ~~strikethrough~~ text denoting the previous ratings applied in the EIS. The benefit and impact categories outlined in *section 14.1.2* of the EIS remain applicable to the assessment of social benefits and impacts carried out as part of the SIA addendum.

Table 5.39 Revised significance matrix from the revised SIA Guideline

Likelihood	Magnitude level				
	Minimal	Minor	Moderate	Major	Transformational
Almost certain	Low	Medium	High	Very high	Very high
Likely	Low	Medium	High	High	Very high
Possible	Low	~~Medium~~ **Low**	Medium	High	High
Unlikely	~~Low~~ **Negligible**	Low	~~Medium~~ **Low**	Medium	High
Very unlikely	~~Low~~ **Negligible**	~~Low~~ **Negligible**	Low	Medium	Medium

5.8.2 Engagement

Targeted stakeholder engagement was undertaken for the Amendment Report between October 2025 and December 2025, and to support the preparation of the SIA addendum. The engagement methods aligned with the *Undertaking Engagement Guidelines for State Significant Projects* (DPE 2021) and the SIA Guideline.

Engagement with affected landowners and community representatives was undertaken in relation to the amended project, the submissions received on the exhibited project, and a range of subject areas relevant to the SIA addendum. The approach of additional engagement dedicated to the SIA addendum was through structured interviews at stakeholder meetings. The stakeholders consulted were selected based on sensitivity to potential impacts arising from the amended project and included Cessnock City Council representatives and sensitive receivers within the corridor social locality, specifically Millfield Public School.

Key topics raised during the engagement process included potential local road disruption and opportunities to enhance community benefits from the amended project, as detailed in *Appendix I (Social impact assessment addendum)* of this Amendment Report.

The outcomes of the targeted engagement have informed the assessment of the potential social benefits and impacts of the amended project.

5.8.3 Existing environment

The existing social environment of the project as described in *section 14.3* of the EIS remains applicable to the amended project. No additional communities beyond those identified for the exhibited project would experience social benefits or impacts as a result of the amended project.

In response to feedback received from DPHI, public submissions during the exhibition period, and additional engagement activities, some vulnerable groups and communities have been identified as likely to be affected by the proposed project amendments. The following vulnerable groups have been identified as likely to experience specific positive and negative social impacts from the proposed amendments:

- Millfield Public School students – Increased construction traffic near the school may raise the risk of pedestrian–vehicle conflicts. Safety concerns could cause anxiety for staff, parents, and guardians
- low-income families – due to additional temporary worker accommodation being provided as part of the amended project at the Wollombi Road construction support site, there may be a reduced need for construction workers to use short term rental accommodation thereby reducing the potential impact on housing stock. This could reduce displacement and related stressors
- Aboriginal population – Project works may affect access to culturally significant land and disrupt community cohesion. Cultural heritage values could also be impacted
- individuals with health conditions – Noise, dust, vibration, and traffic changes may worsen existing health issues such as chronic illness, disability, or mental health conditions. These impacts could reduce mobility, increase anxiety, or limit access to services.

5.8.4 Assessment of impacts

Construction impacts

The amended project would not result in changes to the significance ratings assigned to social benefits during construction compared to the exhibited project. The amended project would however result in a higher positive impact with regard to broad financial benefits through benefit sharing initiatives and generation of employment and training opportunities for local and regional communities.

The amended project would result in changes to social impact significance ratings during construction compared to those outlined in *section 14.4* of the EIS. Changes to ratings are both as a result of the project amendments and as a result of the revised significance matrix in the revised SIA Guideline (DPHI 2025b).

The potential social impacts during construction of the amended project are outlined in *Table 5.40*, with changes compared to the exhibited project highlighted in **bold** and ~~strikethrough~~ text.

Table 5.40 Potential social impacts during construction of the amended project

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Decision-making systems	Perceived lack of ability to influence project and government decision-making processes	Corridor	High	S01 Social impact management plan S02 Community communication strategy S03 Complaints management system S04 Landowner engagement strategy	~~Medium~~ **Low**	The amended project is expected to have similar decision-making impacts due to the perceived lack of agency and transparency in decision-making process amongst affected stakeholders (i.e. communities, landowners, councils, Aboriginal stakeholders, and key organisations within the corridor, local and regional social localities), compared to the exhibited project. However, the same commitment to undertaking a structured, multi-layered and transparent approach to engaging with affected stakeholders has been maintained throughout both the exhibited project and amended project's development. The impact ratings for the corridor and local social localities have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	~~Medium~~ **Low**		~~Low~~ **Negligible**	
		Regional	Negligible		Negligible	
Decision-making systems	Legacy impacts of project engagement affecting enduring relationships, confidence and participation of Traditional Owners	Corridor	Medium	S02 Community communication strategy S06 Industry and Aboriginal participation plan AH04 Aboriginal cultural heritage management plan (refer to *Appendix D (Updated mitigation measures)*)	Low	The amended project is expected to have similar decision-making and legacy impacts on project engagement which may affect enduring relationships, confidence and participation of Traditional Owners, compared to the exhibited project. However, the same commitment to undertaking targeted, meaningful and respectful engagement with Traditional Owners and in collaboration with Aboriginal cultural heritage specialists has been maintained throughout both the
		Local	Medium		Low	
		Regional	~~Low~~ **Negligible**		Negligible	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
						exhibited project and amended project's development. The impact ratings for the regional social locality have changed to align with the revised significance matrix in the revised SIA Guideline.
Way of life	Land use changes due to land acquisition for the project	Corridor	High	S02 Community communication strategy S04 Landowner engagement strategy, including property management plans (refer to mitigation measure LP2 in *Appendix D (Updated mitigation measures)*) Compensation under the *Land Acquisition (Just Terms Compensation) Act 1991* and Strategic Benefit Payments	Medium	Given no additional stakeholders are directly affected by the project amendments, the amended project is anticipated to have similar land use changes due to full or partial land acquisition impacts on directly affected stakeholders (i.e. landowners and agricultural lease holders), compared to the exhibited project. The impact ratings for the regional social locality have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium		Low	
		Regional	~~Low~~ **Negligible**		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Way of life	Loss of property and relocation of landowners	Corridor	Very high	S01 Social impact management plan S04 Landowner engagement strategy, including property management plans (refer to mitigation measure LP2 in *Appendix D (Updated mitigation measures)*) Compensation under the *Land Acquisition (Just Terms Compensation) Act 1991* and Strategic Benefit Payments	High	Given no additional stakeholders are directly affected by the project amendments, the amended project is anticipated to have the same loss of property and relocation of landowners due to full acquisition impacts, compared to the exhibited project (seven private properties). The impact ratings for the regional social locality have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Low		Low	
		Regional	~~Low~~ **Negligible**		~~Low~~ **Negligible**	
Way of life	Loss of local amenity	Corridor	High	S02 Community communication strategy	Medium	The amended project includes several proposed amendments that would change the way affected stakeholders would experience perceived and actual
		Local	High		Medium	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
		Regional	~~Low~~ **Negligible**	S03 Complaints management system Compensation under the *Land Acquisition (Just Terms Compensation) Act 1991* and Strategic Benefit Payments LV1–LV3 landscape and visual mitigation measures, NV1 construction noise and vibration management plan and AQ1-AQ3 air quality mitigation measures (refer to *Appendix D (Updated mitigation measures)*)	~~Low~~ **Negligible**	local amenity impacts (i.e. noise, dust, air quality, visual and utilities interruptions) during construction. Project amendments disproportionately affect stakeholders within the corridor and local social localities, given their minor scale but intensive impact. Project amendments relating to reconfiguration of construction support sites and temporary worker accommodation and realignment of the transmission line at Mount Thorley and Gouldsville have resulted in changes to the likelihood of the unmitigated impact, but not the overall impact significance rating (remains high). Additional mitigation and management measures are proposed accordingly. The impact ratings for the regional social locality have changed to align with the revised significance matrix in the revised SIA Guideline.

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Community	Workforce presence affecting perceptions of safety and community cohesion	Corridor	Medium	S02 Community communication strategy S03 Complaints management system S07 Temporary worker accommodation management plan(s)	~~Medium~~ **Low**	The reconfiguration of the Wollombi Road construction support site would increase the presence of the workforce in nearby towns, particularly outside construction hours. Targeted engagement undertaken with Millfield Public School highlighted perceived impacts on safety and community cohesion. However, the removal of temporary worker accommodation at the Gouldsville Road construction support site is expected to reduce workforce presence in the surrounding towns, thereby reducing the potential for community concern about the influx of workers and its effects on community cohesion and function, as well as increased demand for services and accommodation. Mitigation measure S02 Community communication strategy has been revised to ensure that management measures are developed, where appropriate and feasible, for specific stakeholders who may be disproportionately affected by the amended project. This would be achieved through ongoing proactive engagement with impacted stakeholders located near construction support sites and temporary worker accommodation facilities, such as Millfield Public School. The impact ratings after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium		~~Medium~~ **Low**	
		Regional	Low		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Community	Perceived unequal distribution of project benefits creating conflict and strains on community relationships	Corridor	Medium	S02 Community communication strategy Community and Employment Benefit Program (program not currently defined) Compensation via the Land Acquisition (Just Terms Compensation) Act 1991	~~Medium~~ **Low**	The unmitigated impacts on the perceived unequal distribution of project benefits from the amended project remain the same as assessed in the exhibited project. The broader community continues to experience a perceived lack of clarity and risk of perceived community division in benefit sharing. It is anticipated that these concerns will be alleviated once there is further definition of the Community and Employment Benefit Program. The impact ratings after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium		~~Low~~ **Negligible**	
		Regional	Low		~~Low~~ **Negligible**	
Accessibility	Changed access arrangements for emergency services	Corridor	Medium	S01 Social impact management plan S02 Community communication strategy S03 Complaints Management System S04 Landowner Engagement Strategy TT1 Traffic management plan (refer to *Appendix D (Updated mitigation measures)*)	Low	The amendments and refinements to the project would not result in changes to traffic and transport impacts to an extent that would result in increased impacts to emergency services access compared to the exhibited project. The impact ratings after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium		~~Low~~ **Negligible**	
		Regional	Low		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
	Reduced access to housing and short-term accommodation due to increased workforce demand	Corridor	~~Medium~~ **Low**	S01 Social impact management plan S07 Temporary worker accommodation management plan(s)	~~Low~~ **Negligible**	There would be an increase the overall capacity of construction workforce accommodation from 780 workers (i.e. accommodated in the Hebden Road, Gouldsville Road and Freemans Drive construction support sites), as proposed in the exhibited project, to 900 (i.e. accommodated in the Hebden Road, Wollombi Road and Freemans Drive construction support sites). The peak construction workforce would remain the same as proposed in the exhibited project. This approach to dedicated workforce accommodation solutions substantially reduces the potential demand of non-local workers to be accommodated in the project's social localities, thereby minimising potential pressures on the local rental and short-term accommodation markets. This approach would also reduce the risk of displacement for groups that are socio-economically vulnerable, such as low-income residents, who may otherwise struggle to secure affordable housing, helping maintain access for community members most at risk of being priced out due to increased competition from the project's workforce. The impact ratings before and after mitigation have changed as a result of a surplus in worker accommodation for the construction workforce and to align with the revised significance matrix in the revised SIA Guideline.
		Local	~~Medium~~ **Low**		~~Low~~ **Negligible**	
		Regional	~~Low~~ **Negligible**		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Accessibility	Reduced access to health and other community services due to increase in construction workforce	Corridor	~~Medium~~ **Low**	S01 Social impact management plan S07 Temporary worker accommodation management plan(s)	Low	The inclusion of a temporary worker accommodation at the Wollombi Road construction support site and the resulting increase in the construction workforce would have similar impacts related to reduced access to health and other community services for stakeholders as those identified for the exhibited project. Impacts related to reduced access to health and other community services resulting from the construction workforce still persist with consideration of project amendments. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	~~Medium~~ **Low**		Low	
		Regional	Low		~~Low~~ **Negligible**	
Accessibility	Changed access to recreational infrastructure due to road network changes	Corridor	High	S01 Social impact management plan S02 Community communication strategy TT1 Traffic management plan (refer to *Appendix D (Updated mitigation measures)*)	Medium	Proposed changes to access tracks as part of the amended project are not expected to result in additional changes to access to recreational infrastructure within State forests in a way that would increase impacts to recreation user groups or nature-based recreation operators compared to the exhibited project. The impact ratings before and after mitigation have changed in response to project amendments and to align with the revised significance matrix in the revised SIA Guideline.
		Local	~~Medium~~ **Low**		Low	
		Regional	Low		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Livelihoods	Increased competition for workers impacting local and regional businesses	Corridor	Medium	S01 Social impact management plan S02 Community communications strategy S05 Local business and employment strategy S06 Industry and Aboriginal participation plan	Low	The amended project is expected to have the same increased competition for workers potentially affecting the operation of local and regional businesses as the exhibited project. The impact ratings for the regional social locality have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	High		Low	
		Regional	Low		~~Low~~ **Negligible**	
Livelihoods	Impacts on rural livelihoods and biosecurity risks	Corridor	Medium	S04 Landowner engagement strategy, including property management plans and biodiversity management plan (refer to mitigation measure LP2 and B1 in *Appendix D (Updated mitigation measures)*)	~~Medium~~ **Low**	The amended project, including the realignment of the transmission line at Mount Thorley which would shift around four kilometres of the transmission line alignment on agricultural land, would result in the same impacts on rural livelihoods and biosecurity risks as identified for the exhibited project. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Low		~~Low~~ **Negligible**	
		Regional	~~Low~~ **Negligible**		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Livelihoods	Impacts on tourism operation and visitor economy	Corridor	Low	S01 Social impact management plan S02 Community communications strategy LV1–LV3 landscape and visual mitigation measures, NV1 construction noise and vibration management plan, AQ1-AQ3 air quality mitigation measures and TT1 traffic management plan (refer to *Appendix D (Updated mitigation measures)*)	~~Low~~ **Negligible**	The amended project is not anticipated to result in additional impacts to the tourism sector compared with those identified for the exhibited project. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium		Low	
		Regional	~~Low~~ **Negligible**		~~Low~~ **Negligible**	
Health and wellbeing	Diminished mental health and wellbeing due to project-related stressors	Corridor	High	S01 Social impact management plan S02 Community communications strategy S03 Complaints management system S04 Landowner engagement strategy	~~Medium~~ **High**	The amended project is anticipated to have consistent potential for diminished mental health and wellbeing due to project-related stressors with the exhibited project. Project stressors have been identified through consultation with Millfield Public School and changes to the proposed mitigation measures have been made due to the school expressing concerns about traffic impacts to their operation and children's safety.
		Local	~~Medium~~ **High**		~~Low~~ **Negligible**	
		Regional	~~Low~~ **Negligible**		Negligible	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
						Mitigation measures have been proposed in *section 5.8.5* and *Appendix D (Updated mitigation measures)* to address concerns raised by Millfield Public School. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
Health and wellbeing	Impacts on environmental values	Corridor	High	S01 Social impact management plan S02 Community communication strategy	~~Medium~~ **High**	While the amended project involves changes to vegetation clearing requirements, as well as amendments that would change impacts to biodiversity values, including reduced impacts on threatened amphibian species as a result of changes to the disturbance area and removal of the stringing site at Olney, these would not result in changes to the overall social impact ratings compared to the exhibited project. Notwithstanding, mitigation measure S02 Community communication strategy has been amended to reflect the local community's strong environmental values and commitment to protecting and rehabilitating injured wildlife, highlighted through engagement carried out as part of the SIA addendum. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	High		~~Medium~~ **High**	
		Regional	~~Medium~~ **Low**		Low	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Health and wellbeing	Changes to traffic movements, potentially creating new road safety risks	Corridor	High	S02 Community communication strategy S03 Complaints management system TT1 Traffic management plan (refer to *Appendix D (Updated mitigation measures)*)	~~Medium~~ **Low**	The amended project would result in only a slight increase in additional traffic movements associated with the reconfiguration of the Wollombi Road construction support site to include temporary worker accommodation. However, perceived road safety risks continue to persist, particularly for vulnerable stakeholders (i.e. Millfield Public School). Additional mitigation measures are proposed to be investigated and implemented to minimise the perceived safety risk from construction vehicles in proximity to Millfield Public School, in consultation with Millfield Public School (refer to mitigation measure S09). The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	High		~~Medium~~ **Low**	
		Regional	~~Medium~~ **Low**		Low	
Culture	Potential impacts to Aboriginal cultural heritage, cultural landscapes and wellbeing	Corridor	High	S01 Social impact management plan S02 Community communication strategy AH01 Aboriginal cultural heritage management plan (refer to Appendix D (Updated mitigation measures))	~~Medium~~ **Low**	The amended project would result in changes to potential impacts to Aboriginal cultural heritage, as outlined in *Appendix F (Aboriginal cultural heritage assessment addendum)* and summarised in *section 5.3*. However, these changes would not result in changes to the social impacts compared to those identified for the exhibited project. The impact ratings after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	High		~~Medium~~ **Low**	
		Regional	High		~~Medium~~ **Low**	

Operation impacts

In comparison to the exhibited project's *Technical Report 6 – Social Impact Assessment*, the amended project would result in changes to social impact significance ratings during operation compared to those outlined in *section 14.5* of the EIS as a result of the revised significance matrix in the revised SIA Guideline.

The potential social impacts during operation of the amended project are outlined in Table 5.41, with changes compared to the exhibited project highlighted in **bold** and ~~strikethrough~~ text.

Table 5.41 Potential social impacts during operation of the amended project

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Way of life	Enhanced intergenerational equity through contributing to energy system decarbonisation and improved energy stability	Corridor	Medium (positive)	S02 Community communication strategy	Medium (positive)	The amended project provides an opportunity to avoid and further mitigate potential permanent negative impacts that could affect intergenerational equity, such as biodiversity and environmental impacts. In comparison to the exhibited project's *Technical Report 6 – Social Impact Assessment*, the amended project would result in no change to the unmitigated and mitigated impact likelihood and magnitude. The amended project is aligned with community values and responds to key concerns relating to impacts on the natural environment. It also demonstrates EnergyCo's commitment to meeting social expectations for the energy transition to achieve a balance between decarbonisation and preserving enduring personal and cultural legacies, and the loss of or impacts to biodiversity. The impact rating for the regional locality after mitigation has changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	Medium (positive)		Medium (positive)	
		Regional	High (positive)		**Very** high (positive)	
Health and wellbeing	Safety and wellbeing concerns related to	Corridor	~~Medium~~ **Low**	S01 Social impact management plan	Low	The amended project is expected to have a negligible impact to bushfire risk during operation (refer to *section 5.15*), while the proposed changes to access tracks within State forests are expected to improve
		Local	~~Medium~~ **Low**		~~Low~~ **Negligible**	

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
	electric and magnetic fields (EMF), bushfire hazards and anti-social behaviours	Regional	~~Low~~ **Negligible**	S02 Community communication strategy BF1 bushfire emergency management and evacuation plan (refer to refer to *Appendix D (Updated mitigation measures)*)	~~Low~~ **Negligible**	access for fire and emergency responders seeking access to fire in or near the transmission line easement. This would result in reduced potential bushfire and public safety risks for residents and stakeholders within the corridor and social localities during the project's operation. The amended project would not alter EMF risks compared to the exhibited project as the transmission line and substations/switching stations would be designed to be within the relevant limits directly underneath the lines and at the edge of the transmission line easement and substation/switching station boundaries. The amended project is unlikely to change the likelihood of anti-social behaviour occurring within the transmission line easement compared to the exhibited project. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.

Social impact category	Impact	Extent (social locality)	Impact before mitigation	Relevant mitigation measure	Impact after mitigation	Conclusion of amended project impact
Surroundings	Changes to the natural character of landscape altering sense of place	Corridor	High	S02 Community communication strategy	Medium	The realignment of the transmission line at Mount Thorley, realignment of the transmission line at Gouldsville and changes to access tracks would permanently change the landscape character and visual impacts from different locations compared to the exhibited project. However, while the amended project would result in changes to the natural character of the landscape altering sense of place, these social impacts would be consistent with those identified for the exhibited project. The impact ratings before and after mitigation have changed to align with the revised significance matrix in the revised SIA Guideline.
		Local	High		Low	
		Regional	~~Medium~~ **Low**		~~Low~~ **Negligible**	

5.8.5 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to enhance social benefits and to minimise potential social impacts are listed in Table 5.42. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text).

Table 5.42 Updated mitigation measures – social

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
S01	Social impacts and benefits identified in SIA	A Social Impact Management Plan (SIMP) will be developed to outline the proponent's integrated approach to managing social impacts, enhancing benefits, and delivering responsive engagement and communications. The SIMP will: • **be developed in consultation with Councils and relevant affected stakeholders** • detail commitments and management measures, specifying the social impacts addressed, affected stakeholders, implementation timeframes, roles and responsibilities • describe how project-specific and regional social changes will be monitored to support adaptive management • provide mechanisms for community and stakeholder input to mitigation planning and evaluation of effectiveness • **include a program to monitor, evaluate and publicly report on the effectiveness of the mitigation measures, including consideration of cumulative impacts** • **confirm the approach to respond to unanticipated impacts, over the life of the project** • **include a Trigger Action Response Plan (TARP) to monitor, respond to, and manage social impacts as they arise during project delivery.** The SIMP will be implemented and monitored through quarterly data collection where possible to inform adaptive management and continuous improvement. Monitoring outcomes will be shared with ~~the Regional Reference Group and other~~ stakeholder forums as relevant during construction. The proponent will also host annual community surveys to seek feedback on SIMP monitoring. The SIMP will be reviewed annually and updated based on monitoring data and community and stakeholder feedback. This will include assessing the relevance of mitigation measures and identifying any new issues or initiatives requiring inclusion to ensure they meet the residual risk ratings. Review outcomes will be published on the proponent's website.	Detailed design Construction	Corridor Local Regional

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
S02	Social impacts and benefits identified in SIA	A community communication strategy will establish the approaches to facilitating communication between the proponent and the community during construction. This would include the following measures: • appoint dedicated community liaison officer(s) and ensure they receive adequate training aligned to trauma-informed care principles • ensure key stakeholders - including affected landowners, Hunter businesses, community groups, local government, **Millfield Public School, Forestry Corporation of NSW**- are proactively informed through regular updates using a range of communications channels • undertake proactive, targeted engagement with impacted stakeholders located near construction support sites and temporary worker accommodation – including schools **(such as Millfield Public School),** childcare centres, and social services in Millfield, Cooranbong and Martinsville–to develop and implement agreed mitigation measures • undertake consultation with affected schools **(such as Millfield Public School),** ~~and~~ childcare facilities and local governments on **noise, dust and** traffic impacts and management approaches • implement real-time traffic monitoring and SMS alerts **for stakeholders that may be directly affected by changed access such as** local residents, **Hunter businesses, community groups (such as Pokolbin Mountain Road Residents Group), recreational users of State forests, Hunter Valley Gliding Club, schools (such as Millfield Public School), mining companies, emergency services, childcare centres, and social services** • establish a feedback mechanism by which the community can discuss or provide feedback to the ~~proponent~~ **project as well as communication protocols for** ~~including~~ how the ~~proponent~~ **project** will respond to enquiries or feedback from the community	Detailed design Construction	Corridor Local Regional

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• implement targeted communications regarding visual, noise, and air quality impacts, road changes/closures, and emergency access coordination ensuring timely notification ahead of disruptions (see also mitigation measures LV1-LV3, NV1, AQ1-AQ3, and TT1 **and updated mitigation measures as identified in *Appendix D (Updated mitigation measures)* of the Amendment Report)** • provide clear, accessible information on EMF, fire safety, and associated risk reduction measures to address community concerns • offer 24/7 access to psychological services and tailored mental health support programs, with targeted confidential counselling for directly affected landowners • continue adaptive engagement with Traditional Owners, maintaining agreed governance arrangements and supporting ongoing cultural monitoring through planning and construction (see also mitigation measure AH04 **and updated mitigation measures as identified in *Appendix D (Updated mitigation measures)* of the Amendment Report**) • engage with affected **Hunter businesses (e.g. wineries),** tourism and recreation operators **(including recreational user groups of forestry land) and Hunter Valley Gliding Club** to minimise disruptions and support continuity of operations • set out a framework to develop community notification processes in consultation with Forestry Corporation of NSW and councils during construction • **prepare interface management plans with Glencore, Hunter Valley Operations and the Forestry Corporation of NSW with regards to site based operational interface** • **establish project coordination groups with Glencore, Hunter Valley Operations and the Forestry Corporation of NSW for coordination of operations with project construction.**		

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
S03	Decision-making systems, way of life, community, accessibility, livelihoods, health and wellbeing, culture	A complaints management system will be maintained throughout the construction period and for a minimum of 12 months after the completion of construction. The complaints management system will include the following (at a minimum): • contact details for a 24-hour response line and email address for ongoing stakeholder contact throughout the project • details of all complaints received will be recorded • verbal and written responses describing what action will be taken will be provided to the complainant (or as otherwise agreed by the complainant).	Detailed design Construction	Corridor Local Regional
S04	Decision-making systems, way of life, community, livelihoods, health and wellbeing	A Landowner Engagement Strategy will be developed and implemented for the project and will include: • appointing a dedicated Land Acquisition Manager to oversee implementation of the strategy • ensuring all land and property access and community liaison personnel are trained in community & stakeholder engagement aligned with trauma-informed care principles to support interactions with vulnerable individuals, including those with chronic illness, disability, or mental health conditions. Property Management Plans will also be implemented to complement the Landowner Engagement Strategy. These will be customised to address landowner concerns and property-specific needs, with a focus on respect for landowner values and expectations, co-existence principles, biosecurity, and permissible land uses (see LP2 in ***Appendix D (Updated mitigation measures)*** of the Amendment Report ~~Appendix E of the EIS~~).	Detailed design Construction	Corridor Local
S05	Community, livelihoods	A local business and employment strategy will be prepared and implemented, reflecting EnergyCo's Hunter-first commitments to the local community. It will include the following initiatives: • identify local skills gaps and workforce skills and training requirements	Detailed design Construction	Local Regional

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• set targets for local employment in line with the NSW Renewable Energy Sector Board's Plan (NSW Office of Energy and Climate Change 2022) • set diversity and inclusion targets that align with the NSW Procurement Board Direction PBD 2023-01 Skills, Training, and diversity in construction (NSW Treasury 2023a) • education and training partnerships, such as TAFE NSW and local high schools and the upcoming Cessnock Education Precinct to support energy transition career pathways • support tailored training and upskilling programs for residents, with a targeted focus on young people, Aboriginal people, candidates seeking career transition from existing local industries, and older people • providing full, fair, and reasonable access to Australian, regional and local suppliers, and including commitments to an ongoing program of engagement with regional suppliers and contractors • investment in retraining and upskilling pathways for workers transitioning into renewable energy industries (e.g. technicians, infrastructure specialists) • maintaining a local and regional supplier database to increase promotion and access to project opportunities • prioritising local procurement and contractor engagement, with clear targets for small and medium enterprises (SMEs) linked to NSW Procurement Board Direction PBD-2023-03 Procurement opportunities for small and medium businesses (NSW Treasury 2023b) and the Small and Medium Enterprise and Regional Procurement Policy (Buy NSW 2021) • partnering with Business Hunter, Local Chambers of Commerce, to promote procurement opportunities., • outlining mechanisms to monitor cumulative competition and changes to community access to key goods and services that may be affected by the project's local procurement activities		

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
		• **collaboration with local governments and industry including local mining companies to understand workforce and training needs, cumulative pressures and opportunities to enhance project benefits** • delivery of workforce initiatives focused on Aboriginal employment pathways and contractor engagement.		
S06	Community, livelihoods	An industry and Aboriginal participation plan, outlining tailored strategies to strengthen Aboriginal business participation, will be prepared and implemented and will include: • 'meet-the-contractor' events for local and Aboriginal businesses to learn about potential opportunities associated with project delivery • supply chain mapping, with a focus on identifying goods and services suitable for local sourcing (e.g. select civil works, catering, cleaning, transport) • identifying the capacity of local and Aboriginal business to be ready for additional demand • Aboriginal Procurement commitments of 2.5% with a stretch goal of up to 10% in line with the NSW Renewable Energy Sector Board's Plan (NSW Office of Energy and Climate Change 2022b) • set targets for local procurement in line with the NSW Renewable Energy Sector Board's Plan (NSW Office of Energy and Climate Change 2022b) • monitor the availability and price of goods and services in the community that are locally procured. This plan will be developed in consultation with local business representatives including Traditional Owners and Local Aboriginal Business representatives.	Detailed design Construction	Local Regional

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
S07	Way of life, community, livelihoods, health and wellbeing	A temporary worker accommodation management plan(s) will be developed before construction to address requirements set out in the NSW Guideline for Construction Workers Accommodation (May 2025), and informed by consultation with neighbours, councils, health and emergency service stakeholders. This would include the following: • contemporary analysis of short-term and local accommodation capacity in key localities, including consideration of updated workforce estimates **and local accommodation needs** • **principles for the siting and use of existing accommodation within towns if required to supplement temporary worker accommodation facilities** • a code of conduct for workers, which will include a zero-tolerance policy relating to anti-social behaviour, health & safety, environmental management, community engagement and cultural awareness raising • measures to support workforce well-being and integration with the local community (e.g. internet access, promotion of participation in local events, healthy food options, wellbeing & safety programs • dedicated health, paramedic, catering, and recreational services • specific measures to support community cohesion and safety at nearby communities, including **Millfield, Wollombi**, Cooranbong, Martinsville, and the Lake Liddell Recreation Reserve • security protocols for each accommodation facility The plan(s) will be reviewed on a 6-monthly basis to monitor **the** effectiveness of management commitments and to address emerging or unanticipated impacts.	Detailed design Construction	Corridor Local
S08	**Surroundings, community**	**Investigate opportunities to assist wildlife carers and organisations including Hunter Wildlife Rescue with relocating directly affected wildlife care and soft release pen facilities within the local area and to respond to increased demand in wildlife care services from construction of the project.**	**Detailed design** **Construction**	**Corridor** **Local**

Reference	Impact	Mitigation measure	Timing	Relevant location(s)
S09	Way of life, community, health and wellbeing	Investigate and implement measures to minimise the perceived safety risk from construction vehicles in proximity to Millfield Public School (in consultation with Millfield Public School) such as: • improvements to the school car park to make it more suitable to all weather conditions • improvements to the school fencing to minimise risk of children running onto the road • traffic control measures for pedestrians near the school during pick-up and drop-off times for the duration of construction.	Detailed design Construction	Local

5.9 Historic heritage

Chapter 15 (Historic heritage) and *Technical Report 7 - Historic heritage impact statement* of the EIS assessed the potential impacts of the construction and operation of the exhibited project on historic heritage.

Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential historic heritage impacts identified in the EIS, and to respond to feedback received during exhibition of the EIS.

A historic heritage impact statement (HHIS) addendum has been prepared to support this Amendment Report, and is provided in *Appendix J (Historic heritage impact statement addendum)*.

5.9.1 Assessment approach

Legislation, policies, plans and guidelines

The HHIS addendum was undertaken in accordance with legislation, policies, plans and guidelines consistent with those outlined in *section 15.1.1* of the EIS.

In addition to the legislation, policies, plans and guidelines outlined in *section 15.1.1* of the EIS, the HHIS addendum has considered the NSW *National Parks and Wildlife Act 1974* and the NSW *National Parks and Wildlife Regulation 2019*, which protect cultural values of items which are listed under National Parks and Wildlife Service (NPWS) estate. These include items which are listed on the historical heritage information management system (HHIMS).

Study area

The study area for the HHIS addendum included consistent parameters with those used in the EIS but applied these to the amended project impact area. As such, the amended HHIS study area included:

- the amended project impact area (which includes heritage items and value sites immediately adjacent to the amended project impact area)
- the visual study area (i.e. land within 1.625 kilometres of the amended HTP corridor).

Assessment methodology

The HHIS addendum involved additional assessment of historic heritage within and surrounding the amended project impact area in response to submissions received on the exhibited HHIS and as a result of project amendments.

Assessment of the potential impacts of the amendments and refinements to the project to historic heritage

A review of the impacts to listed heritage items and historic heritage value sites assessed as part of the exhibited HHIS was carried out, including:

- reviewing the amended project impact area to determine whether listed heritage items and historic heritage value sites would be within, adjacent to or in the vicinity of the amended project impact area
- assessing impacts to heritage items and historic heritage value sites as a result of the amendments and refinements to the project to determine whether there is a change in impacts to historic heritage sites compared to the exhibited project.

Additional historic heritage assessment in response to submissions

In response to feedback received from Heritage NSW during exhibition of the EIS, the following adjustments to the methodology for assessment of the potential impacts of the amended project on historic heritage were made:

- identification and assessment of potential impacts on unlisted historic heritage items and archaeological sites
- reassessment of the heritage significance of two heritage items identified in the exhibited HHIS (Oakley Estate and the Wishing Well).

<u>Identification and assessment of unlisted items</u>

In response to feedback from Heritage NSW, the HHIS addendum has included an assessment of the potential impacts to unlisted historic heritage items and archaeological sites. The methodology to identify and assess impacts to unlisted heritage items and archaeological sites was developed in consultation with Heritage NSW on 23 October 2025. The key steps of the methodology included:

- a desktop review of publicly available information to further investigate the potential for unlisted historic heritage items and archaeological sites to be present within the amended project impact area
- development of a predictive model for the amended project impact area to identify areas of low, moderate and high likelihood for historical activity. Areas identified as having moderate to high likelihood for historical activity were then carried forward for further desktop investigation. This involved review of site-specific studies, data collected as part of the Aboriginal cultural heritage assessment addendum (refer to *Appendix F (Aboriginal cultural heritage assessment addendum)*) and primary data (such as land title and ownership records, photographs and artwork, historical writing)
- historic value sites within the Singleton Military Area (SMA) were included in the heritage sensitivity study to identify information which could further define site curtilages (Blacksmith's shop and forge – Vere township, Unidentified site – Vere township, Vere school and second range warden's residence, Loder Family Sawmill)
- site inspections for areas of moderate to high likelihood for historical activity where desktop investigations proved to be inconclusive, or required ground-truthing or inspection of identified potential heritage features. Site inspections were completed on 14, 17 and 18 November 2025 in areas where property access was available

- assessment of potential heritage significance for unlisted historic heritage areas identified as having a moderate to high likelihood for historical activity, including archaeological significance and built fabric significance
- assessment of potential impacts of construction and operation of unlisted historic heritage areas identified as having a moderate to high likelihood for historical activity, including archaeological significance and built fabric significance (undertaken consistently with the methodology outlined in *section 15.1.3* of the EIS)
- identification of any required additional mitigation measures to avoid, minimise and/or manage potential impacts to unlisted historic heritage items and/or non-Aboriginal archaeological sites.

The following categories have been used as part of the assessment of archaeological significance:

- local significance: potential archaeological resources are likely to meet the threshold for heritage significance
- possibly local significance: potential archaeological resources possibly meet the threshold for heritage significance, but further investigation (research and/or test excavations) should be undertaken to better understand these potential deposits if impacts are proposed
- no significance: potential archaeological resources are unlikely to meet the threshold for heritage significance.

The following categories have been used as part of the assessment of built fabric significance:

- local significance: built fabric is likely to meet the threshold for heritage significance
- possibly local significance: built fabric possibly meets the threshold for heritage significance, but further investigation should be undertaken to better understand the built fabric if impacts are proposed
- no significance: built fabric is unlikely to meet the threshold for heritage significance.

Additional information about key steps in the assessment methodology for the identification and assessment of the potential impacts of construction and operation of the amended project to unlisted heritage items and non-Aboriginal archaeological sites is provided in full in *Appendix J (Historic heritage impact statement addendum)*.

<u>Reassessment of listed heritage items</u>

In response to submissions, further assessment of two items identified in the EIS has been completed:

- Oakley Estate (SMA internal ID: 170126/170127). This item is located on Commonwealth land in the Singleton Military Area. On this basis, the heritage significance assessment presented in the EIS considered the Garrison Estate Management System (GEMS) Heritage Importance Rankings Definitions. In response to advice from Heritage NSW, a significance assessment against the NSW Heritage Criteria and reassessment of impacts has been completed.

- Wishing Well (HHIMS Osf 26): This site is listed on the NPWS Historical Heritage Information Management System (HHIMS) as a groundwater-related culturally significant site and would be directly impacted (removed) by the project. In response to feedback received from NPWS and FCNSW, a more detailed heritage assessment of potential heritage significance of this site against the NSW Heritage Criteria has been completed with consideration of the requirements of the NPWS Act to protect heritage.

5.9.2 Existing environment

Listed historic heritage items

The listed historic heritage items as outlined in *section 15.2* of the EIS remain unchanged for the amended project impact area.

Table 5.43 provides a reassessment of heritage significance of the Oakley Estate (SMA internal ID: 170126/ 170127) and the Wishing Well (Osf 26) under the NSW Heritage Criteria. Based on this additional assessment, both items are considered to hold heritage significance at a local level under the NSW Heritage Criteria.

Table 5.43 Reassessment of heritage significance – Oakley Estate and Wishing Well

Heritage item	Conclusions/ Statement of Significance
Oakley Estate (SMA internal ID: 170126/ 170127)	Oakley Estate contains the remains of an early homestead (c.1830–1839), a mid-20th-century garage, and archaeological evidence of former farm structures including a c.1900 hay shed, a c.1860s outbuilding, a modern dairy, paving, a tank stand, and stockyard fencing, set within a broad valley landscape. Since its 2000 assessment, (Suters Architects 2000) the condition of the homestead had degraded significantly by 2024 and worsened in 2025 to near ruin. It is arguable whether the fabric in place represents the greater part of the building in its intact state. Earlier extensions have been demolished, leaving only the main brick structure standing. The garage survives, while the hay shed and modern dairy have been demolished, with only slab and wall remnants remaining — reducing the site's overall heritage value. As one of the older homesteads and farms in the region, the property itself is considered to hold historical significance for its role in the settlement and development of the Broke and Singleton areas. The place has historical associations with the Hewitt and Markwell, Blaxland and Loder families. The aesthetic significance of the homestead and outbuildings is significantly reduced due to ongoing neglect of the structures and recent demolition and structural failure. However, the rural setting — on a rise with mature trees — still reflects 19th-century farm character. Archaeological resources associated with previously demolished original outbuildings may still provide research value, offering insights into early farming practices and the daily lives of past occupants which could contribute to our understanding of these themes at a local level. The remnants of the Oakley Estate in their current condition are considered to hold heritage significance at a local level.
Wishing Well (HHIMS Osf 26)	The Wishing Well on Martinsville Hill Road consists of a concrete pipe and timber shelter built by FCNSW over a stone-capped spring, with a pipe directing overflow beneath the road. These structures are not original historic fabric. Although documentary evidence is limited, 1980s oral histories suggest the spring may once have been a watering point for bullock

Heritage item	Conclusions/ Statement of Significance
	teams hauling timber, and its elevation makes the presence of a spring unusual. Since being formalised by FCNSW staff, the place has become a recognised local landmark for forestry workers, NPWS staff, residents, and visitors. Archaeological material at the site may offer insight into its past use, although no specific early activity is evidenced. The ACHA Addendum notes the spring could have been used by Aboriginal people, but there is no clear cultural or historical association beyond this possibility. The place does not demonstrate notable aesthetic, technical, or associative significance and is not representative of a broader class of heritage places at a local or state scale. The Wishing Well is considered to have heritage significance at a local level.

Built fabric and non-Aboriginal archaeological sites

The desktop assessment and supplementary site inspections identified the following within or in proximity to the amended project impact area:

- 45 activity areas of moderate potential heritage significance
- six activity areas of high potential heritage significance.

The built fabric features or archaeological sites located within an activity area of potential moderate or high heritage significance were carried forward for further assessment of the archaeological or built fabric significance.

The results of the assessment of archaeological significance of areas of moderate or high archaeological potential are presented in Table 5.44.

Of the 25 features of moderate to high archaeological potential located in the vicinity of or within the amended project impact area:

- six features were identified as having no archaeological significance
- thirteen were identified as potentially having local archaeological significance
- six features were identified as having possible local archaeological significance.

Of these, five features are associated with listed heritage sites.

Further information on the criteria used to determine the significance of archaeological resources is outlined in *section 3.1.2* of *Appendix J (Historic heritage impact statement addendum)*.

Table 5.44 Assessment of archaeological potential and significance within amended project impact area

Activity area	Feature	Description (associated heritage item or site if relevant)	Archaeological potential	Archaeological significance
AA54	F10	Former dwelling	Moderate	No significance
AA90	F14	Sewer pipes	High	No significance
	F2	c.1833 structure, 'Greenluk'	High	Local significance
	F2.1	c.1833 'Greenluk' outbuilding	High	Local significance

Activity area	Feature	Description (associated heritage item or site if relevant)	Archaeological potential	Archaeological significance
AA92	F15	Former outbuilding	High	No significance
AA98	F3	Clifford homestead ruins*	High	Local significance
AA100	F19	Former dwelling	High	Possibly local significance
AA109	F6	Brick farm house, Jarvis House associated archaeology*	Moderate	Local significance
AA127	F7	Oakhill homestead	High	Local significance
AA140	F24	Vere school and second range warden's residence	Moderate	Possibly local significance
AA141	F25	Blacksmith's shop and forge – Vere township*	High	Local significance
AA142	F26	Unidentified site – Vere township	Moderate (precise location not known)	Possibly local significance
AA153	F8	Oakley homestead (homestead, garage and hayshed)*	Moderate	Local significance
AA154	F8	Oakley outbuildings (modern dairy, concrete paving, stockyards and former tank stand)	High	No significance
AA155	F8	Oakley outbuildings (former dairy / bails)	High	Possibly local significance
-	F27	Loder Family Sawmill	Moderate	Possibly local significance
AA161	F28	Warringah Stud/Old Myrtle*	Moderate	Local significance
AA176	F29	c. 1930s dwelling	Moderate	No significance
	F31	Former outbuilding	High	No significance
AA226	F34	Parson's dwelling	Moderate	Local significance
AA233	F36	Sawmill off Watagan Forest Road	Moderate	Local significance
AA187	F38	Sawmill site (cnr Martinsville Hill and Watagan Forest Roads)*	High	Local significance
AA186	F40	Wishing well	High	Local significance
AA223	F41	Possibly Inglewood Estate homestead	Moderate	Local significance
	F42	Possibly Inglewood Estate outbuilding	High	Possibly local significance
Various	-	Fence lines	Moderate	No significance

*These features are associated with listed heritage sites.

Of the 21 built fabric features of moderate to high built heritage significance within the amended project impact area:

- nine features were identified as having no built heritage significance
- six features were identified as potentially having local built heritage significance
- six features were identified as having possible local built heritage significance.

Of these items, three features are associated with listed heritage items.

Further information on the criteria used to determine the significance of built fabric is outlined in *section 3.1.3* of *Appendix J (Historic heritage impact statement addendum)*.

Table 5.45 Assessment of built fabric significance within the amended project impact area

Activity area	Feature	Description	Built heritage significance
AA54	F9	Timber and iron shed/barn	No significance
AA70	F12	Dwelling	Possibly local significance
AA71	F13	Animal shelter outbuilding	No significance
AA90	F1	Greenleek homestead	Local significance
AA93	F16	Greenleek dairy	Possibly local significance
	F17	Greenleek milking shed	Possibly local significance
	F18	Dwelling within Greenleek	No significance
AA98	F3	Clifford homestead ruins*	Local significance
AA99	F4	Stafford homestead*	Local significance
AA109	F5	Brick farm house, Jarvis House*	Local significance
	F20	Piggery	No significance
AA141	F25	Blacksmith's shop and forge – Vere township	Possibly local significance
AA225	F21	Jarvis House Cottage (not inspected – desktop assessment only)	Possibly local significance
AA125	F22	Piggery or animal outbuilding	No significance
AA126	F23	Animal shelter or shed	No significance
AA153	F8	Oakley homestead (homestead, garage and hayshed)	Local significance
AA176	F30	Brick dairy	No significance
AA186	F40	Wishing well*	Possibly local significance
AA223	F43	Brick dairy	No significance
AA238	F44	Oaklands homestead	Local significance
AA241	F45	Dwelling	No significance

*These features are associated with listed heritage sites.

5.9.3 Assessment of impacts

Construction impacts

Changes to impacts from the amended project on listed heritage items and heritage value sites

The realignment of the transmission line at Mount Thorley would increase the potential impacts to two listed historic heritage sites compared to the exhibited project (the Brick Farm House and Eraring Power Station). All other amendments/refinements have not resulted in a change in impact.

An updated assessment of potential impacts to these items is provided in *Table 5.46* below, with new text denoted in **bold**, and text no longer relevant included as ~~strikethrough~~.

Consistent with the EIS, heritage items within the visual study area have only been assessed for operational impacts given the distance from the amended project impact area and the temporary, short-term nature of construction visual impacts.

Table 5.46 Updated assessment of potential impacts to listed items of historic heritage as a result of the amended project

Heritage item	Updated description of proposed works	Impact type	Significance of impact (unmitigated)	Change in impact from amended project
Brick Farm House (local) AA 109 F-5 AA 109, F-6	• The HTP corridor extends into the curtilage of this heritage item, and 250 metres from the farmhouse building • A stringing site is 668 metres from the farmhouse building and outside of the item curtilage • Access tracks are within the item curtilage and 280 metres from the farmhouse building	Indirect **Direct**	~~Minor~~ **Moderate** **Minor**	The amended project would result in a minor direct impact as the HTP corridor now extends into the heritage items curtilage. No impacts would continue to occur to built fabric resources or archaeological resources of potential heritage significance as the area of archaeological potential associated with the farm hour is over 200 metres from the amended project. The amended project would be about 600 metres closer to the Brick Farm House than the exhibited project, increasing indirect impacts from minor to moderate.
Eraring Power Station	• Larger footprint for constructability, including for parking and the adjustment of utilities • Substation generator connections on the existing hardstand area	Direct Indirect	~~Minor~~ **Moderate** ~~Minor~~ **Moderate**	Moderate direct and indirect temporary impacts are anticipated. The area identified for construction works within the item has increased as part of the amended project. This would result in an increase in direct and indirect temporary impacts during construction. Minor direct permanent impacts are also anticipated. While there would be a larger footprint required for the

Heritage item	Updated description of proposed works	Impact type	Significance of impact (unmitigated)	Change in impact from amended project
	• Modification works on the existing bench • New poles and adjustment of the existing generator connections into Eraring Power Station • Localised undergrounding of the optical ground wire route by trenching between existing transmission towers.			construction works, the operational footprint remains largely similar and does not increase the impact of the amended project to the item.

Revised assessment of archaeological values on listed heritage items and heritage value sites

Since the exhibition of the EIS, additional research has improved the understanding of the likely extent of the archaeological resource at three listed heritage items. This has resulted in the following revisions to the impact assessment for the following sites:

- Blacksmith's shop and forge - Vere township
- Unidentified site - Vere township
- Loder Family Sawmill.

An updated assessment of the potential impacts to these items is included in Table 5.47.

Table 5.47 Revised impact assessment to archaeological values of listed items of historic heritage

Heritage item	Impact type	Significance of impact (unmitigated)	Change in impact from amended project
Blacksmith's shop and forge - Vere township (Commonwealth (GEMS – medium)) AA 141-F 25	Direct Indirect	~~Moderate~~ **Minor** Minor	Minor permanent direct impacts to archaeological resources of potential heritage significance are anticipated. The access track works extend only 1-2 metres into the western portion of the feature but not directly impacting the location of the slab structure. However, there remains the possibility that archaeological resources could be in this location. This could impact possible deposits which may have the potential for research and technical values and the ability to demonstrate the past. Direct impacts would be reduced to minor due to the limited incursion into the feature boundary.

Heritage item	Impact type	Significance of impact (unmitigated)	Change in impact from amended project
Unidentified site - Vere township (Commonwealth (GEMS – low)) AA 142-F 26	~~Direct~~ None ~~Indirect~~ None	~~Minor~~ None ~~Minor~~ None	Evidence indicates that the archaeological resources associated with this site are around 14 metres from access track upgrade works and around 72 metres from a stringing site.
Loder Family Sawmill (Commonwealth (GEMS – low)) F27	~~Indirect~~ None	~~Minor~~ None	Evidence indicates that the archaeological resources associated with this site are around 243 metres from access track upgrade works. Indirect impacts would be reduced to none.

Potential impacts to listed heritage items and features of heritage or possible heritage significance

The assessment of construction impacts on unlisted heritage items and archaeological sites that have been identified since the exhibition of the EIS is summarised in *Table 5.48*.

Activity areas and features that were assessed as not having either archaeological or built fabric significance in *section 5.9.2* have not been considered further.

As identified in *section 5.9.2*, several features are associated with listed heritage items. The amended project and additional information obtained through the additional assessments has not altered the assessments of these items as presented in the exhibited HHIS, with the exception of the three heritage value sites listed in *Table 5.47*.

Table 5.48 Assessment of impacts of construction of the amended project on listed heritage items and features of heritage or possible heritage significance

Activity area / feature	Description and heritage significance	Potential impact	Direct or indirect	Significance of impact	Impact on overall heritage values and significance
AA70 / F12	Dwelling Possible local built heritage significance	• The structure would not be demolished by the amended project, however temporary indirect impacts due to vibration that may cause damage to the feature's structural integrity and permanent indirect visual impacts associated with the change to the building's setting would occur	Direct or indirect	Major or moderate	The project may have an adverse impact on the feature's possible heritage significance through damage to built fabric which may possibly have research potential for adaptation of rural homes over the 19th and 20th century.
AA90 / F1	Greenleek homestead Local built heritage significance	• Temporary indirect vibration impacts which may cause damage to the feature's structural integrity	Indirect	Major	The project would have a significantly adverse impact on the feature's heritage significance, including through damage to built fabric which contributes to the feature's historical, associative, aesthetic rarity and representative values.
AA90 / F2	c.1833 structure, 'Greenluk' Local archaeological significance	• Permanent direct impacts to potential archaeological resources	Direct	Major	The project would have a significantly adverse impact on the feature's potential heritage significance through the loss of potential archaeological resources which have research potential for domestic life and early 19th century accommodation, associative significance, possible aesthetic significance and the ability to demonstrate the past.

Activity area / feature	Description and heritage significance	Potential impact	Direct or indirect	Significance of impact	Impact on overall heritage values and significance
AA90 / F2.1	c.1833 'Greenluk' outbuilding Local archaeological significance	• No permanent or temporary direct or indirect impacts	N/A	N/A	No permanent or temporary direct or indirect impacts.
AA93 / F16	Greenleek dairy Possible local built heritage significance	• Temporary indirect visual changes to the setting of the feature • Temporary indirect vibration impacts due to nearby construction activity that may impact structure integrity	Indirect	Moderate	The project would have an adverse impact on the feature's possible heritage significance, including through alteration of the rural setting of the feature, particularly to the east, south and west, and through potential damage to built fabric which may hold heritage value.
AA93 / F17	Greenleek milking shed Possible local built heritage significance	• Temporary indirect visual changes to the setting of the feature.	Indirect	Moderate	The project would have an adverse impact on the feature's possible heritage significance, including through alteration of the rural setting of the feature, particularly to the east, south and west, and through potential damage to built fabric which may hold heritage value through vibrations.
AA100 / F19	Former dwelling Possible local archaeological significance	• No permanent or temporary direct or indirect impacts	N/A	N/A	No permanent or temporary direct or indirect impacts.
AA225 / F21	Jarvis House Cottage Possible local built heritage significance	• Temporary indirect visual changes to the setting of the feature	Indirect	Moderate	The project would have an adverse impact on the feature's possible heritage significance as a result of alteration of the rural setting of the feature, particularly to the east and north.

Activity area / feature	Description and heritage significance	Potential impact	Direct or indirect	Significance of impact	Impact on overall heritage values and significance
AA127 / F7	Oakhill homestead Local archaeological significance	• Permanent direct impacts to potential archaeological resources	Direct	Major	The project would have a significantly adverse impact on the feature's potential heritage significance through a loss of potential archaeological resources which have research potential for domestic life and early 19th century accommodation, associative significance, aesthetic and technical significance and an ability to demonstrate the past.
AA226 / F34	Parson's dwelling Local archaeological significance	• Permanent direct impacts to potential archaeological resources	Direct	Major	The project would have a significantly adverse impact on the feature's potential heritage significance through a loss of potential archaeological resources which have research potential for domestic life and mid-19th century accommodation for religious officials, possible aesthetic significance and an ability to demonstrate the past.
AA233 / F36	Sawmill off Watagan Forest Road Local archaeological significance	• No permanent or temporary direct or indirect impacts	N/A	N/A	No permanent or temporary direct or indirect impacts.
AA223 / F41	Possibly Inglewood Estate homestead Local archaeological significance	• If the current dwelling is demolished and/or earthworks are proposed, this risks permanent direct impacts to archaeological resources	Direct	Major	If the current dwelling is demolished or earthworks occur, the project would have a significantly adverse impact on the feature's potential heritage significance through a loss of archaeological resources which have historical value, and the possibility of associative and research potential values, and the ability to demonstrate the past.

Activity area / feature	Description and heritage significance	Potential impact	Direct or indirect	Significance of impact	Impact on overall heritage values and significance
AA223 / F42	Possibly Inglewood Estate outbuilding Possible local archaeological significance	• Permanent direct impacts to archaeological resources	Direct	Major	The project would have a significantly adverse impact on the feature's potential heritage significance through a loss of archaeological resources which possibly have historical associative and research potential values, possible aesthetic or technical values, and the ability to demonstrate the past.
AA238 / F44	Oaklands homestead Local built heritage significance	• Temporary indirect visual changes to the setting of the feature	Indirect	Minor	The project would have a minor adverse impact to the feature's heritage significance.

Operation impacts

Review of impacts from the amended project on listed heritage items and heritage value sites

Impacts to heritage items during operation of the amended project would largely be consistent with the impacts outlined in *section 15.4* of the EIS. Potential impacts to historic heritage during operation would predominantly relate to indirect visual impacts from the presence of permanent elements of the project, including transmission lines, towers and switching stations. For heritage items assessed as part of the exhibited HHIS, the following minor changes to operational impacts would occur as a result of the amended project:

- 'Stafford', homestead and 'Clifford', homestead (ruins): moderate indirect permanent impacts. The realignment of the transmission line at Gouldsville would result in the transmission line easement shifting 15 to 20 metres to the south, resulting in a minor deviation of the easement at the southeastern corner of the curtilage of this heritage item. However, this would not change the moderate indirect impact assessed as part of the exhibited HHIS
- Brick farm house: moderate indirect permanent visual impacts (increase from minor indirect impacts as part of the exhibited project). The realignment of the transmission line at Mount Thorley would result in the transmission line easement being located closer to the curtilage of this heritage item than for the exhibited project. While closer, the slight slope to the east would still provide a partial visual barrier to the transmission towers and transmission line to the east where it follows the floodplain. The presence of a large transmission line easement would have permanent impacts on the wider pastoral setting of and northern views from the item across the Hunter River floodplain.

For two heritage items assessed as part of the exhibited HHIS, the amended project works remain the same as the EIS in the vicinity and adjacent to the heritage site, however the impact has changed due to the completion of more detailed research and assessment of archaeological values and curtilage review:

- Unidentified site - Vere township: no indirect impacts (decreased from minor indirect impacts as part of the exhibited project). The archaeological resources associated with this site are now understood to be around 14 metres from access tracks. As such, no indirect impacts to this site are anticipated
- Loder Family Sawmill: no indirect impacts (decreased from minor indirect impacts as part of the exhibited project). The archaeological resources associated with this site are now understood to be around 243 metres from access tracks. As such, no indirect impacts to this site are anticipated.

Impact assessment of activity areas and features of heritage significance identified in response to submissions

The assessment of operational impacts on unlisted heritage items and archaeological sites that have been identified since the exhibition of the EIS is summarised in *Table 5.49*.

Activity areas and features that were assessed as not having either archaeological or built fabric significance in *section 5.9.2* have not been considered further.

As identified in *section 5.9.2*, several features are associated with listed heritage items. The amended project and additional information obtained through the additional assessments has not altered the assessments of these items as presented in the exhibited HHIS.

Table 5.49 Assessment of impacts of operation of the amended project on activity areas and features of heritage significance

Activity area / feature	Description	Potential impact	Direct or indirect	Significance of impact	Impact on overall heritage values and significance
AA90 / F1	Greenleek homestead	Permanent indirect visual impacts associated with the change to the building's setting.	Indirect	Major	The project would have a significantly adverse impact on the feature's heritage significance, including through alteration of the rural setting of the feature, particularly to the east, south and west.
AA93 / F16	Greenleek dairy	Permanent indirect visual changes to the setting of the feature.	Indirect	Moderate	The project would have an adverse impact on the feature's heritage significance, including through alteration of the rural setting of the feature, particularly to the east, south and west.
AA93 / F17	Greenleek milking shed	Permanent indirect visual changes to the setting of the feature.	Indirect	Moderate	The project would have an adverse impact on the feature's heritage significance, including through alteration of the rural setting of the feature, particularly to the east, south and west.
AA225 / F21	Jarvis House Cottage	Permanent indirect visual changes to the setting of the feature.	Indirect	Moderate	The project would have an adverse impact on the feature's heritage significance as a result of alteration of the rural setting of the feature, particularly to the east and north.

5.9.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential historic heritage impacts are listed in *Table 5.50*. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text). The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.50 Updated mitigation measures - historic heritage

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
HH1	Historic heritage management	An HHMP will be prepared by a suitably qualified and experienced heritage specialist to provide the post-approval framework for managing archaeological mitigation and historical heritage within the project impact area. The HHMP will include as a minimum: • measures that will be implemented to manage potential impacts on listed heritage items**, historic heritage value sites in the Singleton Military Area** and **newly identified sites assessed to hold or possibly hold heritage significance** • inclusion of heritage awareness and management training within the site induction process for relevant personnel involved in site works • identify heritage sites that will be subject to archival recording • details of the management of any historic heritage artefacts recovered during construction • **adherence to guidelines in the management of heritage values on NPWS estate** • **consultation on the HHMP will be undertaken with NPWS and Heritage NSW.**	Detailed design Construction	Project impact area, and all identified heritage items**, features of heritage significance and possible heritage significance** that will be adversely impacted by the project
HH2	Impacts to heritage curtilage	Prior to construction activities near the heritage item, an exclusion barrier (e.g. fence or suitable alternative) will be installed at the curtilage of heritage items, ~~and~~ **historic heritage value** sites **and activity areas and features** where works will be in the vicinity to reduce the risk of unintentional impacts to heritage values. Where works enter the curtilage of an item or site: • any significant elements of the heritage item or site will be fenced off, preferably with a minimum of a 5 m buffer, where possible	Detailed design Construction	• Blacksmith's shop and forge - Vere township **(AA 141-F 25)** • Unidentified site – Vere township **(AA 142-F 26)** • Vere school and Second Range Warden's Residence **(AA 140-F 24)** • Oakley Estate (Location 1) **(AA 153-F 8, AA 155-F 8)**

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• where not possible, the area of works will be fenced off from the remaining part of the item or site curtilage • the barrier will be maintained for the duration of construction.		• Warringah Stud/Old Myrtle **(AA 161-F 28)** • Stafford homestead and Clifford' homestead **(AA 98-F 3, AA 99-F 4)** • Archerfield and outbuildings • Catholic Church and Cemetery • **AA 70-F 12 – Dwelling (if not demolished)** • **AA 90-F 1 – Greenleek homestead** • **AA 90-F 2 - c.1833 structure, 'Greenluk'** • **AA 90-F 2.1 - c.1833 'Greenluk' outbuilding** • **AA 93-F 16 - Greenleek dairy** • **AA 93-F 17 - Greenleek milking shed** • **AA 98-F 3 - Clifford homestead ruins** • **AA 100-F 19 - Former dwelling** • **AA 223-F 41 - Inglewood Estate homestead**

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
HH3	Impacts to heritage curtilage	The construction impact area at tower pad areas will be remediated at the end of construction to minimise impacts to setting of the heritage curtilage.	Construction	• Belmont • Beer Homestead • 'Stafford' homestead and 'Clifford' homestead **(AA 98-F 3, AA 99-F 4)** • Eraring Power Station • Stone house, timber slab barn and fencing
HH4	Ground disturbance at archaeological areas	Where possible, ground disturbance will be avoided within these site curtilages. Alternatives to ground disturbance for access track upgrades may include laying of protective materials, such as thick plastic and geofabric, over the ground surface followed by a layer of gravel. Materials for the upgrade of the access track can be deposited on top of this protective layer.	Detailed design Construction	• Blacksmith's shop and forge - Vere township **(AA 141-F 25)** • Unidentified site - Vere township **(AA 142-F 26)** • Vere school and Second Range Warden's Residence **(AA 140-F 24)** • **AA 90-F 2 - c.1833 structure, 'Greenluk'** • **AA 127-F 7 - Oakhill homestead** • **AA 223-F 41 - Inglewood Estate homestead** • **AA 223-F 42 - Inglewood Estate outbuilding** • **AA 226-F 34 - Parson's dwelling**
~~HH5~~	~~Changes to settings of item or heritage site~~	~~A review of visual impacts may be required once the final tower locations are known.~~	~~Detailed design~~	• ~~Oakley Estate~~ • ~~Stafford homestead and Clifford' homestead~~

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
~~HH6~~ **HH5**	Changes to settings of item or heritage site	Minimise tree removal in the laydown area at Crump Street.	Construction	• Millfield General Cemetery
~~HH7~~ **HH6**	Disturbance or destruction of unexpected items of potential heritage significance, relics or human remains	Any items of potential heritage significance or human remains discovered during construction will be managed in accordance with an unexpected finds procedure. Work in the vicinity of the find will stop if objects such as bonded bricks, timber or stones appearing in formation indicating a wall or floor for instance are found, or if soil with artefacts concentrations, is excavated. A description of the types of finds that will stop works within the vicinity of the finds will be determined prior to construction as part of the HHMP and staff involved in excavation work will be informed about how to apply it. The unexpected finds procedure will include actions such as: • stop work procedures and exclusion buffers • using the advice of a technical specialist • consultation with Heritage NSW, Department of Climate Change, Energy, the Environment and Water (Heritage NSW) • protocols for continuing work in the area after assessment.	Detailed design Construction	• Blacksmith's shop and forge - Vere township **(AA 141-F 25)** • Unidentified site - Vere township **(AA 142-F 26)** • Vere school and Second Range Warden's Residence **(AA 140-F 24)** • Oakley Estate (Location 1) **(AA 153-F 8, AA 155-F 8)** • Warringah Stud/Old Myrtle **(AA 161-F 28)** • Belmont • Beer Homestead • Stafford homestead and Clifford' homestead **(AA 98-F 3, AA 99-F 4)** • Brick farmhouse (AA 109-F 5, AA 109-F 6) • Archerfield and outbuildings • Eraring Power Station • **AA 90-F 2 - c.1833 structure, 'Greenluk'** • **AA 223-F 41 - Possibly Inglewood Estate homestead** • **AA 127-F 7 - Oakhill homestead**

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
				• AA 226-F 34 - Parson's dwelling • AA 223-F 42 - Possibly Inglewood Estate outbuilding
~~HH8~~ HH7	Potential disturbance or destruction of known items of potential heritage significance, relics or human remains	Should it not be possible to avoid ground disturbance in areas of archaeological potential with heritage significance or possible heritage significance, ~~archaeological monitoring of any ground disturbing works will be prepared at sites of archaeological potential. An Archaeological Method Statement (AMS)~~ an Archaeological Research Design and Excavation Methodology (ARDEM) will be prepared to appropriately manage ~~for~~ the proposed works in these locations in accordance with the HHMP. If appropriate and relevant, exceptions under Section 139 of the *Heritage Act 1977* and Heritage NSW guidance regarding implementation of these exceptions will be utilised (Heritage NSW 2022, Heritage NSW 2022a, Heritage NSW 2022b).	Detailed design Construction	• Blacksmith's shop and forge - Vere township (AA 141-F 25) • Unidentified site - Vere township (AA 142-F 26) • Vere school and Second Range Warden's Residence (AA 140-F 24) • AA 90-F 2 - c.1833 structure, 'Greenluk' • AA 223-F 41 - Possibly Inglewood Estate homestead • AA 127-F 7 - Oakhill homestead • AA 226-F 34 - Parson's dwelling • AA 223-F 42 - Inglewood Estate outbuilding
~~HH9~~ HH8	Confirmed destruction of known items of heritage significance, relics or human remains	Direct impacts to the Wishing Well are unavoidable due to access track upgrades to Martinsville Hill Road. The Wishing Well will be subject to archaeological excavation and recording to ensure that a record is made prior to its ~~demolition~~ removal. ~~An AMS~~ The ARDEM will include specifications ~~be prepared~~ for these works.	Detailed design Construction	• Wishing Well (AA 186-F 40)

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		A commemorative plaque will be installed in a location as close as possible/practicable to the water source of the Wishing Well, **and the built fabric of the Wishing Well will be relocated. The final locations of the commemorative plaque** ~~which~~ will be determined through further consultation with NPWS, Forestry Corporation of NSW and Heritage NSW. **A suitable storage location for the Wishing Well built fabric and timeframe for relocation will be determined during the development of the Historical Heritage Management Plan.** **The Wishing Well built fabric will be relocated, in accordance with the HHMP and relevant regulatory requirements, to the Sawmill site at the corner of Martinsville Hill Road and Watagan Forest Road, unless otherwise agreed upon by NPWS, Forestry Corporation of NSW and Heritage NSW.** ~~Continue consultation regarding engineering solutions for maintaining access to the water source post-construction.~~		

5.10 Noise and vibration

Chapter 16 (Noise and vibration) of the EIS assessed the potential noise and vibration impacts from construction and operation of the exhibited project. Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential noise and vibration impacts identified in the EIS.

A noise and vibration impact assessment (NVIA) addendum has been prepared to support this Amendment Report, and is provided in *Appendix K (Noise and vibration impact assessment addendum)*. The findings of the NVIA addendum are described in this section.

5.10.1 Assessment approach

Legislation, plans, policies and guidelines

The NVIA addendum was prepared with consideration of the same legislation, policies, plans and guidelines as the exhibited NVIA.

Study area

The study area used for the NVIA addendum, including noise catchment areas (NCAs), is consistent with the study area outlined in *section 16.1.2* of the EIS.

Assessment methodology

The assessment methodology implemented to assess the potential noise and vibration impacts of the amended project is generally consistent with the assessment methodology outlined in *section 16.1.3* of the EIS. Minor changes to the assessment methodology have been implemented to assess amendments and refinements to the project, including:

- minor changes to the representative construction scenarios to account for amendments to the project. The construction scenarios that have been updated are outlined in Table 5.51, with all other construction scenarios outlined in *section 16.1.4* of the EIS remaining applicable to the amended project
- minor changes to the construction road traffic noise methodology to account for updated traffic movements at the Wollombi Road construction support site and updated construction traffic routes
- minor changes to the assessment of construction activities within the HTP corridor methodology including assessing towers sites occurring anywhere in the HTP corridor. In the EIS the tower sites were assessed at individual tower locations
- changes to the construction vibration assessment methodology to apply the *German Standard DIN 4150-3:1999-02 Structural vibration – Effects of vibration on structures (DIN 4150) Group 3* vibration guide values to the assessment of vibration impacts on Aboriginal heritage sites, in line with the approach used in *Appendix F (Aboriginal cultural heritage assessment addendum)*.

Table 5.51 Updated construction scenario descriptions to account for project amendments and refinements

Construction scenario	Updated description
Earthworks and access	The description of this construction scenario outlined in *section 16.1.4* of the EIS is applicable to the amended project, however additional earthworks required at the Bayswater substation for trenching of the underground fibre optic communication and at Eraring substation for localised undergrounding of the optical ground wire route have been incorporated.
Construction support sites	The description of this construction scenario in *section 16.1.4* of the EIS is applicable to the amended project, however additional plant and equipment at construction support sites and laydown areas included as part of the amended project in response to feedback from potential construction contractors have been included in this scenario. This includes diesel generators, crushing and screening plant, washdown facilities and wastewater treatment plants.

The potential operational noise impacts from the amended project have been predicted in accordance with the NSW Environment Protection Authority Noise Policy for Industry (NPfI) (EPA, 2017), consistent with *Technical Report 8 - Noise and Vibration Impact Assessment* prepared for the EIS.

The operational noise assessment has been updated based on the refinements to the layout and additional noise generating equipment at Bayswater and Eraring substation areas. The operational transmission line noise assessment in the NVIA addendum is an updated assessment for the entire amended project, which includes consideration of the HTP corridor amendments and potential conductor swing.

5.10.2 Existing environment

The existing environment described in *section 16.2* of the EIS, including NCAs and noise management levels (NMLs) for these NCAs determined using the results from the unattended ambient noise monitoring, is applicable to the amended project.

Additional sensitive receivers have been included in the NVIA addendum compared to those assessed as part of the exhibited NVIA, including:

- sensitive receivers in proximity to the amendments and refinements of the project
- sensitive receivers not previously included in the exhibited NVIA which have been identified through submissions received during the exhibition of the EIS as needing to be assessed, including receivers in proximity to road upgrades, future residential subdivisions, and camping areas and walking trails within State forests.

5.10.3 Assessment of impacts

Construction impacts

Consistent with the exhibited project, it is expected that the construction noise levels would frequently be lower than predicted for most construction activities for the amended project as the noise levels represent a worst-case scenario occurring at the work site boundary which is the closest point to each sensitive receiver. The addendum noise assessment also assumes several items of construction equipment would be in use simultaneously within individual scenarios. However, in reality, there would frequently be periods when construction noise levels are much lower than the worst-case levels predicted as well as times when no equipment is in use.

Construction hours and noise sources

The construction hours, proposed out of hours works and construction noise sources outlined in *section 16.3.1* of the EIS remain applicable to the amended project. Construction of the amended project would be carried out during standard construction hours where possible (Monday to Friday between 7.00 am and 6.00 pm and Saturday between 8.00 am and 1.00 pm), as defined in the *Interim Construction Noise Guideline* (NSW DECCW 2009) (ICNG).

Airborne noise

The amended project would result in a total of 603 potentially impacted sensitive receivers. While 30 sensitive receivers have been newly identified as a result of the amended project, 30 sensitive receivers are no longer impacted in comparison to the EIS resulting in no net change of sensitive receivers. However, five additional sensitive receivers would be highly affected by the amended project in comparison to the EIS.

<u>Changes to construction noise impacts from construction support sites, laydown areas, substations and switching stations from the amended project</u>

The description of construction noise impacts from construction support sites, laydown areas, substations and switching stations in *section 16.3.3* of the EIS is applicable to the amended project. Although the Wollombi Road construction support site now includes a temporary worker accommodation as part of the amended project, this would not result in any additional noise exceedances of NMLs at sensitive receivers, including during out of hours operation of the 24/7 facility. Maximum noise levels from from construction works at construction support sites and laydown areas are predicted to exceed noise management levels at up to 58 receivers, compared to 55 in the EIS. Noise exceedances would increase by three sensitive receivers within NCA09 from the EIS primarily as a result of the inclusion of crushing and screening plant at construction support sites and laydown areas. There would be no changes to exceedances as a result of changes at Bayswater substation or Eraring substation.

In addition to the above, other airborne construction noise impacts from the use of construction support sites, laydown areas, substations and switching stations during construction of the amended project include:

- consistent with the EIS, the predicted impacts are generally limited to residential receivers closest to each site

- consistent with the EIS, noise levels from the out of hours operation of temporary worker accommodation facilities are predicted to exceed the sleep disturbance screening level at two locations near the Freemans Drive construction support site, however this is unlikely to cause awakening reactions
- one new 'other sensitive' receiver (Millfield Cemetery) is predicted to have 'clearly audible' (1-10 decibel (dB)) impacts.

Construction noise from access track construction and intersection upgrades

The description of construction noise impacts from access track construction and intersection upgrades in *section 16.3.3* of the EIS is applicable to the amended project. Consistent with the EIS, the majority of (potentially) highly noise affected receivers are in proximity to the Wollombi Road / Hayes Road intersection upgrade and Martinsville Road / Freemans Drive intersection upgrade due to the higher number of receivers in these areas. It is noted that these exceedances would be short term and in advance of the other construction activities associated with the amended project.

Airborne construction noise impacts from access track construction and intersection upgrades can be summarised as follows:

- consistent with the EIS, the predicted impacts are generally limited to residential receivers closest to each site
- 23 fewer sensitive receivers would be impacted in comparison to the EIS, the majority of which are in NCA 11
- five additional 'other sensitive' receivers would be impacted in comparison to the EIS. This is attributed to additional passive recreational sites being assessed e.g. walking tracks in the State forests.

Construction noise impacts from construction activities within the HTP corridor and stringing sites

The construction activities within the HTP corridor described in *section 16.3.3* of the EIS remain applicable to the amended project.

During the day, there would be one additional exceedance of NMLs for residential receivers within NCA05 compared with the exhibited project as a result of the realignment of the transmission line in Mount Thorley and the realignment of the transmission line in Gouldsville, both of which have brought the HTP corridor closer to sensitive receivers. However, no sensitive receivers would be highly noise affected (75 dBA or greater) during construction as a result of these amendments.

Due to a change in methodology in which tower sites have been assessed as occurring anywhere inside the HTP corridor, two fewer sensitive receivers would be impacted in comparison to the EIS. This would result in an overall net change of one fewer sensitive receiver being impacted in comparison to the EIS attributed to activities within the HTP corridor and stringing sites.

Airborne construction noise impacts from access track construction activities within the HTP corridor and stringing sites can be summarised as follows:

- consistent with the EIS, the predicted impacts are generally limited to residential receivers closest to each site
- one fewer sensitive receiver would be impacted in comparison to the EIS due to the realignment of the HTP corridor

- 2 additional 'other sensitive' receivers would be impacted in comparison to the EIS. This is attributed to additional passive recreational sites being assessed e.g. walking tracks in the State forests
- noise levels from the out of hours use of stringing sites are predicted to exceed the sleep disturbance screening level at five additional sensitive receivers in comparison with the EIS, however this is unlikely to cause awakening reactions.

Summary of noise exceedances

Consistent with the exhibited project, there are no predicted noise exceedances for any construction activities in NCA01, NCA07 and NCA10. The predicted exceedances of NMLs for all other NCAs within the study area for construction of the amended project are provided in *Table 5.52* to *Table 5.62*.

Table 5.52 Summary of predicted noise exceedances in NCA02 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	~~Exceedances are predicted at up to three receivers.~~ During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be **up to 10 dB at two receivers**: • up to 10 dB at one receiver • 11 to 20 dB at two receivers.	Amended project contains changes to the design of access tracks resulting in one fewer impacted receiver
Intersection upgrades	No exceedances predicted.	-
Transmission lines	**No exceedances predicted.** ~~During the noisiest works (earthworks with rock breaker), the exceedances are predicted to be up to 10 dB at one receiver.~~	No tower pad sites will be constructed in this NCA as part of the amended project resulting in no impacted receivers.

Table 5.53 Summary of predicted noise exceedances in NCA03 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	Exceedances are predicted at up to three receivers. During the noisiest works (earthworks with rock breaker), the exceedances are predicted to be: • up to 10 dB at two receivers • over 20 dB at one receiver.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~12~~ **9** receivers. During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~four~~ **five** receivers • 11 to 20 dB at ~~five~~ **two** receivers • over 20 dB at two receivers • greater than 75 dB at ~~one~~ **two** receiver**s** (highly noise affected).	Amended project contains changes to the design of access tracks resulting in fewer impacted receivers.
Intersection upgrades – rural areas	Exceedances are predicted at up to ten receivers. During the noisiest works (intensive intersection works), the exceedances are predicted to be: • up to 10 dB at four receivers • 11 to 20 dB at two receivers • greater than 75 dB at one receiver (highly noise affected).	-
Transmission lines	Exceedances are predicted at up to nine receivers. During the noisiest works (earthworks with rock breaker within the HTP corridor and at tower sites), the exceedances are predicted to be: • up to 10 dB at ~~five~~ **two** receivers • 11 to 20 dB at three receivers • Over 20 dB at three receivers • greater than 75 dB at one receiver (highly noise affected).	As part of the amended project, tower sites have been assessed as occurring anywhere inside the HTP corridor resulting in no overall change in number of impacted receivers but several changes to the number of receivers within each category of exceedance.

Table 5.54 Summary of predicted noise exceedances in NCA04 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	Exceedances associated with laydown areas during earthworks (without rock breaker) are predicted to be up to 10 dB at two receivers.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~18~~ **9** receivers. During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~nine~~ **four** receivers • 11 to 20 dB at ~~seven~~ **four** receivers • over 20 dB at one receiver • greater than 75 dB at one receiver (highly noise affected).	Amended project contains changes to the design of access tracks resulting in fewer impacted receivers.
Intersection upgrades	No exceedances predicted.	-
Transmission lines	Exceedances are predicted at up to 15 receivers. During the noisiest works (earthworks with rock breaker within the HTP corridor), the exceedances are predicted to be: • up to 10 dB at seven receivers • 11 to 20 dB at four receivers • over 20 dB at three receivers • greater than 75 dB at one receiver (highly noise affected).	No change

Table 5.55 Summary of predicted noise exceedances in NCA05 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~20~~ 15 receivers. During the noisiest works (earthworks without rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~11~~ **seven** receivers • 11 to 20 dB at ~~three~~ **five** receivers • over 20 dB at ~~four~~ **one** receiver • greater than 75 dB at two receivers (highly noise affected).	Amended project contains changes to the design of access tracks resulting in fewer impacted receivers.
Intersection upgrades	Exceedances are predicted at up to ~~eight~~ **nine** receivers. During the noisiest works (typical intersection works), the exceedances are predicted to be: • up to 10 dB at six receivers • 11 to 20 dB at ~~two~~ **three** receivers.	Additional typical intersection works on Mount Thorley Road resulting in additional impacted receiver.
Transmission lines	Exceedances are predicted at up to 20 receivers. During the noisiest works (earthworks with rock breaker within the HTP corridor), the exceedances are predicted to be: • up to 10 dB at ~~17~~ **12** receivers • 11 to 20 dB at ~~three~~ **seven** receivers • . over 20 dB at **one** receiver	Realignment of the HTP corridor in this NCA as part of the amended project has not resulted in changes to the overall number of impacted receivers

Table 5.56 Summary of predicted noise exceedances in NCA06 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~six~~ **two** receivers. During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~five~~ **two** receivers**.** • 11 to 20 dB at one receiver.	Amended project contains changes to the design of access tracks resulting in fewer impacted receivers.
Intersection upgrades	During the noisiest works (typical intersection works), the exceedances are predicted to be up to 10 dB at seven receivers.	-
Transmission lines	Exceedances are predicted at up to six receivers. During the noisiest works (earthworks with rock breaker within the HTP corridor and at tower sites), the exceedances are predicted to be: • up to 10 dB at five receivers • 11 to 20 dB at one receiver.	-

Table 5.57 Summary of predicted noise exceedances in NCA08 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	During the noisiest works (earthworks without rock breaker), exceedances are predicted to be up to 10 dB at ~~seven~~ **four** receivers.	A reduction in the number of impacted receivers in NCA08 during construction is a result of the removal of the Trig Road and North Road intersection resulting in two fewer impacted receivers and one sensitive receiver incorrectly categorised in the EIS which has been verified since exhibition of the EIS as not being a dwelling.
Substation and switching stations	No exceedances predicted.	-

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Access tracks	**The greatest number of exceedances would occur during earthworks without rock breaker (up to 71 receivers compared to 24 in the EIS) due to the location of construction activity relative to sensitive receivers. However,** during the noisiest works (earthworks with rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~54~~ **37** receivers • 11 to 20 dB at ~~seven~~ **three** receivers • over 20 dB at one receiver.	Amended project contains changes to the design of access tracks resulting in an overall increase in the number of impacted receivers.
Intersection upgrades	~~No exceedances predicted.~~ **During the noisiest works (typical intersection works), the exceedances are predicted to be between 11 to 20 dB at one receiver.**	Transcription error in EIS NIA where there should have been one impacted receiver.
Transmission lines	Exceedances are predicted at up to ~~19~~ **18** receivers. During the noisiest works (earthworks with rock breaker within the HTP corridor), the exceedances are predicted to be: • up to 10 dB at ~~18~~ **17** receivers • 11 to 20 dB at one receiver.	One receiver was removed due to no dwelling existing on the identified land resulting in fewer impacted receivers.

Table 5.58 Summary of predicted noise exceedances in NCA09 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	During the noisiest works (earthworks without rock breaker), exceedances are predicted to be up to 10 dB at four receivers.	-
Laydown areas	Exceedances are predicted at up to 39 36 receivers. During the noisiest works (earthworks without rock breaker) exceedances are predicted to be: • up to 10 dB at ~~21~~ **22** receivers • 11 to 20 dB at ~~12~~ **13** receivers • over 20 dB at one receiver.	As per the amended project, the inclusion of a generator at laydown areas has resulted in 3 additional impacted receivers (2 of which are new sensitive receivers identified post exhibition of the EIS).
Substation and switching stations	No exceedances predicted.	-

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Access tracks	**The greatest number of exceedances would occur during earthworks without rock breaker (up to eight receivers compared to 3 in the EIS) due to location of construction activity relative to sensitive receivers. However,** during the noisiest works (earthworks with rock breaker), the exceedances are predicted to be: • up to 10 dB at one receivers. • 11 to 20 dB at one receiver.	Amended project contains changes to the design of access tracks resulting in an overall increase in impacted receivers.
Intersection upgrades – rural areas	During the noisiest works (intensive intersection works), the exceedances are predicted to be up to 10 dB at two receivers.	-
Intersection upgrades – Wollombi Road with Hayes Road and Mt View Road	Exceedances are predicted at up to 139 receivers. During the noisiest works (typical intersection works), the exceedances are predicted to be: • up to 10 dB at 78 receivers • 11 to 20 dB at 34 receivers • over 20 dB at 20 receivers • greater than 75 dB at seven receivers (highly noise affected).	-
Transmission lines	During the noisiest works (earthworks with rock breaker within the HTP corridor and at tower sites), the exceedances are predicted to be up to 10 dB at seven receivers.	-

Table 5.59 Summary of predicted noise exceedances in NCA11 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	**The greatest number of exceedances would occur during earthworks without rock breaker (up to 47 receivers compared to 57 in the EIS) due to location of construction activity relative to sensitive receivers. However,** during the noisiest works (earthworks with rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~51~~ **32** receivers • 11 to 20 dB at ~~25~~ **five** receivers. • over 20 dB at three receivers • greater than 75 dB at three receivers (highly noise affected).	Amended project contains change to the design of access tracks resulting in fewer impacted receivers.
Intersection upgrades – rural areas	Exceedances are predicted at up to 24 receivers. During the noisiest works (typical intersection works), the exceedances are predicted to be: • up to 10 dB at 14 receivers • 11 to 20 dB at five receivers • over 20 dB at five receivers.	-
Transmission lines	Exceedances are predicted at up to 11 receivers. During the noisiest works (stringing), the exceedances are predicted to be: • up to 10 dB at 10 receivers • 11 to 20 dB at one receiver.	-

Table 5.60 Summary of predicted noise exceedances in NCA12 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~43[1]~~ **45** receivers. During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be: • up to 10 dB at ~~29~~ **27** receivers • 11 to 20 dB at ~~seven~~ **nine** receivers • over 20 dB at two receivers greater than 75 dB at two receivers.	Amended project contains change to the design of access tracks resulting in fewer number of receivers being impacted.
Intersection upgrades – rural areas	Exceedances are predicted at up to 15 receivers. During the noisiest works (intensive intersection works), the exceedances are predicted to be: • up to 10 dB at six receivers • 11 to 20 dB at seven receivers • over 20 dB at two receivers.	-
Intersection upgrade – Martinsville Road and Freemans Drive	Exceedances are predicted at up to 108 receivers. During the noisiest works (intensive intersection works), the exceedances are predicted to be: • up to 10 dB at 74 receivers • 11 to 20 dB at 25 receivers • over 20 dB at six receivers • greater than 75 dB at three receivers (highly noise affected).	-
Transmission lines	Exceedances are predicted at up to five receivers. During the noisiest works (stringing), the exceedances are predicted to be up to 10 dB at ~~five~~ **six** receivers.	Change relates to additional receivers identified post the submission of the EIS resulting in additional impacted receivers

Notes: 1 Due to a transcription error, the EIS stated 36 receivers however this should have been 43.

Table 5.61 Summary of predicted noise exceedances in NCA13 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	Exceedances are predicted at up to five receivers. During the noisiest works (earthworks without rock breaker) exceedances are predicted to be: • up to 10 dB at three receivers • 11 to 20 dB at two receivers.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	Exceedances are predicted at up to ~~3~~ **4** receivers. During the noisiest works (earthworks with**out** rock breaker), the exceedances are predicted to be**:** • up to 10dB at three receivers • 11 to 20 dB at one receiver.	Amended project contains a change to the design of access tracks resulting in one additional impacted receiver.
Intersection upgrades	Exceedances are predicted at up to five receivers. During the noisiest works (intensive intersection works), the exceedances are predicted to be: • up to 10 dB at four receivers • greater than 75 dB at one receiver (highly noise affected).	-
Transmission lines	No exceedances predicted.	-

Table 5.62 Summary of predicted noise exceedances in NCA14 during construction of the amended project

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Construction support sites	No exceedances predicted.	-
Laydown areas	No exceedances predicted.	-
Substation and switching stations	No exceedances predicted.	-
Access tracks	During the noisiest works (minor earthworks), the exceedances are predicted to be up to 10 dB at ~~two~~ **four** receiver~~s~~.	Amended project contains a change to the design of access tracks resulting in two more impacted receivers.

Component	Summary of predicted exceedances of NMLs	Discussion of change in impact
Intersection upgrades	No exceedances predicted.	-
Transmission lines	No exceedances predicted.	-

Sleep disturbance

Sleep disturbance as a result of out of hours construction activities for the amended project would be consistent with those described in *section 16.3.3* of the EIS, with the addition of three additional exceedances in NCA03 as a result of stringing of the transmission line over Lemington Road. Additional sensitive receivers were identified after the submission of the EIS resulting in seven additional impacted receivers in NCA12 and 13 as a result of the stringing of the transmission line over M1 Pacific Motorway.

Aircraft noise

Helicopters/helipad facilities

Consistent with the exhibited project, helicopters/helipad facilities would be located at the following four construction support sites as part of the amended project:

- Hebden Road
- Pikes Gully Road
- Gouldsville Road
- Freemans Drive.

Of the four locations considered for helipads, only the Freemans Drive construction support site has predicted aircraft noise impacts for residential receivers. Aircraft noise from the arrival and departure of helicopters at the Freemans Drive construction support site is predicted to be above 75 dBA for six residential receivers. This is an increase from five residential receivers as part of the exhibited project due to the slight change in layout within the construction support site for the amended project.

No other receivers would experience noise impacts above 75 dBA from helicopter arrival and departure at construction support sites due to these other construction support sites being located at a sufficient distance from receivers.

Flights within the HTP corridor

Consistent with the exhibited project, most aircraft use within the HTP corridor would include helicopters and drones for stringing work to install wires between the transmission towers and would typically involve flight from the potential helipad to the designated transmission tower, followed by flight along the transmission line route to pull the wire.

The assessment of noise impacts from flights within the HTP corridor as part of the amended project shows that up to three sensitive receivers may experience noise levels above 85 dBA during helicopter flights at 52 metres (170 feet) above ground level within the HTP corridor, with the majority of nearby impacted receivers experiencing 60 to 65 dBA. This is consistent with the impacts assessed for the exhibited project. However, as part of the amended project, an additional 16 sensitive receivers would experience 60-80dBA in comparison to the EIS.

Flights outside the HTP corridor

Consistent with the exhibited project, helicopters would be required to fly from the nominated helipad to and from the HTP corridor. Helicopter noise from flights outside of the HTP corridor are expected to be relatively short-term and would likely be apparent for less than a minute at any individual sensitive receiver underneath the flight path. There would be no additional impacts from helicopter flights outside the HTP corridor compared to those described for the exhibited project.

Road traffic noise impacts

As a result of the amendments and refinements to the project, updated construction traffic volumes have been reassessed for all proposed construction traffic access routes.

Consistent with the exhibited project, for major roads such as the New England Highway, Golden Highway and Freemans Drive, construction traffic would not increase existing road traffic noise levels by more than 2 dB. Construction traffic on Wollombi Road would likely result in a noticeable increase in noise levels (>2 dB) due to the relatively low existing traffic volumes on this road. However, compliance with the RNP criteria is predicted for all receivers.

Construction traffic would likely result in a noticeable increase in noise levels (>2 dB) on all local roads with the exception of the AGL Bayswater Power Station site access road and Lemington Road, due to low existing traffic volumes on these roads compared to the proposed construction traffic volume.

A summary of the road traffic noise impacts on local roads as a result of the amended project are included in *Table 5.63.*

Table 5.63 Summary of construction road traffic noise on local roads

Road / Access Route	> 2.0 dB increase	Approximate offset distance (m) to comply with RNP Criteria	Number of receivers within offset distance
Local Roads			
Watagan Road west of Martinsville Road, Martinsville	Yes	76	5
AGL Bayswater Power Station site access – west of New England Highway	No	n/a	-
Lemington Road, Ravensworth	No	n/a	-
Hayes Road (Unsealed), Millfield	Yes	163	9
Mount View Road / Mount Baker Road, Millfield	Yes	69	32
Mount View Road (Unsealed) / Mount Baker Road (Unsealed), Millfield	Yes	207	16
Pokolbin Mountains Road, Pokolbin	Yes	84	-
Pokolbin Mountains Road (Unsealed) / Broken Back Road (Unsealed), Pokolbin	Yes	155	5

Road / Access Route	> 2.0 dB increase	Approximate offset distance (m) to comply with RNP Criteria	Number of receivers within offset distance
Hebden Road, Muswellbrook	Yes	230	-
Pikes Gully Road, Howick	Yes	116	-
Comleroi Road, Warkworth	Yes	118	-
Gouldsville Road, Gouldsville	Yes	110	-
Oakley Lane, Broke	Yes	94	-
Oakley Lane (Unsealed), Broke	Yes	173	-
Pringles Road, Martinsville	Yes	120	1
Mount Faulk Road, Cooranbong	Yes	123	3
Mount Nelinda Road, Cooranbong	Yes	59	6

A total of 77 residential receivers would potentially be impacted by an increase in road traffic noise levels due to construction related vehicle movements. An additional 34 residential receivers would be impacted compared to the EIS due to adjustments to proposed access routes for construction; also, existing traffic numbers were not available during the EIS on many local roads and an overly conservation assumption of one vehicle per hour was used. The inclusion of traffic numbers has resulted in a more realistic prediction of impacts.

Vibration impacts

Residential receivers

Minimum working distances for the vibration intensive equipment required for construction of the amended project while remaining below vibration levels for cosmetic damage and human comfort are detailed in *Appendix K (Noise and vibration impact assessment addendum)*. Worst-case vibration impacts for the construction of the amended project have been determined based on the minimum working distances and use of 3-5 tonne and 8-10 tonne vibratory rollers at the boundary of the amended project impact area. The number of vibration sensitive receivers and structures within the minimum working distances of construction are outlined in Table 5.64, with changes compared to the exhibited project highlighted in **bold** and ~~strikethrough~~ text.

Table 5.64 Overview of vibration impacts of the amended project

Project component	Number of receivers within minimum working distance	
	Cosmetic damage	Human comfort
Construction support sites, substations, laydown sites and HTP corridor	**3 (2 receivers within the project impact area)** ~~4 (3 receivers within the project impact area)~~	~~19~~ **26**
Access tracks and intersection upgrades	6	~~39~~ **25**

Changes to the number of receivers within the minimum working distances for vibration impacts compared to the exhibited project are a result of changes to access tracks, the removal of intersections previously included in error, and the removal of non-residential receivers previously assessed as being impacted.

The use of a 2-4 tonne vibratory roller in place of the larger vibratory rollers proposed would result in a reduction of impacted residential receivers within the cosmetic damage minimum working distances to two receivers (compared to a reduction to three for the exhibited project), with none located within the amended project impact area (compared to two located within the amended project impact area compared to the exhibited project). The number of residential receivers within the minimum working distance for human comfort would be reduced to 10 (compared to a reduction to 17 for the exhibited project).

Consistent with the exhibited project, these impacts would be transient and short term.

High pressure gas pipeline

Potential vibration impacts on high pressure gas pipelines during construction of the amended project would be consistent with those described in *section 16.3.6* of the EIS.

Heritage items

Additional features of significance or possible heritage significance were identified as part of *Appendix J (Historic heritage impact statement addendum)* for the Amendment Report. An assessment of vibration impacts on these additional heritage items based on the use of 3-5 tonne and 8-10 tonne vibratory rollers is summarised in Table 5.65.

No additional impacts on listed heritage items already identified in the EIS are anticipated from the amended project.

Table 5.65 Vibration impacts to historic heritage sites identified through the historic heritage impact statement addendum

Description	Location	Distance to nearest structure	Vibration impact and discussion
Dwelling	Warkworth	53 m	Outside of minimum safe working distance for heritage item
Greenleek homestead	Warkworth	Immediately adjacent to access track upgrade works 19 m from amended HTP corridor	**Access track works** There is a separation of approximately 5 m from the homestead structure and access tracks works. If the structure is deemed structurally sound a 1-2 tonne roller can be used up to within 5 m of the structure. If deemed structurally unsound, alternate means of compaction would need to used. **HTP corridor works** If deemed structurally unsound a 2-4 tonne vibratory roller would need to be used rather than the up to 10 tonne roller proposed when within 31 m of the structure.

Description	Location	Distance to nearest structure	Vibration impact and discussion
			The up to 8 tonne to 10 tonne roller can be used if deemed structurally sound.
c. 1883 'Greenluk' outbuilding	Warkworth	10 m	If deemed structurally unsound a 2-4 tonne vibratory roller would need to be used rather than the up to 10 tonne roller proposed when within 31 m of the structure. The up to 8 tonne to 10 tonne roller can be used if deemed structurally sound.
Greenleek dairy	Warkworth	29 m	Outside of minimum safe working distance for heritage item
Greenleek milking shed	Warkworth	22 m	Outside of minimum safe working distance for heritage item

A total of 26 Aboriginal objects are within the adopted minimum 31 metre safe working distance for Aboriginal heritage items. Of these, 14 are within the amended project impact area. It is noted that the Aboriginal heritage items are diverse in nature and not all would be sensitive to vibration.

Operation impacts

Operational noise impacts from transmission lines

Consistent with the exhibited project, noise levels under fair weather conditions during operation of the amended project are predicted to be under 35 dBA at the edge of the transmission line easement and as such would be compliant at all receivers.

The operational noise impacts from the transmission lines under worst-case scenario (i.e. light rain or mist) conditions are summarised in Table 5.66. Consistent with the exhibited project, exceedances are only predicted in NCA03, NCA04 and NCA05, however there are slight changes to the number of residential receivers within these NCAs with nighttime exceedances compared to the exhibited project (highlighted in **bold** and ~~strikethrough~~ text).

Rain days in the study area have historically been observed for between 21 and 30 per cent of days, depending on the location and season, with the highest proportion of rain days during summer and autumn.

The historical rain days include periods of both light and heavy rain where rainfall totals equal or exceed one millimetre in a 24-hour period. It is expected that L50 conditions (light rain or mist) would form a smaller subset within these rain days. Further, it is expected that the number of days for which L50 (light rain or mist) conditions occur during the night-time period with the lowest background noise levels would be a smaller subset again.

Table 5.66 Transmission line audible noise – predicted number of exceedances

NCA	Number of residential receivers with night-time exceedance		
	≤ 2 dB	≥ 3 but ≤ 5 dB	> 5 dB
NCA03	-	~~3~~ 2	~~1~~ 2
NCA04	1	3	1
NCA05	~~1~~ 2	1	-

The assessment of operational noise impacts shows an increase of two potentially impacted receivers in NCA05 as a result of the realignment of the transmission line at Mount Thorley. Additionally, the change in impact category in NCA03 is due to receiver location refinement since the exhibition of the EIS.

Operational residual impacts

Residual noise impacts are where noise from a development remains above the project noise trigger levels after all feasible and reasonable noise mitigation measures have been considered. Given the transmission lines (and hence the noise source) would be elevated above the ground, noise barriers and other noise mitigation measures would provide limited benefit in reducing noise levels at potentially impacted receivers.

Assessment of operational residual noise impacts for the amended project shows during light rain or mist conditions (which is expected to be the worst-case conditions for audible noise impacts) the significance of the noise impact would be:

- considered to be 'significant' (more than 5 dBA exceedance) at three residential receivers (compared to two for the exhibited project)
- considered to be 'moderate' (between 3 to 5 dBA exceedance) at six residential receivers (consistent with the exhibited project)
- considered to be 'negligible' (less than 2 dBA exceedance) at three residential receivers (compared to two for the exhibited project).

It is noted that one of the potentially significantly impacted residential receivers would be within the HTP corridor.

The assessment considers only horizontal distance between the transmission line easement and sensitive receivers, without factoring in terrain or sound propagation, which are expected to lower noise levels at greater distances. Therefore, the residual impacts are considered indicative and likely to decrease with further detailed design of the transmission line, consistent with the exhibited project.

Operational noise impacts from switching stations

Operational noise impacts from switching stations during operation of the amended project would be consistent with the impacts described in *section 16.4.3* of the EIS.

Operational noise impacts from Eraring substation

Operational noise impacts from Eraring substation during operation of the amended project would be consistent with the impacts described in *section 16.4.4* of the EIS.

Operation and maintenance activities

Noise impacts from operation and maintenance activities as part of the amended project, including operational road traffic noise impacts, would be consistent with the impacts described in *section 16.4.5* of the EIS.

5.10.4 Updated or additional mitigation measures

There are no changes to the noise and vibration mitigation measures compared to the exhibited project. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

5.11 Surface water

Chapter 17 (Surface water) of the EIS assessed the potential impacts from construction and operation of the exhibited project on surface water. Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential surface water impacts identified in the EIS. The findings of the additional assessment are described in this section.

5.11.1 Assessment approach

Legislation, policies, plans and guidelines

The same legislation, policies, plans and guidelines summarised in *section 17.1.1* of the EIS for the exhibited project apply to the amended project.

Assessment methodology

The amended project was assessed against the risks to surface water identified in the EIS to identify whether there were any changes to the potential surface water impacts that were not assessed as part of *Technical Report 10 – Surface water impact assessment* or *Chapter 17 (Surface water)* of the EIS, or any impacts that needed to be updated to reflect the amended project.

Changes to surface water impacts as a result of the amended project were considered against the key potential impacts to surface water considered in the EIS, including water quality (and water quality objectives (WQOs)), streamflow regime (and river flow objectives (RFOs)), interactions with riparian corridors and water supply, and licensing and regulation identified in the EIS. The proposed amendments and refinements to the project were reviewed against the assessment methodology for the assessment of surface water quality impacts included in the EIS and a screening exercise was completed to determine the amendments and refinements that required additional or changed assessment. The outcomes of this screening are provided in *Table 5.67*.

Where additional assessment of potential impacts to surface water have been identified as a result of the amendments and refinements to the project, the methodology applied to undertake the assessment of surface water impacts of the proposed amendments and refinements is consistent with the methodology detailed in *section 17.1* of the EIS.

Table 5.67 Screening assessment of additional surface water assessment requirements of the amended project

Amendment/ refinement	Water quality / WQOs	Streamflow regime / RFOs	Watercourses and riparian corridors	Water supply, licensing and regulation
Changes to 500 kV transmission line infrastructure	Consistent with the EIS.	Consistent with the EIS.	Further assessment Proposed realignment of the transmission line at Mount Thorley and Gouldsville may interact with different riparian corridors compared to those identified in the EIS.	Consistent with the EIS.
Changes to substation infrastructure	Further assessment. Trenching, particularly where it occurs across watercourses, presents potential risks to water quality that have not been assessed in the EIS.	Further assessment. Trenching, particularly where it occurs across watercourses, presents potential risks to streamflow regime that have not been assessed in the EIS.	Further assessment. Trenching, particularly where it occurs across watercourses, presents potential risks to watercourses and riparian corridors that have not been assessed in the EIS.	Consistent with the EIS.
Changes to intersection, roads and access tracks	Consistent with the EIS.	Consistent with the EIS.	Further assessment. The changes to access roads and tracks may interact with different riparian corridors compared to those identified in the EIS.	Consistent with the EIS.
Changes to construction methods and facilities	Further assessment. The inclusion of wastewater treatment plants at construction support sites present water quality risks that have not been assessed in the EIS.	Consistent with the EIS.	Consistent with the EIS.	Consistent with the EIS.

Additional assessment in response to feedback received during exhibition of the EIS

Feedback received from DCCEEW Water during exhibition of the EIS requested that the proposed footprints of the Hebden Road, Wollombi Road and Freemans Drive construction support sites be clarified, particularly with regards to where they intersect with waterfront land.

Definitions of the riparian corridors at these construction supports sites were refined (compared to the indicative riparian zones (IRZ) approach detailed in the EIS) and defined following consideration of:

- elevation data
- aerial imagery
- site visit outcomes (where access was possible).

Inner and outer riparian corridors were defined and works in these mapped riparian zones would be undertaken in accordance with the *Controlled Activity Guidelines* (DCCEEW 2025). This information is provided in *section 5.11.3* of this Amendment Report.

A response to the submission received from DCCEEW Water is provided in *section 8.4* of the Submissions Report.

Study area

The amended project is located within the surface water study area identified in *section 17.1* of the EIS. The study area therefore remains unchanged. No new catchments, sub-catchments or watercourses would be introduced as a result of the amended project.

5.11.2 Existing environment

The existing surface water environment for the amended project impact area, including the existing catchments and watercourses, geomorphology, water quality and environmental receivers, is consistent with the existing surface water environment outlined in *section 17.2* of the EIS.

5.11.3 Assessment of potential impacts

Construction impacts

Water quality

The elements of the project, and construction activities which may potentially impact downstream water quality were presented in *Table 17.7* of *section 17.3.1* of the EIS. A Primary Erosion and Sediment Control Plan (PESCP) (refer to *Appendix Q of Appendix E (Revised biodiversity development assessment report)*) was developed by a Certified Practitioner in Erosion and Sediment Control (CPESC) to address water quality impacts in the Olney State Forest due to design changes associated with the changes to access tracks, removal of stringing sites and changes to the disturbance area. The PESCP details practicable measures that can be implemented to minimise soil and water impacts associated with construction in environmentally sensitive areas. All other potential water quality impacts would remain unchanged as a result the amended project. The impact pathways and potential impacts to water quality for project activities identified in *Table 17.8* of *section 17.3.1* of the EIS would also remain unchanged with the amended project.

Additional construction activities and facilities that form part of project amendments and refinements that have been identified as creating additional potential risks to water quality to those identified in the EIS include:

- minor discrete additional instances of trenching to those identified in the EIS, located at and near to the Eraring substation and between the Bayswater substation and Bayswater South switching station
- the addition of wastewater treatment plants at construction support sites.

These construction activities and facilities are presented alongside the locations, pathways and risks to water quality for each construction activity in *Table 5.68*.

Table 5.68 Overview of amended project risks to water quality

Activity / facility	Locations	Pathways	Risks to water quality
Trenching (as described in *section 3.2.4*)	• Eraring substation (no watercourses present) • Between Bayswater substation and Bayswater South switching station (across two first order watercourses) • In the Transgrid easement, approximately 2.3km west of Eraring substation (across two first order watercourses)	• Disturbance of the ground surface and vegetation that stabilises topsoil, resulting in the mobilisation of sediment • If trenching occurs across a waterway when it is flowing, concentrated flow over disturbed areas would elevate the risk of erosion and sediment mobilisation	• Increased turbidity and suspended sediments, resulting in smothering and reduced biological productivity of aquatic ecosystems • Increased nutrients, resulting in algal blooms and high biological oxygen demand • Mobilisation of a range of contaminants that bind to soil particles such as pesticides and metals
Wastewater treatment plants	Wastewater treatment plants may be located at temporary worker accommodation facilities and construction support sites	• Discharge of inadequately treated water if the system is undersized or as a result of a malfunction	• The project does not propose to discharge treated wastewater into the receiving environment, and so risks to water quality are associated with wastewater treatment plants having inadequate capacity or malfunctions of the treatment system (particularly if being reused as part of non-potable construction water demand), resulting in discharge of: — pathogens — nutrients, resulting in algal blooms and high biological oxygen demand

Activity / facility	Locations	Pathways	Risks to water quality
			— surfactants — oil and grease.

Due to the large project extent and its interaction with land uses of varying levels of disturbance, the sensitivity of the receiving environment varies widely. In order to establish the existing conditions and assess the potential impacts of the project, the sensitivity of the receiving environment has been classified into three broad categories; low, medium and high. The classification of the receiving environment into these categories is provided in *Table 17.6* of *Chapter 17 (Surface water)* of the EIS

Residual impacts to water quality for the construction activities in Table 5.68 were evaluated with consideration of:

- the scale of the activity
- the sensitivity of the receiving environment
- the impact pathways
- potential risks to water quality
- implementation of mitigation measures.

The residual impact rating for these construction activities is provided in Table 5.69 (in line with the residual impact rating methodology used for the EIS) for low medium and high sensitivity receiving environments. Mitigation measures have been developed to achieve a low residual impact to water quality for each construction activity (refer to *section 5.11.4*).

Table 5.69 Amended project residual impacts to surface water quality

Activity	Summary of key risks and mitigation measures	Residual impacts to water quality		
		Low sensitivity receiving environments	Moderate sensitivity receiving environments	High sensitivity receiving environments
Trenching	Watercourses directly affected by trenching activities are first order ephemeral watercourses and do not exhibit defined banks. The mitigation measures provided in *section 5.11.4* would reduce the potential impact of trenching on water quality by: • undertaking trenching activities in accordance with Controlled activities – Guidelines for laying pipes and cables in watercourses on waterfront land (DCCEEW 2025)	Low	Low	Trenching is not proposed in high sensitivity receiving environments

Activity	Summary of key risks and mitigation measures	Residual impacts to water quality		
		Low sensitivity receiving environments	Moderate sensitivity receiving environments	High sensitivity receiving environments
	• undertaking trenching activities when intercepted watercourses are dry • providing appropriate erosion and sediment control measures and stabilising topsoil following disturbance.			
Wastewater treatment plants	The project does not propose to discharge treated wastewater into the receiving environment. The mitigation measures provided in section 5.11.4 would reduce the potential impact of wastewater treatment plants on water quality (particularly if being reused as part of non-potable construction water demand) by: • selecting the most appropriate system for the project based on the site layout, site conditions and constraints • ensuring plants are designed, constructed, operated, maintained and decommissioned in accordance with best practice and relevant guidelines and standards. The following guidelines and standards detail best practice on-site wastewater management and treated effluent re-use: • Onsite domestic wastewater management, Designing and Installing On-Site Wastewater Systems (WaterNSW 2023) • AS/NZS 1547:2012 On-site domestic wastewater management (Standards Australia and Standards New Zealand 2012)	Low	Low	No wastewater treatment plants would be located in high sensitivity receiving environments

Activity	Summary of key risks and mitigation measures	Residual impacts to water quality		
		Low sensitivity receiving environments	Moderate sensitivity receiving environments	High sensitivity receiving environments
	• *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)* (Environment Protection and Heritage Council, National Resource Management Ministerial Council, and Australian Health Minister's Conference 2006). Strategies and measures outlined in these guidelines and standards have been considered in the development of mitigation measures for the project.			
Construction work in Olney State Forest	The mitigation measures provided in Appendix Q of the BDAR – Primary Erosion and Sediment Control Plan would reduce impacts to surface water through: • separation of site water and non-site water • monitoring, management, maintenance and rehabilitation or stabilisation of exposed surface • installation of erosion and sediment control measures, with a focus on infiltration-based controls • minimisation of disturbance areas. The following guidelines and standards detail best practice on-site erosion and sediment control management: • *Best Practice Erosion and Sediment Control* (International Erosion Control Association (IECA, 2008) • Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 1 (the "Blue Book"), Landcom, 2004	Low	Low	Disturbance areas would avoid drainage lines, and amphibian habitat where feasible. Remaining risk would be controlled through the implementation of erosion and sediment control plans and focus on infiltration-based controls and no-ponding requirements

Activity	Summary of key risks and mitigation measures	Residual impacts to water quality		
		Low sensitivity receiving environments	Moderate sensitivity receiving environments	High sensitivity receiving environments
	• Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 2A: Installation of Services (DECC, 2008a) • Managing Urban Stormwater: Soils and construction (4th Edition) Volume 2C: Unsealed Roads (DECC, 2008b).			

Risks to water quality from the amended project are consistent with those identified for the exhibited project. As noted in the EIS, risks to water quality are higher in the State forests where the topography is steep and where disturbance activities are located upstream of sensitive biodiversity areas. Steep topography increases the risk of erosion and sediment mobilisation due to higher velocity of runoff which can increase erosive forces, causing greater scour and mobilisation of sediments. Trenching and the operation of wastewater treatment plants is not proposed in high sensitivity receiving environments or areas that present a high risk to surface water quality. These activities, therefore, do not increase potential impacts to surface water in high sensitivity environments. Water quality risks are substantially lower in areas of the Hunter Valley of low to moderate grades and where the receiving environment is highly modified as a result of land clearing, coal mining, and energy generation.

NSW water quality objectives

Potential impacts to surface water from construction of the project were identified in the EIS as being low to moderate, with the implementation of mitigation measures. Water quality objectives in receiving environments as a result of the amended project would be protected and maintained, consistent with the EIS. *Section A4.4.4* of the updated project description provided as *Appendix A (Updated project description)* of this Amendment Report provides an update to the water supply strategy for the project. Consistent with the EIS, any potential extraction of water for construction from a new surface water source (e.g. Congewai Creek and the Hunter River) would conform with extractions limits applied as part of a Water Supply Work Approval under the *Water Management Act 2000* (WM Act) (refer to *Chapter 4 (Statutory context)* of the EIS for more information). Extraction limits would also be applied that maintain the RFOs of the downstream watercourse.

Streamflow regime

The elements of the exhibited project and construction activities which may potentially impact streamflow regime were assessed in *section 17.3.3* of the EIS and, with the exception of changes to substation infrastructure (namely trenching) and trenching proposed as part of the amended project, would remain unchanged for the amended project.

As identified in *Table 5.70*, the amended project includes trenching activities at Eraring substation, within the Transgrid easement west of the Eraring substation and between the Bayswater substation and the Bayswater South switching station. Trenching has the potential to affect streamflow regime if the trenching occurs across a watercourse or impedes flow to downstream environments. This can alter natural drainage patterns, cause upstream ponding or diversion of flows, and increase the risk of bank erosion or sediment mobilisation during subsequent rainfall events.

Trenching at Eraring would not interact with any watercourses and trenching at Bayswater and within the Transgrid easement would intersect two Strahler classified first order ephemeral watercourses that do not exhibit defined banks.

Mitigation measures for trenching activities, as described in *section 5.11.4*, will reduce the potential impacts to streamflow by avoiding trenching while flow is present in watercourses and minimising the construction period of such activities. The predicted impact of trenching on streamflow regime is low, as the watercourses affected are minor, ephemeral, and impacts, if any, would be localised, short-term and dissipate downstream.

Consistent with the EIS, potential impacts to streamflow regime during construction of the amended project are considered low. No material impacts to streamflow regime with regards to RFOs are predicted for the amended project.

Also consistent with the EIS, any potential extraction from a surface water source (e.g. the Hunter River) would be undertaken in accordance with the NSW water regulatory framework including any conditions on WALs, and existing water supply and use approvals as well as rules in the relevant water sharing plan (WSP) under the WM Act. This framework considers measures to manage extractions such that there are minimal impacts to downstream water users and the environment.

Watercourses and riparian corridors

Similar to the development of the design and construction methodology of the exhibited project, the amendments to the project, where relevant, have been developed with the aim of minimising impacts to riparian corridors, including:

- avoiding the placement of project infrastructure in riparian corridors as much as possible
- inclusion of no clearing corridors along the transmission line easements
- minimising clearing of riparian corridors for transmission line easements through consideration of tower placement
- maximising the use of existing access roads.

Impacts to riparian corridors are largely associated with vegetation clearance for the transmission alignment, the installation of watercourse crossing for access tracks, and the construction of the Olney switching station.

Consistent with the exhibited project, the majority of the amended project's interactions with riparian corridors are associated with vegetation clearing within the HTP corridor and access tracks (new or upgrades) and construction of the Olney switching station. Clearing of vegetation within riparian corridors would be undertaken in accordance with the modified clearing methods described in *Chapter 4 (Project description)* of the EIS and replicated in the updated project description,

provided in *Appendix A (Updated project description)* of this Amendment Report. This approach will reduce impacts to riparian corridors and maximise stability of the watercourses.

The components of the riparian corridor assessment for the amended project are presented in Table 5.70.

Table 5.70 Summary of the riparian corridor assessment for the amended project

Project Component	Justification for reassessment	How the assessment outcomes are presented
500 kV transmission line infrastructure	The amended project transmission line alignment may impact a different number of watercourses or watercourses not identified in the EIS.	• A summary of changes to interactions with 4th order streams and above is provided in Table 5.71 • Table 5.71 summarises the changes to the total number of interactions across the project impact area, including all stream orders • The interactions of the amended project with riparian corridors are presented in Figure 5-1
Changes to substation infrastructure	The inclusion of trenching at Eraring and Bayswater substations in the amended project was not considered in the EIS project description.	• The potential impacts of trenching in riparian corridors in assessed in Table 5.71 and the potential impacts to streamflow regime described above
Changes to intersections, roads and access tracks	The amended project access roads and tracks may impact a different number of watercourses or watercourses not identified in the EIS	• A summary of changes to interactions with 4th order streams and above is provided in Table 5.71 • Table 5.71 summarises the changes to the total number of interactions across the project impact area, including all stream orders • The interactions of the amended project with riparian corridors are presented in Figure 5-1
Changes to construction methods and facilities	Feedback received from DCCEEW Water during exhibition of the EIS requested that the proposed footprints of the Hebden Road, Wollombi Road and Freemans Drive construction support sites be clarified, particularly with regards to where they intersect with waterfront land.	• Construction support sites have been assessed in more detail, including specific identification of riparian corridors and exclusion zones at each site as shown in Figure 5-2, Figure 5-3 and Figure 5-4.

Indicative riparian zones (IRZs) are approximate representations of riparian corridors as defined by the WM Act. IRZs were determined along each watercourse corridor as part of the exhibited surface water impact assessment by assigning buffers to the watercourses consistent with the vegetated riparian corridor widths in *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE Water 2022).

The amended project would remove the following interactions with the riparian corridors of 4th order streams and above:

- an interaction of the HTP corridor running parallel with the riparian corridor of the Hunter River
- an interaction of an intersection upgrade with the outer riparian corridor of Loder Creek
- an interaction of minor works to an existing access track with the riparian corridor of an unnamed tributary of Dora Creek
- an interaction of an upgrade to an access track with the riparian corridor of Cedar Brush Creek.

The amended project would result in one new interaction with riparian corridors of 4th order streams and above, which was not included in the EIS:

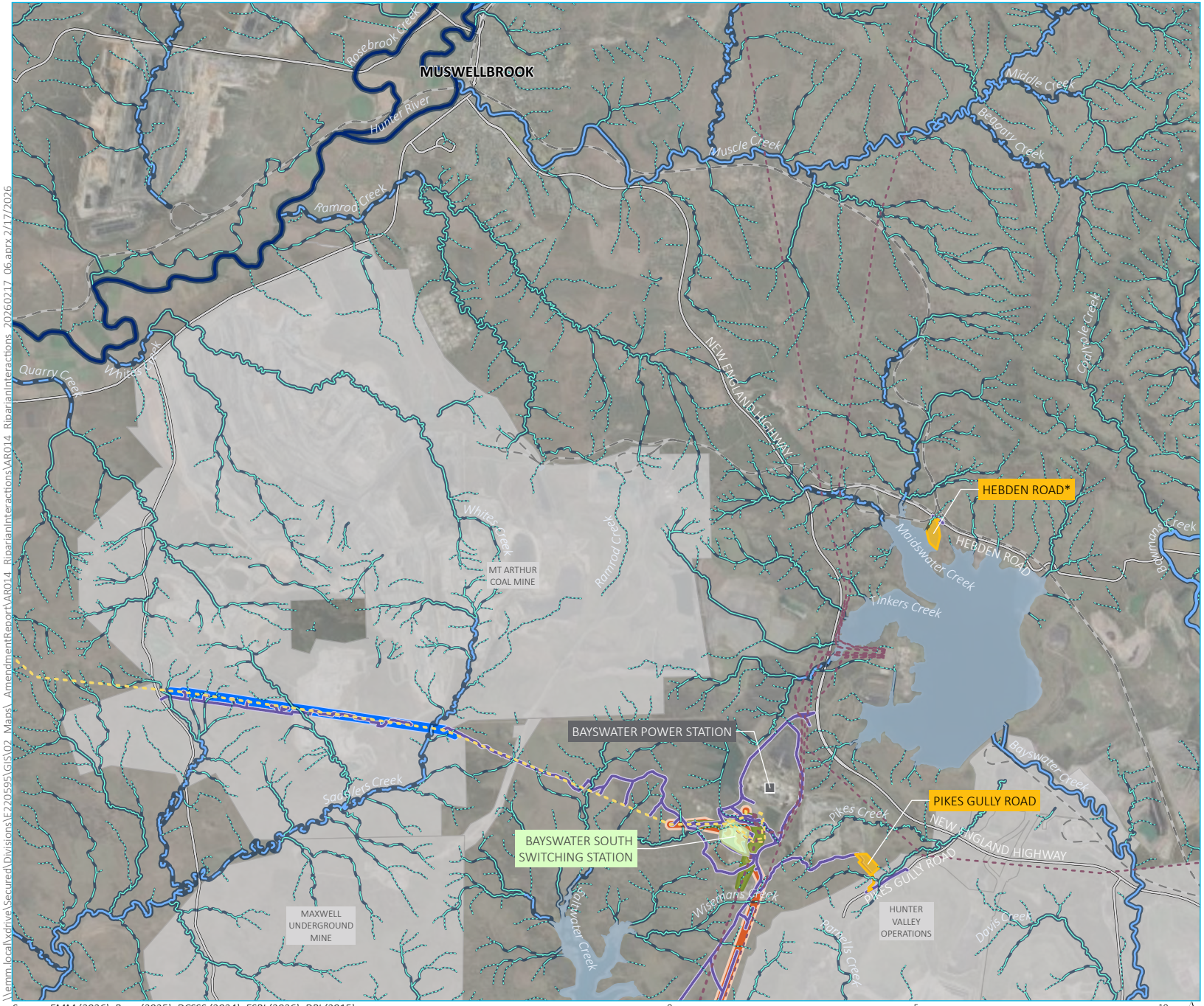
- a new access track crossing of Loder Creek (Strahler stream order of 4) within the HTP corridor

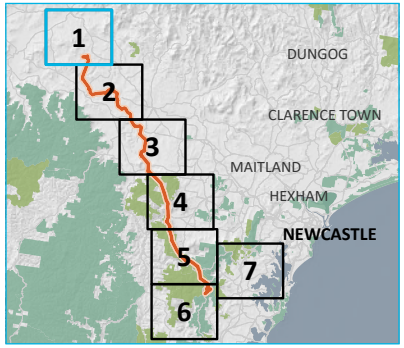
The access track crossing of Loder Creek is located within the HTP corridor, and therefore impacts on riparian vegetation are possibly reduced, as clearing for the HTP corridor would occur irrespective of the crossing for the new access track.

Design of the Loder Creek crossing will be progressed and finalised as part of subsequent project design stages. Designs will minimise impacts to streamflow conveyance and flooding (as per the mitigation measures in *Technical Report 12 - Flooding impact assessment* of the EIS).

Consistent with the EIS, all watercourse crossings will be designed, installed and maintained in accordance with relevant guidelines for watercourse crossings such as (but not limited to) *Policy and Guidelines for Fish Friendly Watercourse Crossings* (DPI 2003), *Guidelines for watercourse crossings on waterfront land* (DPE Water 2022c) and *Managing Urban Stormwater: Soils and Construction - Volume 1, 4th Edition* (Landcom 2004) (refer to mitigation measures in *section 5.11.4* and *Appendix D (Updated mitigation measures)*).

The interactions of the amended project with IRZs are presented in Figure 5-1 and summarised in Table 5.71. Changes to interactions of the amended project as summarised in Table 5.71 are denoted in **bold** and information no longer applicable to the amended project is included as ~~strikethrough~~ text.





KEY

- Indicative riparian zone

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order
- 9th order

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named waterbody
- State forest
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

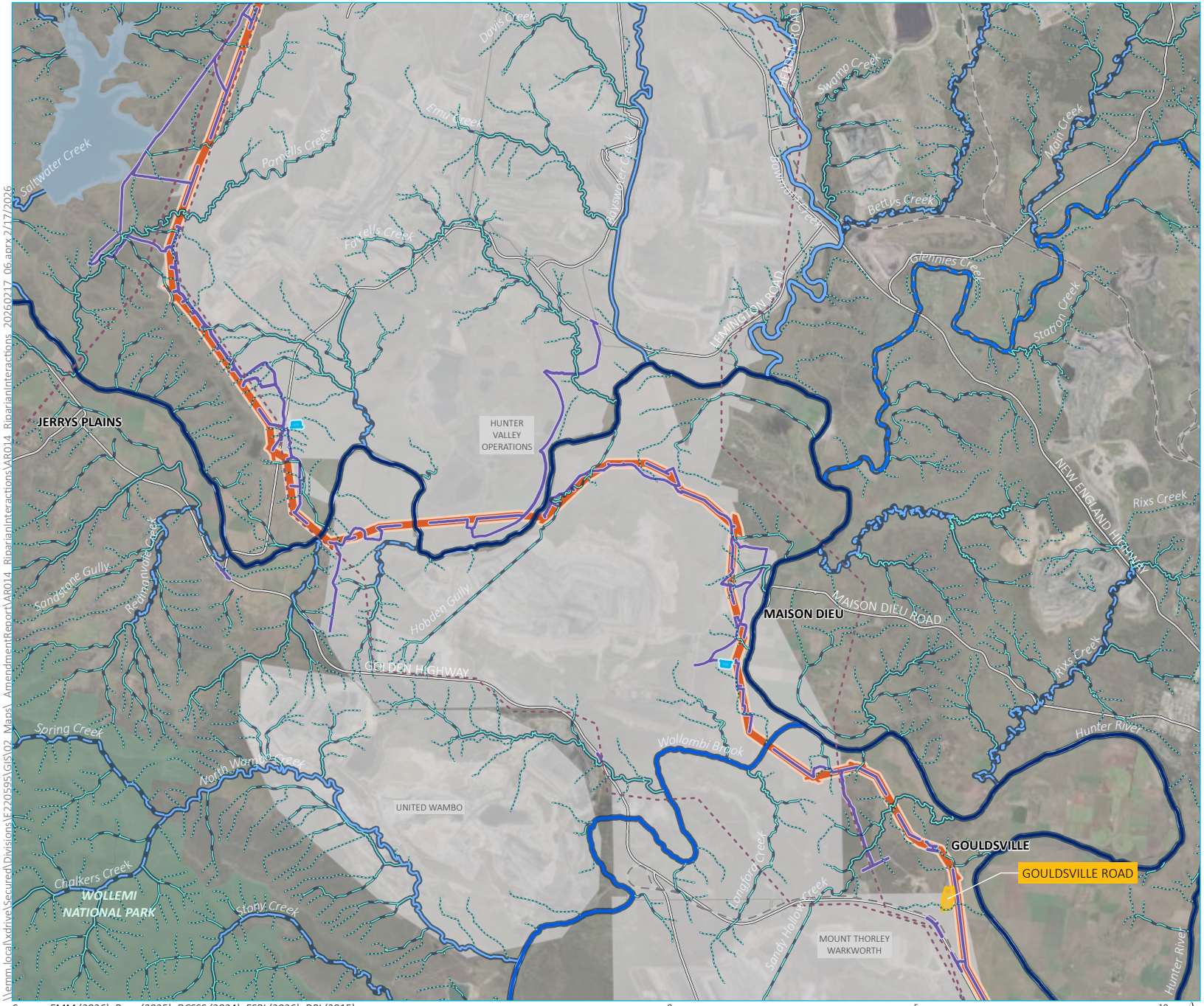
N

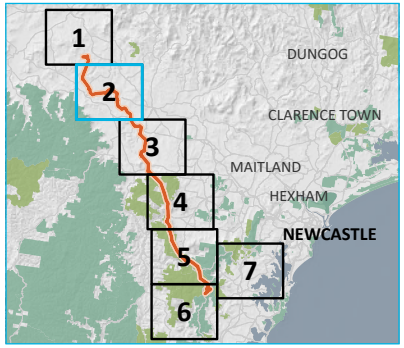
Project interactions with indicative riparian zones
Map 1 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR014_RiparianInteractions\VAR014_RiparianInteractions_20260217_06.aprx 2/17/2026





KEY

Indicative riparian zone

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order
- 7th order
- 8th order
- 9th order

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named waterbody
- NPWS reserve
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

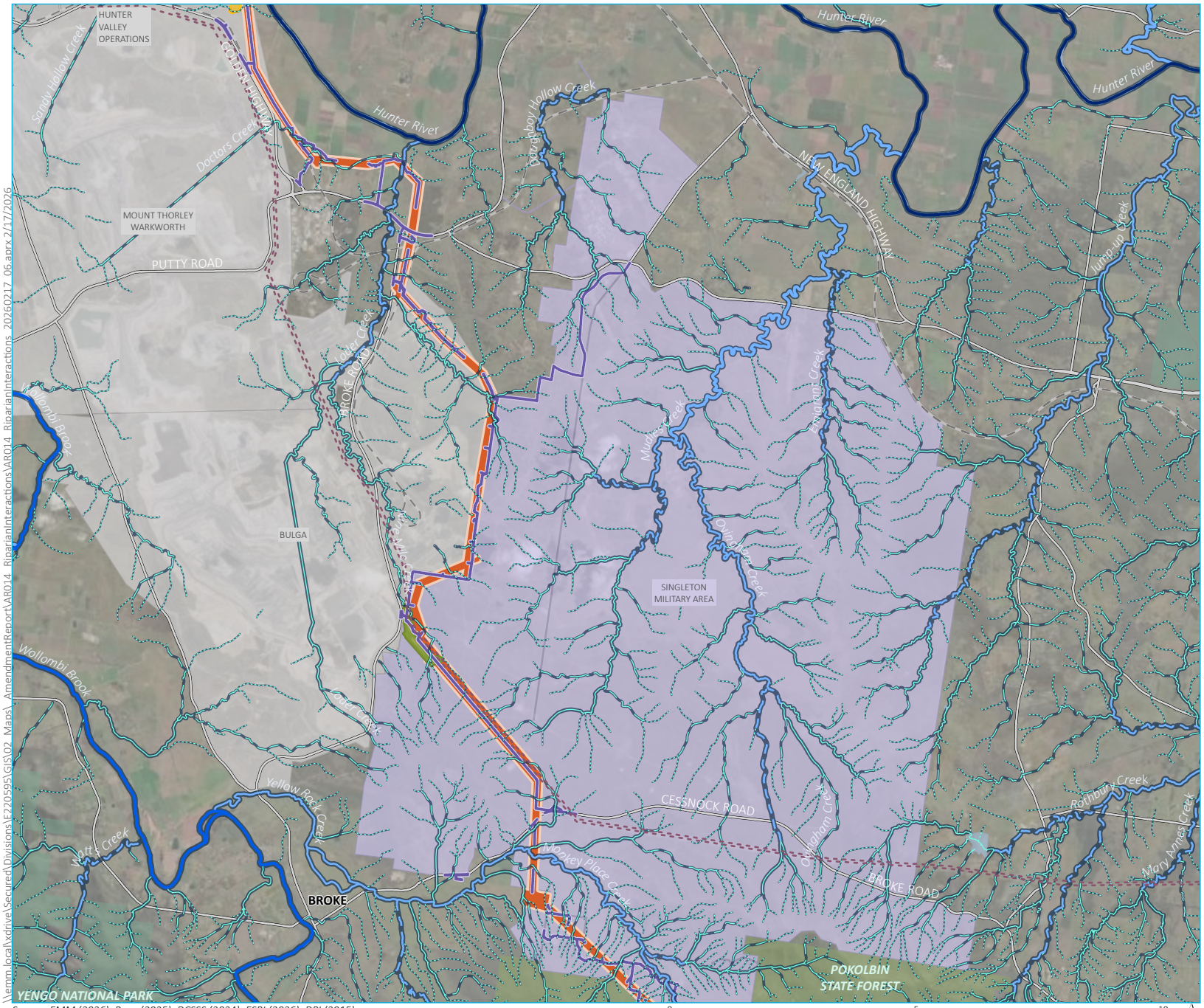
N

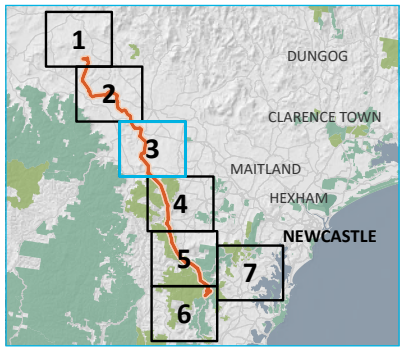
Project interactions with indicative riparian zones
Map 2 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR014_RiparianInteractions\AR014_RiparianInteractions_20260217_06.aprx 2/17/2026





KEY

- Indicative riparian zone

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order
- 8th order
- 9th order

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

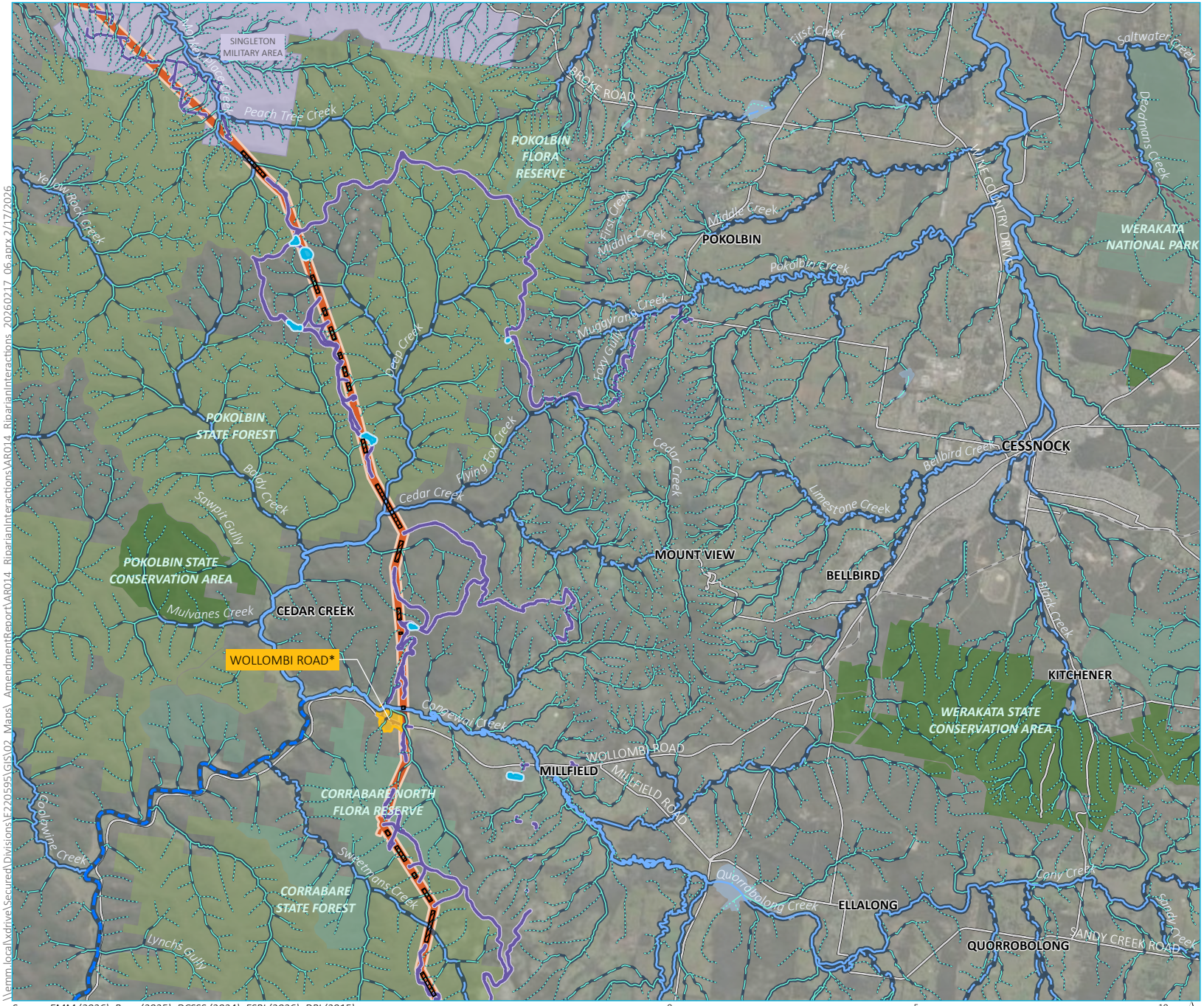
N

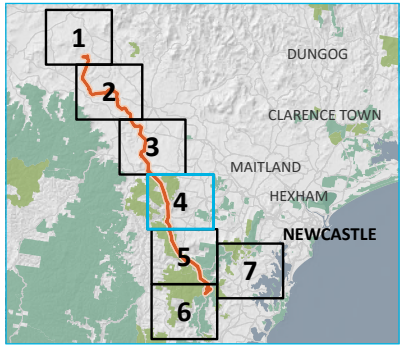
Project interactions with indicative riparian zones
Map 3 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR014_RiparianInteractions\VAR014_RiparianInteractions_20260217_06.aprx 2/17/2026





KEY

- Indicative riparian zone
- No clearing zone

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order
- 7th order

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

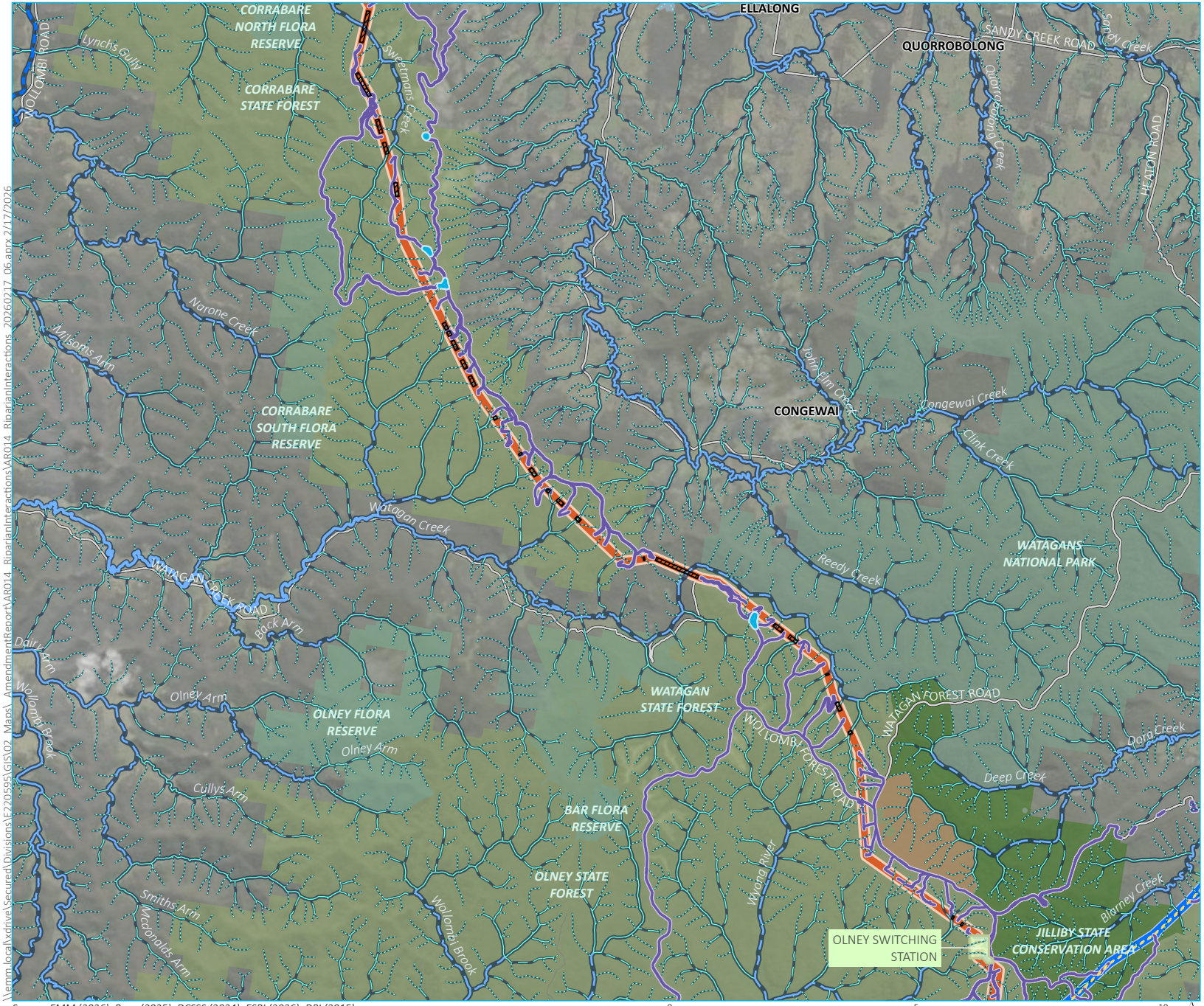
N

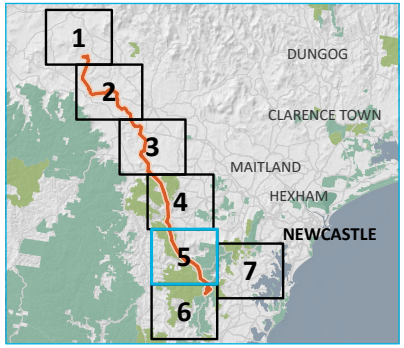
\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR014_RiparianInteractions\VAR014_RiparianInteractions_20260217_06.aprx 2/17/2026

Project interactions with indicative riparian zones
Map 4 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM
creating opportunities





KEY

- Indicative riparian zone
- No clearing zone

Amended project impact area

- HTP corridor
- Olney switching station
- Laydown area
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order
- 7th order

Existing environment

- 500 kV transmission line
- Major road
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

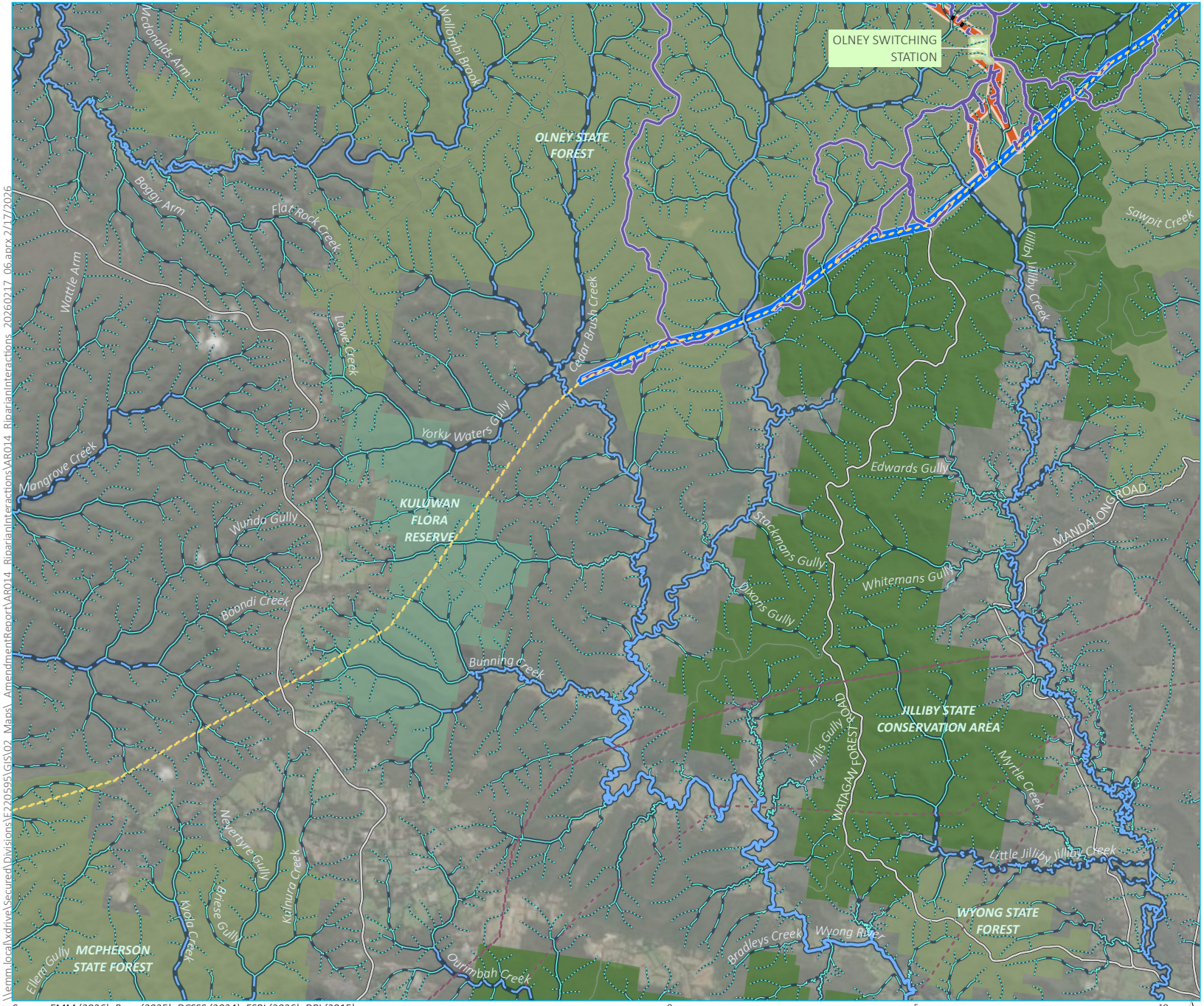
N

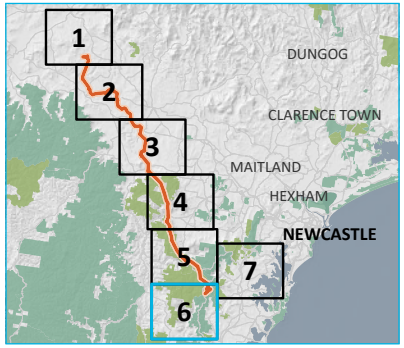
Project interactions with indicative riparian zones
Map 5 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR014_RiparianInteractions\AR014_RiparianInteractions_20260217_06.aprx 2/17/2026





KEY

- Indicative riparian zone
- No clearing zone

Amended project impact area

- HTP corridor
- Olney switching station
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment

- 330 kV transmission line
- 500 kV transmission line
- Major road
- Named waterbody
- NPWS reserve
- State conservation area
- State forest

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 5 10 km

GDA2020 MGA Zone 56

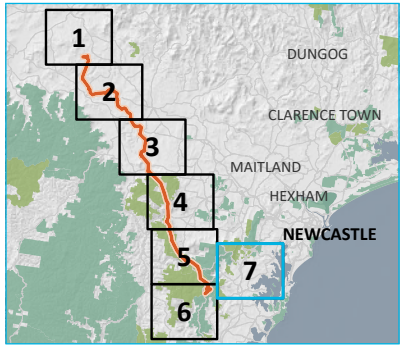
N

Project interactions with indicative riparian zones
Map 6 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR014_RiparianInteractions\VAR014_RiparianInteractions_20260217_06.aprx 2/17/2026



KEY

- Indicative riparian zone

Amended project impact area

- Construction support site (*with temporary worker accommodation)
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named waterbody
- NPWS reserve
- State conservation area
- State forest

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

Project interactions with indicative riparian zones
Map 7 of 7

Hunter Transmission Project
Amendment Report
Figure 5.1

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR014_RiparianInteractions\AR014_RiparianInteractions_20260217_06.aprx 2/17/2026

Table 5.71 Summary of amended project interactions with IRZs

Project component	Interactions with IRZs	Construction activities with the potential to interact with IRZs	Residual impact within receiving environment		
			Low	Moderate	High
HTP transmission alignment	Interactions with riparian corridors of minor and major watercourses, including: • about 230 interactions with IRZs of 1st order watercourses • about 60 interactions with IRZs of 2nd order watercourses • about 20 interactions with IRZs of 3rd order watercourses • about 20 interactions with IRZs of 4th order watercourses and higher.	• Vegetation clearance for transmission line easements • Installation of transmission tower infrastructure and associated works • **Trenching**	Low	Moderate	Moderate
Access tracks	Interactions with riparian corridors of minor and major watercourses, including: • about 170 interactions of 1st order watercourses • about 60 interactions of 2nd order watercourses • about 25 interactions of 3rd order watercourses • about 20 interactions of 4th order watercourses and higher.	Construction and/or upgrading of access tracks, including: • vegetation clearing • minor earthworks • installation of cross-drainage infrastructure.	Low	Low	Moderate
Ancillary works	The location of ancillary works in riparian corridors are possible but will be avoided where practicable.	• Vegetation clearing • Minor earthworks • Stockpiling	Low	Low	Low

Project component	Interactions with IRZs	Construction activities with the potential to interact with IRZs	Residual impact within receiving environment		
			Low	Moderate	High
Construction support sites, switching stations and substation upgrades	Interactions with riparian corridors of minor and major watercourses, including: • about 5 interactions of 1st order watercourses • about 3 interactions of 2nd order watercourses • about one interactions of 3rd order watercourses • about 3 interactions of 4th order watercourses and higher.	Switching stations and substation upgrades: • Vegetation clearing • Earthworks • **Trenching at Bayswater substation across minor watercourses** • Installation of temporary infrastructure and permanent infrastructure Construction support sites: • **Construction activities within the identified riparian zones**	Low	Low	Moderate

Feedback received from DCCEEW Water during exhibition of the EIS requested that the proposed footprints of the Hebden Road, Wollombi Road and Freemans Drive construction support sites be clarified, particularly with regards to where they intersect with waterfront land. A response to the submission received by DCCEEW Water is provided in *section 8.4* of the Submissions Report.

To respond to the feedback received from DCCEEW water, the riparian corridors at the Hebden Road, Wollombi Road and Freemans Drive construction support site have been mapped in accordance with *Controlled activities - Guidelines for riparian corridors on waterfront land* (DPE 2022), including identifying the inner and outer riparian corridors. These are provided as *Figure 5-2, Figure 5-3* and *Figure 5-4*. As stated in the guidelines: "where a watercourse does not exhibit features of a defined channel with bed and banks, the department may determine that the watercourse is not waterfront land for the purposes of the WM Act" (DCCEEW 2025). Several mapped watercourses interacting with construction support sites were deemed to not exhibit features of a defined channel in accordance with the guidance in *Controlled activities - Guidelines for riparian corridors on waterfront land* (DCCEEW 2025). Therefore, riparian zones associated with these watercourses are not included in figures.

In accordance with the *Controlled Activity Guidelines* (DCCEEW, 2025):

- construction activities in the mapped inner 50 per cent of a riparian zone would be avoided (with the exception of watercourse crossings and water extraction in accordance with existing water supply work approvals). These would be demarcated as no-go zones
- construction activities in the mapped outer 50 per cent of a riparian zone would be avoided where possible. However, if construction works cannot be avoided in these areas, they would comply with the *Controlled activities - Guidelines for riparian corridors on waterfront land* (DPE 2022) (including riparian zone offsets and encroaching cleared areas only).

Any restriction to works at these construction support sites, in accordance with the *Controlled Activity Guidelines*, would apply only to the mapped riparian corridors in *Figure 5-2* to *Figure 5-4*.

Additional mitigation measures have been provided in *section 5.11.4* and *Appendix D (Updated mitigation measures)* to reflect the clarified mapping at the Hebden Road, Wollombi Road and Freemans Drive construction support sites.

KEY

- Watercourse bank
- Inner vegetated ziparian zone
- Outer vegetated ziparian zone

Amended project impact area

- Construction support site
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Contour (2 m interval)
- Railway
- Major road
- Named waterbody

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 100 200 m

GDA2020 MGA Zone 56

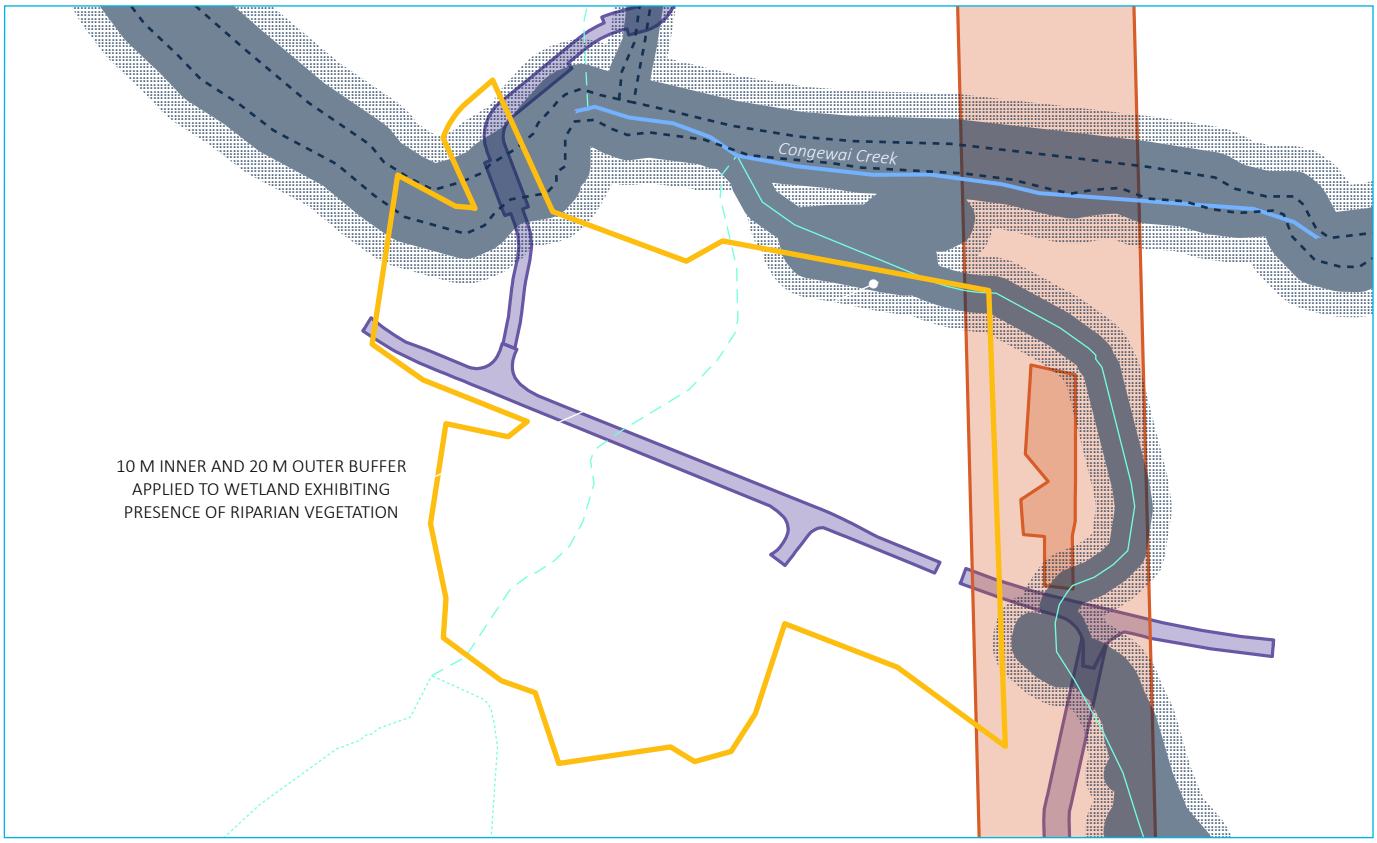
N

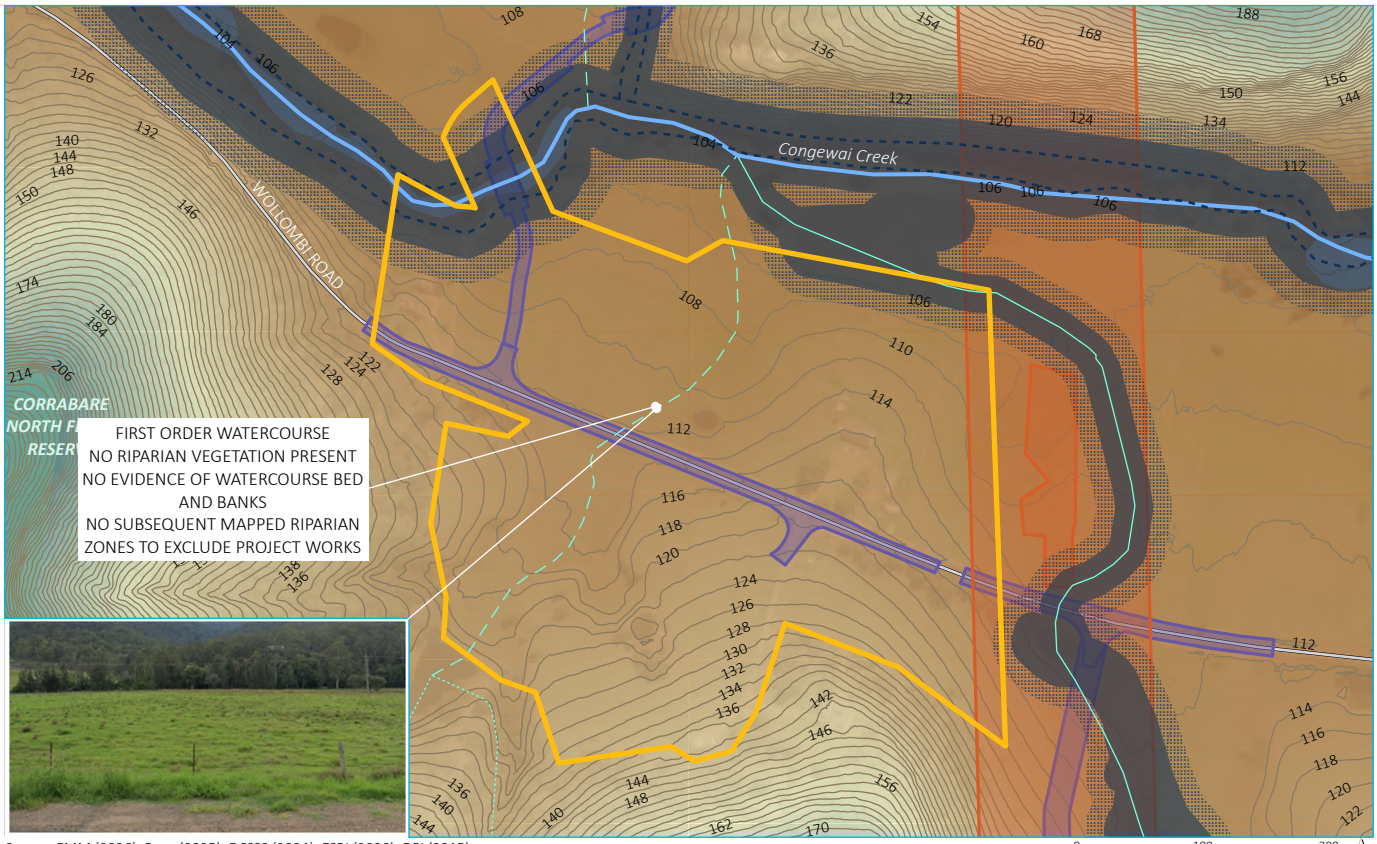
\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR015_RiparianInteractionsCSS\AR015_RiparianInteractionsCSS_20260213_06.aprx 16/02/2026

Interaction of the Hebden Road construction support site with riparian zones

Hunter Transmission Project
Amendment Report
Figure 5.2

EMM
creating opportunities





Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 100 200 m
GDA2020 MGA Zone 56
N

KEY

- Watercourse bank
- Inner vegetated ziparian zone
- Outer vegetated ziparian zone

Amended project impact area

- Construction support site
- HTP corridor
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 6th order

Existing environment

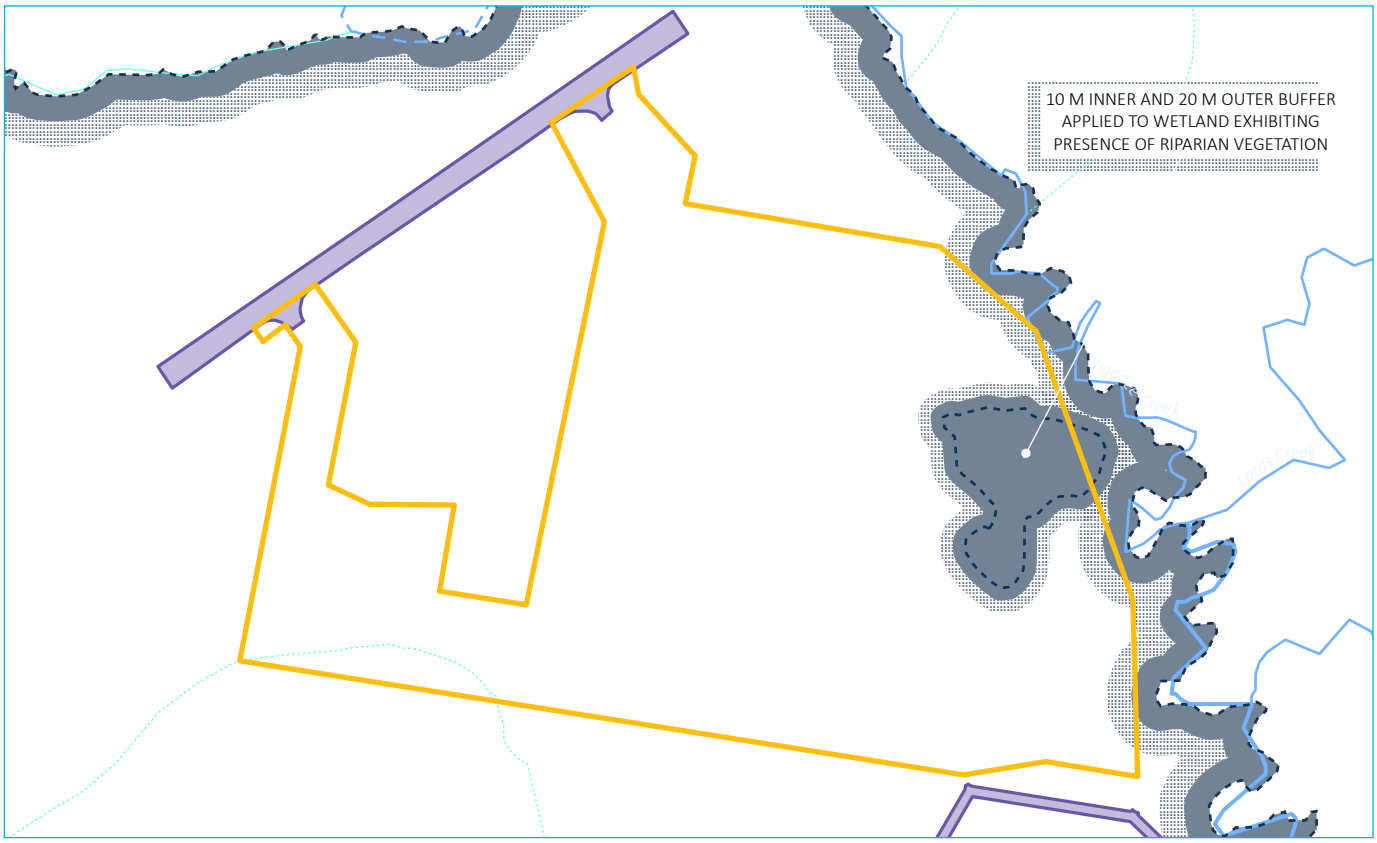
- Contour (2 m interval)
- Major road
- Named waterbody
- NPWS reserve
- State forest
- Footprint

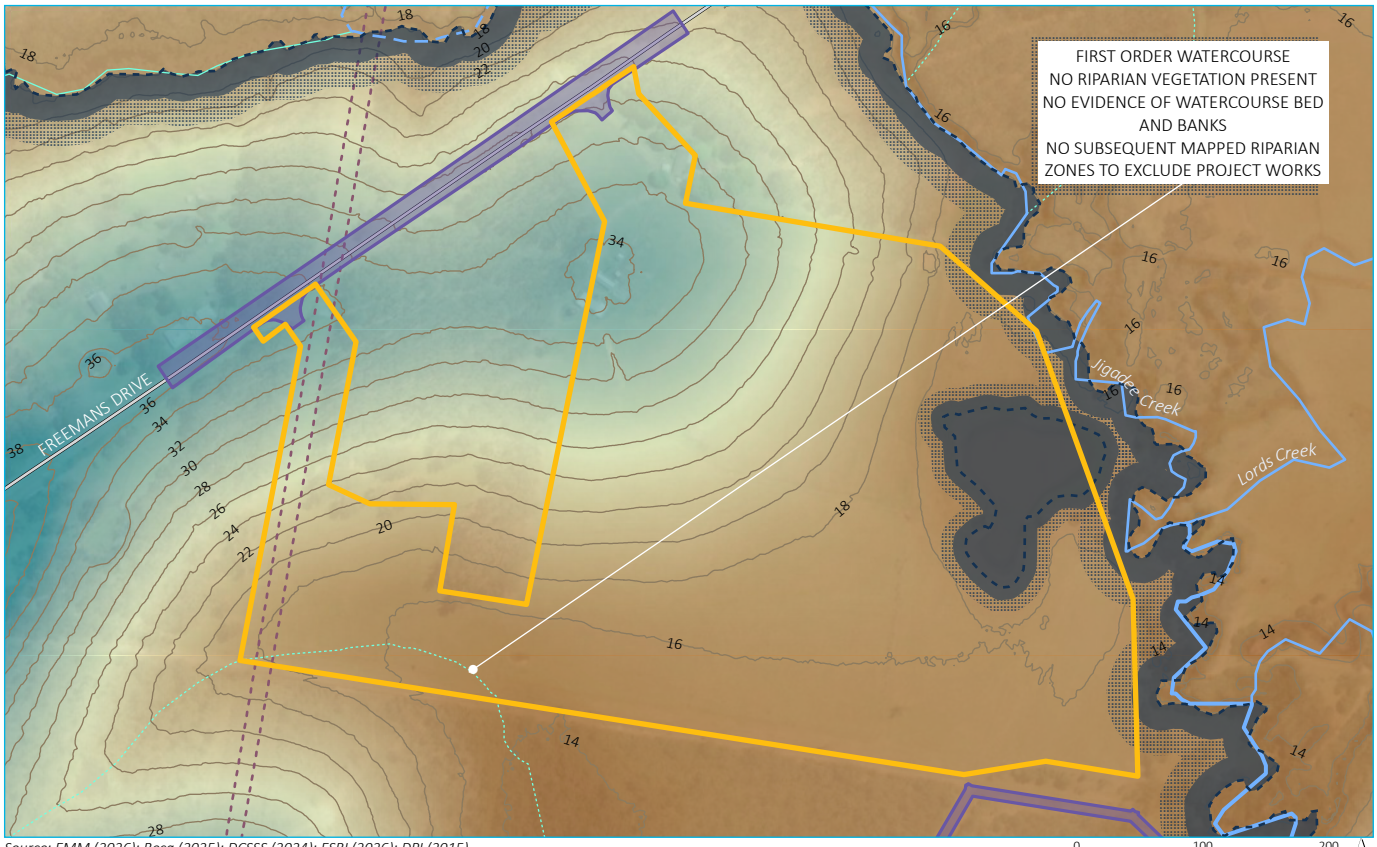
Interaction of the Wollombi Road construction support site with riparian zones

Hunter Transmission Project
Amendment Report
Figure 5.3

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR015_RiparianInteractionsCSS\AR015_RiparianInteractionsCSS_20260213_06.aprx 2/18/2026





Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); DPI (2015)

0 100 200 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR015_RiparianInteractionsCSS\AR015_RiparianInteractionsCSS_20260213_06.aprx 16/02/2026

KEY

- Watercourse bank
- Inner vegetated ziparian zone
- Outer vegetated ziparian zone

Amended project impact area

- Construction support site
- Access tracks, road upgrades and intersection upgrades

Strahler stream order

- 1st order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment

- Contour (2 m interval)
- 330 kV transmission line
- Major road

Interaction of the Freemans Drive construction support site with riparian zones

Hunter Transmission Project
Amendment Report
Figure 5.4

EMM creating opportunities

Water supply licensing and regulation

Since the exhibition of the EIS, the water supply strategy for the project has been updated to reflect amendments to potential construction water sources to include an additional supply location from the Hunter River. The details of this potential supply location are included in the updated water supply strategy in *section A.4.4* of the updated project description (refer to *Appendix A (Updated project description)* of this Amendment Report).

Due to the large geographical extent of the project and the variety of water quality requirements for construction, water is likely to be sourced from several sources, including from reuse within the project impact area, environmental sources (including surface water and existing groundwater bores) and private sources (including recycled water, wastewater and mine water).

The feasibility of and preference for identified surface water extraction locations would be confirmed as part of detailed design and construction planning for the project.

Operation impacts

Water quality

The potential impacts to water quality from the operation of the amended project would be consistent with the impacts identified in *section 17.4.1* of the EIS.

The management of potential water quality impacts would occur through the implementation of the network operator's environmental management system to be implemented for the project, as detailed in *section 5.11.4* and *Appendix D (Updated mitigation measures)* of this Amendment Report.

Streamflow regime

The potential impacts to streamflow regime from operation of the amended project would be consistent with the potential impacts identified for the exhibited project.

Impacts to streamflow regime during operation will be minimised through implementation of the mitigation measures provided in *section 5.11.4* and *Appendix D (Updated mitigation measures)* of this Amendment Report. Additional impacts to streamflow regime are not anticipated during operation.

Watercourses and riparian zones

The operation of the amended project does not require additional infrastructure in watercourses or riparian corridors compared to the construction of the amended project.

Works in watercourses and riparian corridors during operation would be limited to:

- managing vegetation in and around the transmission line easement
- maintenance of access tracks, particularly drainage conveyance structures, as necessary.

Impacts to watercourses and riparian corridors would be minor during operation of the project. Vegetation management during operation would have minimal impacts on the watercourses or riparian corridors.

5.11.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential impacts on surface water are listed in *Table 5.72*. The changes are presented in **bold** text (for new text) or ~~strikethrough~~ text (for deleted text).

In addition to these mitigation measures, a preliminary erosion and sediment control plan to minimise impacts to biodiversity within the Olney State Forest has been prepared (refer to *Appendix E (Revised biodiversity development assessment report)*) which details the standard of erosion and sediment control devices that may be applied to meeting the environmental objectives of the project.

The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.72 Updated mitigation measures - surface water

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
SW1	Impacts to surface water	A project specific Soil and Water Management Plan (SWMP) will be prepared, which provides mitigation measures to minimise impacts on soils and water. The SWMP will be prepared in accordance with the management approach outlined in *Chapter 8 (Management)* of *Technical Report 10 - Surface water impact assessment* and will: • identify foreseeable risks relating to soil erosion and water pollution during construction and describe how these risks will be managed • include a description of soil and water management approaches, methods for impact assessment and monitoring, and mitigation measures • include ESCPs • include surface water quality monitoring requirements • include stormwater management plans. At the completion of construction, appropriate measures will be carried into the network operator's Environmental Management System (EMS).	Detailed design Construction	All locations
SW2	Water quality and geomorphology	Scour protection will be considered for any infrastructure within a watercourse. Design will incorporate features that minimise impact on flow conditions and natural function of the watercourse, where feasible and reasonable. Works within or near watercourses will consider and adhere to the following guidelines: • *Controlled activities - Guidelines for watercourse crossings on waterfront land* (DPE 2022c) • *Controlled activities - Guidelines for instream works on waterfront land* (DPE 2022d)	Detailed design Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Watercourse Crossings* (DPI 2003) • *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013).		
SW3	Erosion and sedimentation	Erosion and sediment control plans (ESCPs) will be developed, prior to construction, and implemented in consultation with a Certified Professional in erosion and sediment control for all disturbance activities. ESCPs will include additional considerations for areas of high risk (e.g. high slopes) and located upstream of sensitive biodiversity areas (i.e. State forest areas) including at Olney switching station. The plans will detail the processes, responsibilities and measures to manage potential soil and water quality impacts in accordance with the principles and requirements in: • *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom 2004), *Volume 2A* (DECC 2008a) *and 2C* (DECC 2008b), commonly referred to as the 'Blue Book' • *Best Practice Erosion and Sediment Control* (IECA 2008) • *Guidelines for controlled activities* (Riparian corridors (DPE 2022b) and Watercourse crossings (DPE 2022c).	Detailed design Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
SW4	Water quality monitoring	As part of a Soil and water management plan (SWMP), a water quality monitoring program will be developed and implemented to establish baseline water quality conditions in watercourses of high sensitivity that may be impacted by nearby construction and to detect changes in water quality that may be attributable to the project during construction. The frequency, location and duration of sampling will be detailed in a monitoring program. Monitoring will: • be positioned upstream and downstream of project disturbance areas, focusing on locations with sensitive receiving environments. Where upstream and downstream monitoring is not possible, pre-construction water quality conditions will be established through baseline monitoring • be carried out in accordance with water quality objectives and criteria for the project and in accordance with Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000).	Detailed design Construction	All locations
SW5	Stormwater management – general	General stormwater management principles within the project impact area will include: • appropriate siting of proposed infrastructure within the project impact area, which will minimise (and avoid where possible) disturbance to existing drainage lines, riparian vegetation and overland flow paths • grading of earthworks to minimise changes to existing catchments and flow paths • surface drainage infrastructure that diverts upslope runoff around infrastructure and excavations to receiving drainage lines • infrastructure areas that contain oil and/or grease will include suitable containment measures • scour protection will be considered downstream of areas that increase runoff into receiving watercourses	Detailed design Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• consideration of appropriate water quality and stormwater controls (for ancillary areas) upstream of sensitive receiving environments, such as at Olney switching station • **an inspection program of installed scour protection and stormwater controls will be undertaken during construction. If protection and control works are found to be ineffective, the works will be rectified or designed as appropriate.**		
SW6	Stormwater management – concrete batching plants	Stormwater management measures for concrete batching plants (both mobile and temporary) will include: • the separation of clean and potentially contaminated runoff by a bunded cementitious areas • the collection of first flush runoff from cementitious areas • offsite disposal of contaminated water not suitable for reuse to a licenced waste facility.	Detailed design Construction	All locations
SW7	Stormwater management – excavations	Stormwater management measures for excavations (particularly for transmission towers) will include bunding around excavations to prevent runoff into excavations.	Detailed design Construction	Excavations
SW8	Stormwater management – spoil	Runoff from spoil piles, topsoil stockpiles and other excavated material will be managed through: • minimising the number of stockpiles, stockpile areas and the time they are exposed • locating stockpiles away from drainage lines and natural watercourses and from where they will be susceptible to erosion • bunding stockpiles in accordance with Managing Urban Stormwater – Soils and Construction, Volume 1, 4th Edition (Landcom 2004)	Detailed design Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		• stabilising stockpiles, establishing sediment controls and suppressing dust as required.		
SW9	Water supply	**Construction water supply would be sourced in accordance with the water supply hierarchy included in *section A4.4.4* in *Appendix A (Updated project description)*.** Water supply management will be undertaken in accordance with agreements between the construction contractors, relevant landowners and relevant water users and suppliers. Groundwater and surface water allocations purchased from existing registered bores/users must be extracted in accordance with the conditions stated in the associated water access license(s) and water supply works approval(s). **Surface water and groundwater extracted under an exemption under the *Water Management Regulation 2025* will be recorded and reported on in accordance with regulatory requirements.**	**Detailed design** Prior to and during construction	Water extraction locations
SW10	Dewatering	In the event that dewatering is required: • the management of discharge water will be documented in the SWMP and will consider options for containment, reuse, application to grassed areas and transport to licensed waste facilities. In the event that discharge water is discharged to grassed areas: • application will be limited to grassed areas within the project impact area, away from watercourses. If the discharge water if highly turbid, dewatering through a filter sock (or similar) or via transportable sedimentation tanks will be considered, where appropriate, to minimise sedimentation.	Detailed design Construction	Excavations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
SW11	Construction impact area – clearance (general)	Clearance practices will include: • immediate laying of mulch where ground disturbance has occurred (except in riparian corridors) • stabilisation of mulch where mobilisation by wind or runoff is possible • management of mulching activities and stockpiles to minimise tannin production and avoid discharge to watercourses • ground stabilisation using felled vegetation placed across the slope to minimise the concentration of flows, especially upstream of riparian corridors.	Construction	All locations
SW12	Construction impact area – clearance (riparian buffer areas)	Riparian buffer areas include 5 m from the top of bank of any mapped or unmapped watercourse. Clearance practices in riparian buffer areas will include: • hand clearing methods that minimise ground disturbance and disturbance of the understorey • no placement of mulch (and measures to avoid the transport of mulch into watercourses) • stabilisation of the watercourse bed and banks will be installed as soon as practical, where disturbance to the understorey or ground has occurred. Where vegetation clearance is oblique or parallel to the watercourse (i.e. not perpendicular), stabilisation works with minimal impact will be designed prior to disturbance and installed as soon as practical.	Construction	Riparian corridors

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
SW13	Trenching	Trenching undertaken in close proximity to (mapped) watercourses will: • be undertaken in accordance with Controlled activities – Guidelines for laying pipes and cables in watercourses on waterfront land • be undertaken when intercepted watercourses are dry • provide appropriate erosion and sediment control measures and stabilise topsoil following disturbance.	Construction	Trenching near mapped watercourses
SW14	Construction support sites - wastewater treatment plants	Wastewater treatment plants design and operation will include: • selection of the most appropriate system for the project based on the site layout, site conditions and constraints • design, construction, operation, maintenance and decommissioning in accordance with best practice and relevant legislation, guidelines and standards.	Detailed design Construction	Construction support sites
SW15	Construction support sites – riparian corridors	Activities undertaken at construction support sites will be in accordance with the *Controlled Activities - Guidelines for riparian corridors on waterfront land (DCCEEW 2025)*.	Detailed design Construction	Hebden Road, Wollombi Road and Freemans Drive construction support sites
SW16	Hazardous chemicals	Herbicides will not be applied within five metres of the top of a bank or any mapped or unmapped watercourse. Herbicides are not to be applied: • when greater than five millimetres of rain is forecast in the following 24 hours • in windy conditions • when overland runoff is visible.	Construction Operation	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
-	Hazardous chemicals	Store chemicals, fuels and other hazardous substances in accordance with mitigation measures DG1, DG2, DG3 and DG4.	Construction Operation	All locations

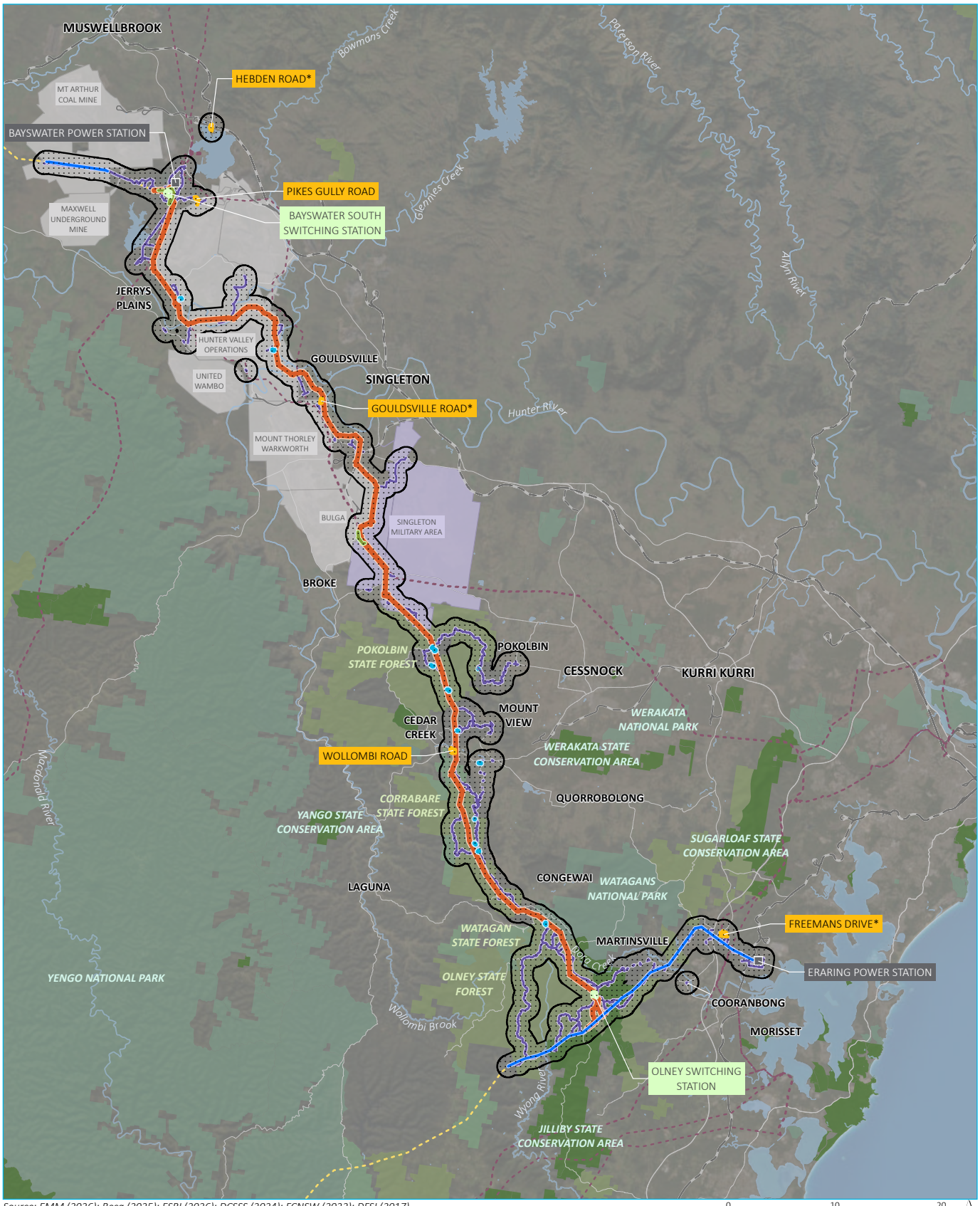
5.12 Groundwater

Chapter 18 (Groundwater) and *Technical Report 11 – Groundwater impact assessment* of the EIS assessed the potential impacts from construction and operation of the exhibited project on groundwater. Additional assessment has been undertaken to identify whether the amended project would result in changes to the potential groundwater impacts identified in the EIS. The findings of the additional assessment are described in this section.

5.12.1 Assessment approach

The methodology for the assessment of groundwater impacts of the proposed amendments and refinements is consistent with the methodology detailed in *section 18.1* of the EIS. The assessment of the amended project was undertaken to an amended groundwater study area, which, consistent with *section 18.1.2* of the EIS, applied a 1-kilometre buffer around the amended project impact area. The amended groundwater study area is shown in *Figure 5-5*.

As part of engagement with Origin Energy during and since exhibition of the EIS, additional information has been made available about the groundwater environment of the Eraring Power Station. This information has been included in the existing environment of the amended project, and has been considered in the assessment of potential groundwater impacts of the project.



Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); DFSI (2017)

0 10 20 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR022_Groundwater\StudyArea\AR022_Groundwater\StudyArea_20260212_02.aprx 16/02/2026

KEY

Groundwater study area

Amended project impact area

- HTP corridor
- Switching station
- Construction support site
- Laydown area
- Adjustment to existing transmission line
- Upgrades to existing transmission line
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence
- Energy

Amended groundwater study area

Hunter Transmission Project
Amendment Report
Figure 5.5

EMM
creating opportunities

5.12.2 Existing environment

The existing groundwater environment for the amended project impact area would remain unchanged from the existing groundwater environment outlined in *section 18.2* of the EIS, including the existing groundwater systems, hydrogeology and conceptual groundwater model.

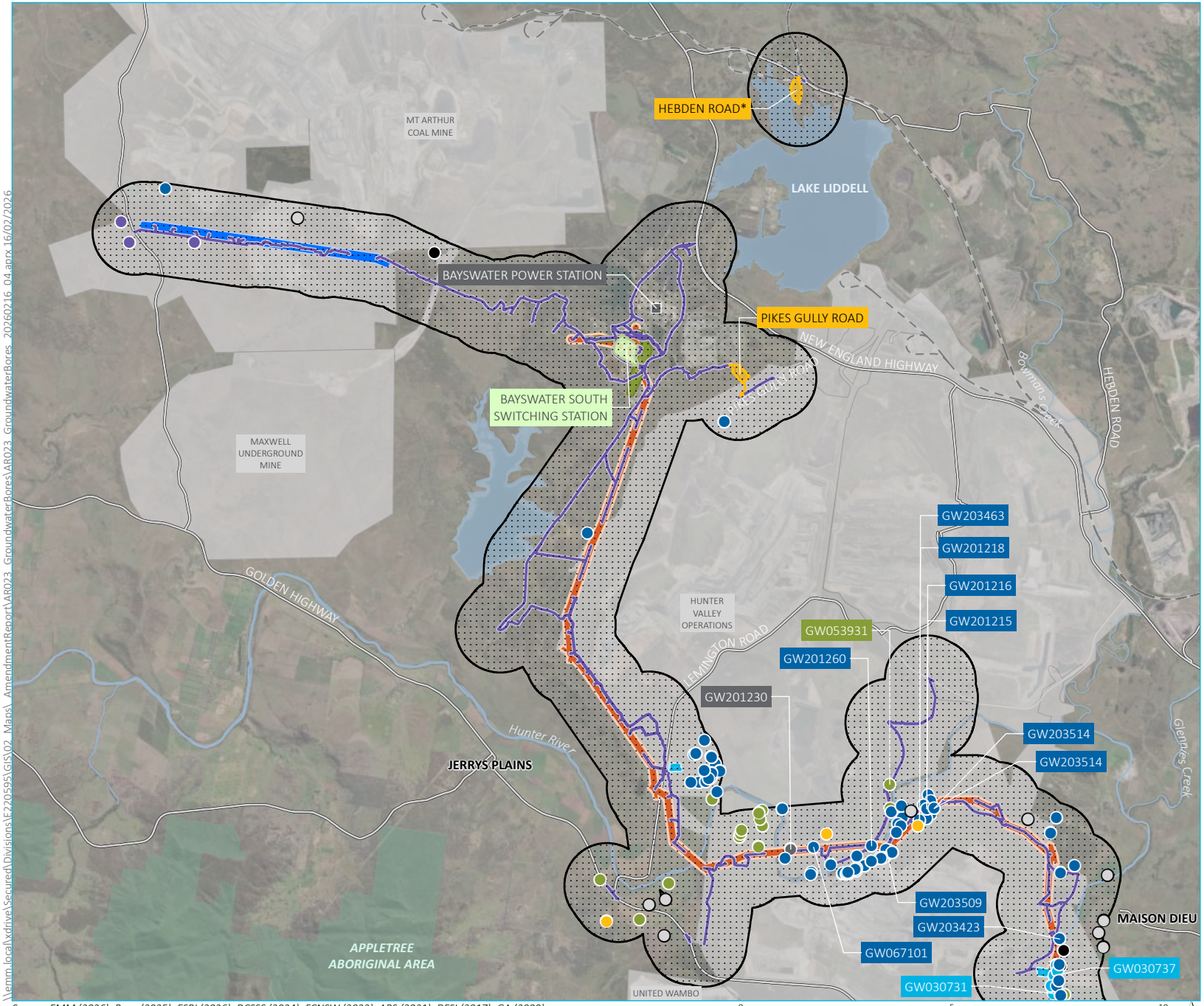
The number and type of registered groundwater bores within both the amended project impact area and the amended groundwater study area have increased compared to those within the exhibited project impact area and the exhibited groundwater study area due to changes in the alignment of the transmission line at Mt Thorley and Gouldsville positioning the project closer to different groundwater bores. Based on the National Groundwater Information System database (BoM 2022), there are 258 groundwater bores listed within the amended groundwater study area described as active, in use, functioning, non-functioning, proposed or unknown (conservatively assumed to be active for the purpose of this assessment). Of the 258 groundwater bores listed within the amended groundwater study area, 30 are within the amended project impact area. Of the 30 groundwater bores within the amended project impact area, 27 (or 90 per cent) are licenced as monitoring bores.

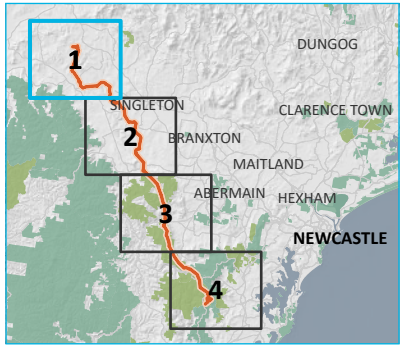
A comparison of registered bores and licence types between the exhibited project and the amended project is included in *Table 5.73*. Groundwater bores within the amended groundwater study area are shown in *Figure 5-6*.

Table 5.73 Comparison of registered bores and licence types between the exhibited and amended project

Licence type	Number of bores for the exhibited project		Number of bores for the amended project	
	Exhibited groundwater study area	Exhibited groundwater project impact area	Amended groundwater study area	Amended project impact area
Commercial and industrial	3	0	3	0
Dewatering	2	1	2	1
Exploration	4	2[1]	0	0
Irrigation	30	4	31	1
Monitoring	140	15	170	27
Stock and domestic	11	1	10	1
Unknown	18	1	18	0
Water supply	24	0	24	0
Total	232	24	258	30

1. Listed as abandoned on the National Groundwater Information System database (BoM 2022)





KEY

Groundwater study area

Landholder borehole

- Commercial and industrial
- Dewatering
- Exploration
- Irrigation
- Monitoring
- Stock and domestic
- Water supply
- Unknown

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy

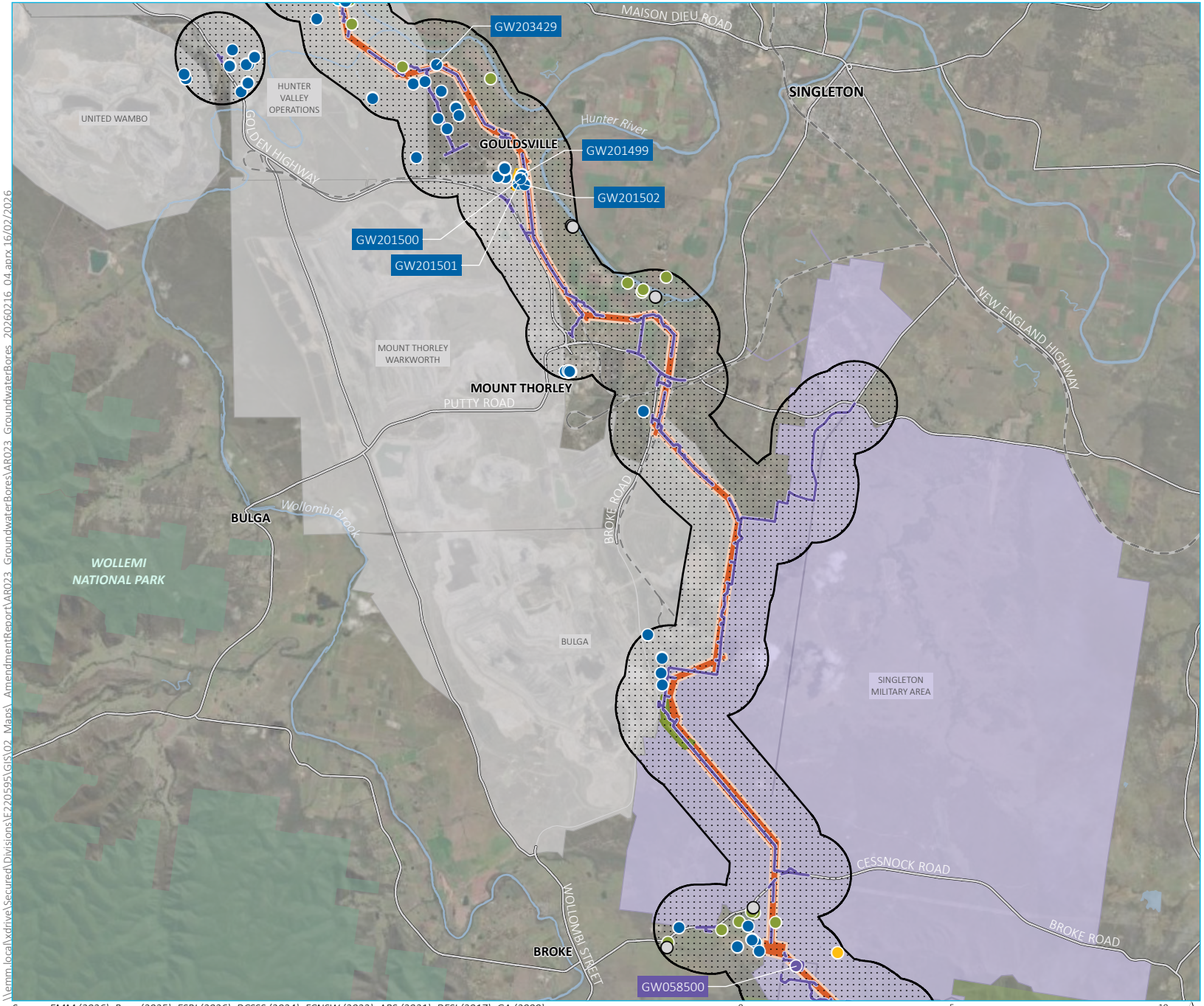
Registered groundwater bores within the amended groundwater study area
Map 1 of 4

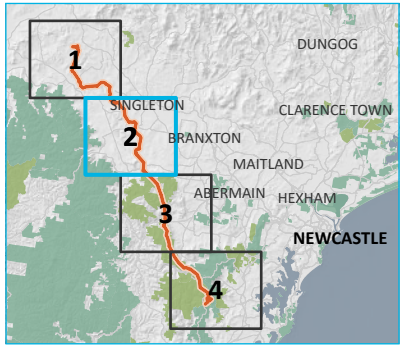
Hunter Transmission Project
Amendment report
Figure 5.6

EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR023_GroundwaterBores\AR023_GroundwaterBores_20260216_04.aprx 16/02/2026





KEY

Groundwater study area

Landholder borehole

- Exploration
- Irrigation
- Monitoring
- Stock and domestic
- Water supply
- Unknown

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy

Registered groundwater bores within the amended groundwater study area
Map 2 of 4

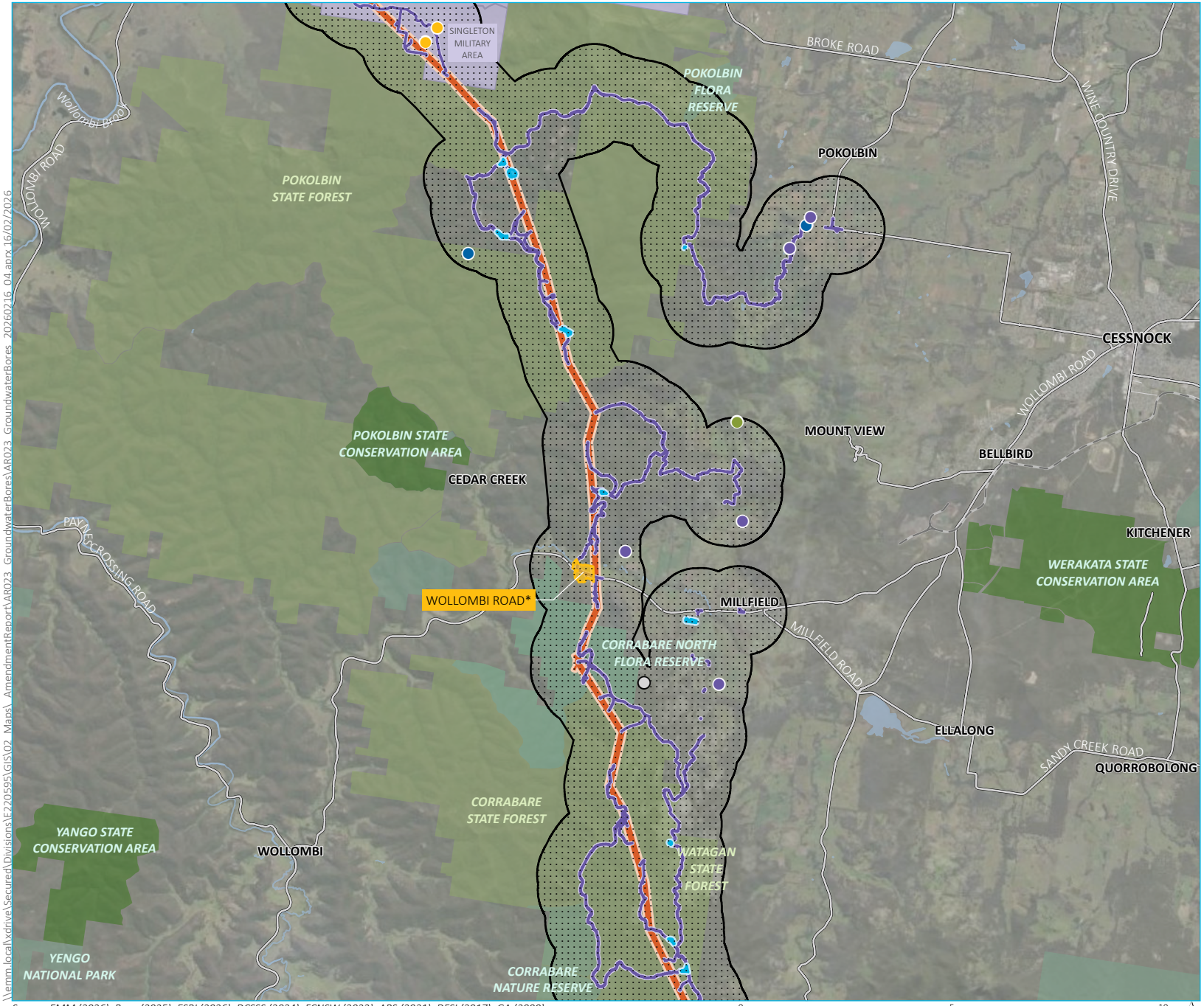
Hunter Transmission Project
Amendment report
Figure 5.6

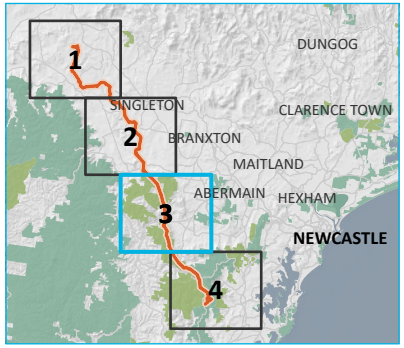
Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

0 5 10 km
GDA2020 MGA Zone 56

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR023_GroundwaterBores\AR023_GroundwaterBores_20260216_04.aprx 16/02/2026





KEY

- Groundwater study area

Landholder borehole

- Irrigation
- Monitoring
- Stock and domestic
- Water supply
- Unknown

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence

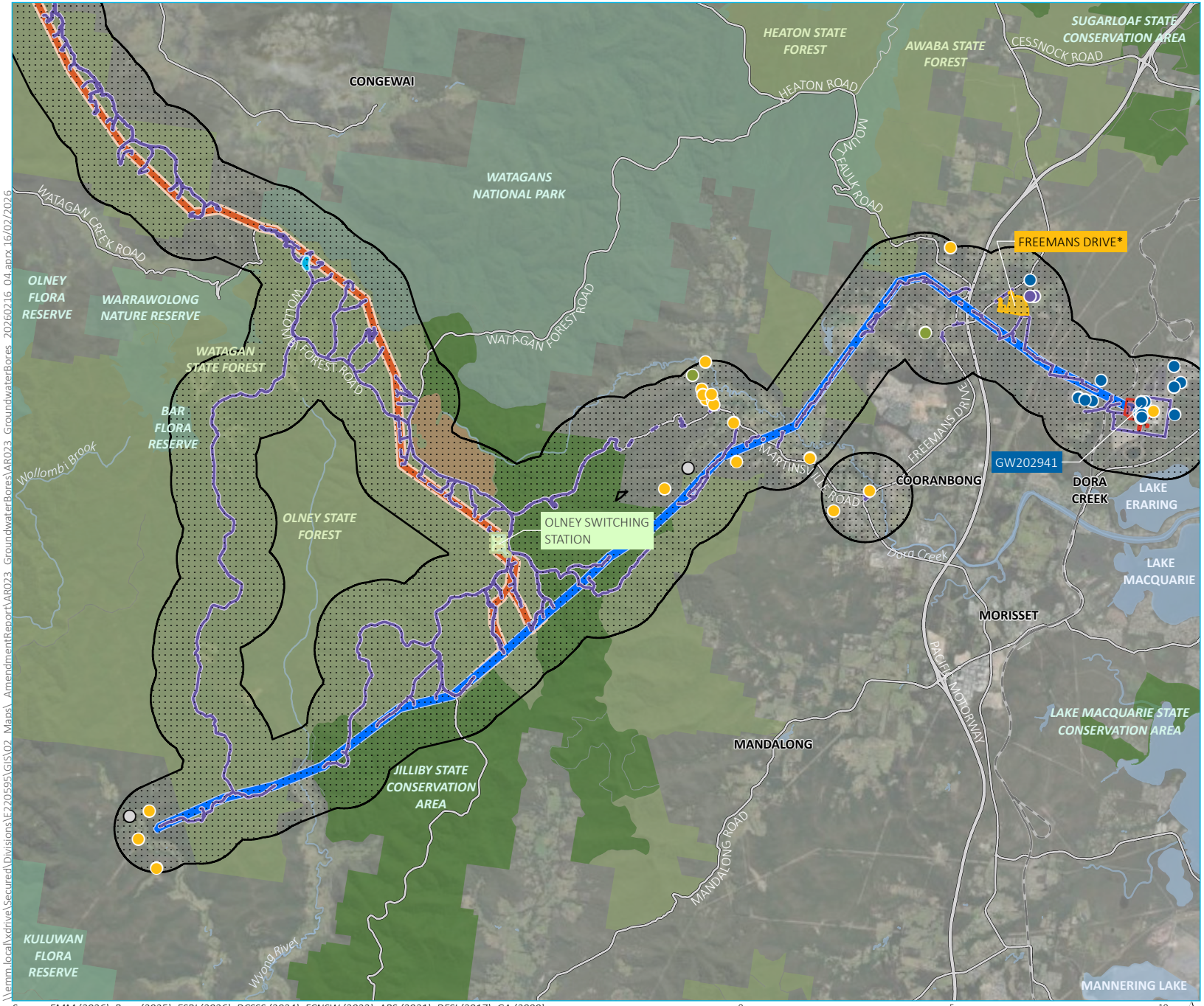
Registered groundwater bores within the amended groundwater study area
Map 3 of 4

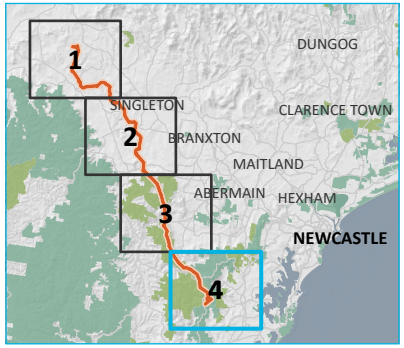
Hunter Transmission Project
Amendment report
Figure 5.6

EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR023_GroundwaterBores\AR023_GroundwaterBores_20260216_04.aprx 16/02/2026





KEY

- Groundwater study area

Landholder borehole

- Irrigation
- Monitoring
- Stock and domestic
- Water supply
- Unknown

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area

Registered groundwater bores within the amended groundwater study area
Map 4 of 4

Hunter Transmission Project
Amendment report
Figure 5.6

EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR023_GroundwaterBores\AR023_GroundwaterBores_20260216_04.aprx 16/02/2026

5.12.3 Assessment of potential impacts

Construction impacts

The potential risks to the groundwater environment during construction of the amended project would be consistent with or lower than those outlined in *section 18.3* of the EIS, including activities such as excavations and dewatering causing localised, temporary groundwater drawdown, construction of hardstand areas and transmission tower foundations reducing potential groundwater recharge, and potential contamination due to chemical and fuel spills and/or the disturbance of existing contamination that infiltrates into the groundwater system(s) of the groundwater study area. Additionally, impacts to groundwater quantity from construction of the amended project and to groundwater levels from construction water supply would be consistent with those described in *section 18.3.1* of the EIS.

The risk of groundwater drawdown at registered bores from incidental take due to the construction of transmission towers would be lower than that described in *section 18.3.2* of the EIS. In *section 18.3.2* of the EIS, four existing landholder bores were identified as being within 18 metres of the closest transmission tower (the distance at which the calculated predicted maximum drawdown spatial extent from the predicted inflows associated with the construction of transmission towers has been calculated for the project). The realignment of the transmission line at Mount Thorley means that the amended project would have no existing landholder bores within 18 metres of a transmission tower, meaning no existing groundwater bores would experience drawdown from construction of the amended project. The closest existing groundwater bore is now over 50 metres away from a transmission tower.

No changes to the potential impact on groundwater dependent ecosystems or culturally significant sites during construction described in *section 18.3.2* of the EIS are anticipated due to the amended project.

Changes to groundwater flow paths as a result of the interception of the groundwater table from the concrete footings of transmission towers as part of the amended project would be consistent with potential changes described in *section 18.3.3* of the EIS. Additionally, the amendments and refinements as part of the amended project are not anticipated to result in changes to groundwater quality impacts compared to those described in *section 18.3.4* of the EIS.

Operation impacts

The potential risks to the groundwater environment during operation of the amended project would be consistent with those outlined in *section 18.4* of the EIS, including activities such as the use of large hardstand areas or compaction of underlying soils reducing the potential groundwater recharge, potential contamination due to chemical and fuel spills, and the potential for transmission tower foundations to change groundwater flow directions. Consistent with the EIS, no ongoing groundwater take is proposed for the amended project during operation, meaning no impacts to groundwater levels and groundwater sensitive receivers are anticipated during operation.

5.12.4 Updated or additional mitigation measures

There are no changes to groundwater mitigation measures compared to the exhibited project. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

5.13 Flooding

Chapter 19 (Flooding) and *Technical Report 12 – Flooding impact assessment* of the EIS assessed the potential hydrology and flooding impacts from construction and operation of the exhibited project.

A flooding impact assessment addendum is provided in *Appendix L (Flooding impact assessment addendum)* and has been prepared to identify and assess changes to potential flooding impacts from construction and operation of the amended project and to respond to feedback received during exhibition of the EIS. The findings of the additional flooding impact assessment are described in this section.

5.13.1 Assessment approach

Legislation, policies, plans and guidelines

The flooding impact assessment addendum prepared to assess the amended project (refer to *Appendix L (Flooding impact assessment addendum)*) was prepared in accordance with consistent legislation and guidelines as the exhibited flooding impact assessment.

Assessment methodology

The proposed amendments and refinements were screened for relevance to the flooding impact assessment addendum for the amended project, which identified that amendments and refinements that would be subject to additional assessment (refer to *section 5.1* and *Table 5.1* for more information).

The approach to defining flood behaviour under existing conditions and to assess each of the proposed amendments and refinements followed the same approach adopted for the exhibited project that is set out in *section 3.4* of *Technical Report 12 – Flooding impact assessment* to the EIS.

In response to feedback received during exhibition of the EIS and through continued consultation with Origin Energy, additional information about the existing flood conditions and existing drainage design of the Eraring substation has become available. As part of the flooding impact assessment addendum, a revised assessment of the potential operational impacts of the project at the Eraring substation has been included using this additional information. Revised existing environment information as it relates to flooding at the Eraring substation has been included in *section 5.13.2*, and the revised operational impact assessment is included in *section 5.13.3*.

Study area

The amended project would not change the study area of the flooding impact assessment, which is defined by the catchments within which the project is located. While the project impact area has changed in some areas as a result of the amendments and refinements, it remains wholly within the catchments and study area as described in *section 19.1.4* of the EIS.

Flood frequency terminology

The flood frequency terminology described in *section 19.1.2* of the EIS, including annual exceedance probability (AEP) and average recurrence interval (ARI), remain relevant for the amended project. The assessment of potential flooding impacts of the amended project has been referred to in terms of AEP (e.g. a one per cent AEP). A summary of the equivalence between AEP and ARI as included in Table 19.1 of the EIS has been replicated in *Table 5.74*.

Table 5.74 Approximate equivalence between AEP and ARI descriptions of flooding

Annual exceedance probability (AEP) (per cent)	Average recurrence interval (ARI) (years)
0.05	2000
0.1	1000
0.2	500
0.5	200
1	100
5	20
10	10
20	5
50	2
1 EY*	1
2 EY*	0.5

5.13.2 Existing environment

Consistent with the EIS, the amended project is located within the Hunter River, Lake Macquarie and Wyong River catchments, with each catchment comprising a number of sub-catchments as described in *section 19.2* of the EIS. In addition to the sub-catchments described in the EIS, the amended project also crosses Doctors Creek at three locations as a result of the realignment of the transmission line at Mount Thorley and associated changes to access tracks. Doctors Creek is a tributary of Loder Creek, which drains to the Hunter River.

Existing flood behaviour

The description of existing flood behaviour that is presented in *section 19.2.1* of the EIS is generally applicable to the amended project impact area, with the exception of:

- where amendments and refinements occur within flood prone areas, or remove components in flood prone areas

- changes in response to additional information received from Origin Energy about the existing drainage systems within and surrounding the Eraring substation and power station.

Modelled existing flood conditions in sub-catchments for the amendments and refinements to the project are outlined in Table 5.75. All other refinements and amendments to the project would not result in changes to the existing environment as described in *section 19.2.1* of the EIS.

Table 5.75 Modelled existing flood conditions in sub-catchments for project amendments

Amendment / refinement	Description of existing flood conditions at locations of amendments and refinements to the project	Sub-catchment
Realignment of the transmission line at Mount Thorley	The realigned section of the transmission line at Mount Thorley would intersect with different existing flood behaviour for the 1% AEP flooding event compared to the exhibited alignment. The exhibited project impact area would have been inundated by Hunter River flooding where the HTP corridor ran along the southern bank of the river at its confluence with Loder Creek over a length of 3.2 kilometres and to a maximum depth of six metres. The amended project impact area would be inundated by Hunter River flooding at two locations, including: • where it crosses Loder Creek to the south of where it meets the Hunter River over a length of 360 metres and to a maximum depth of six metres • where it crosses Doctors Creek along the southern bank of the Hunter River to the west of Loder Creek over a length of 2.2 kilometres to a maximum depth of six metres.	Loder Creek
Changes to laydown areas	The Trig Road / Flick Road laydown area replaces the Trig Road / Mf1 Road / North Road laydown area in Corrabare State Forest, meaning the existing flood conditions described for the exhibited laydown area in *section 19.2.1* of the EIS no longer apply to the amended project. The Trig Road / Flick Road laydown area would not be impacted by mainstream flooding or major overland flow. However, it would be inundated by local catchment runoff from upslope areas to its east. Depths of inundation across the laydown area would typically be less than 0.1 metres but would reach a maximum of 0.3 metres during a 1% AEP event. The Watagan Creek Road / Burma Road laydown area replaces the Wollombi Forest Road (south of Halls Road) laydown area in the Watagan State Forest, meaning the existing flood conditions described for the exhibited laydown area in *section 19.2.1* of the EIS no longer apply to the amended project. The Watagan Creek Road / Burma Road laydown area would be located on a ridge line and therefore would not be impacted by mainstream flooding or major overland flow.	Wollombi Brook
Reconfiguration of the Flick Road emergency helicopter landing area	The Flick Road emergency helicopter landing area would be reconfigured in the same location as the exhibited project. Consistent with the EIS, while the helipad site is not impacted by mainstream flooding or major overland flow, it would be inundated by local catchment runoff from upslope areas to its east. Depths of inundation across the laydown area would typically be less than 0.1 metres during a 1% AEP event.	Wollombi Brook

Amendment / refinement	Description of existing flood conditions at locations of amendments and refinements to the project	Sub-catchment
Changes at Eraring substation	The increase in the extent of the construction impact area at the Eraring substation as part of the amended project would result in the following additional existing flood conditions compared to the exhibited project: • depths of between 0.1 metres and 0.3 metres during a 1% AEP flood event along a drainage line that runs through the western portion of the site where overland flow would occur • depths of inundation to a maximum of 1.4 metres during a 10% AEP flood event, increasing to a maximum of 1.8 metres during a 1% AEP flood event along a catch drain that drains to the west of the Eraring substation. In all other areas of the increased construction impact area at the Eraring substation, existing flood conditions would be consistent with those outlined in the EIS.	Dora Creek
Minor changes at Bayswater substation	The area of trenching that is proposed between the Bayswater substation and the Bayswater South switching station would be inundated by flow that is conveyed along a drainage line that runs through its southern portion, where depths of inundation would occur to a maximum of 0.2 metres during a 1% AEP flood event. The area of trenching would also cross: • a catch drain that controls runoff from an area to the south of the Bayswater substation, where depths of inundation would occur to a maximum of 0.4 metres during a 1% AEP flood event • a channel that runs in a westerly direction around 180 metres to the south of the Bayswater substation, where depths of inundation would occur to a maximum of 1.4 metres during a 1% AEP flood event.	Bayswater Creek

Amendment / refinement	Description of existing flood conditions at locations of amendments and refinements to the project	Sub-catchment
Changes to access track locations	Consistent with the exhibited project, the construction of new access tracks and upgrade of existing access tracks would cross a number of non-perennial creeks, watercourses and local drainage lines. These areas would be inundated by runoff that is conveyed in these watercourses and local drainage lines during frequent rainfall events. As a result of the changes to access tracks, including the addition or removal of new/upgraded access tracks, the project impact area would: • no longer cross Saddlers Creek (as a result of the removal of an access track near Bayswater to avoid an existing biodiversity offset area) • cross Doctors Creek at a different location to the exhibited project (as a result of access track changes for the realignment of the transmission line at Mount Thorley). The crossing under the amended project would be inundated by backwater flooding from the Hunter River during a 1% AEP flood event to a maximum depth of four metres, compared to six metres for the exhibited project • cross Loder Creek to the south of where it meets the Hunter River further south than the exhibited project (as a result of access track changes for the realignment of the transmission line at Mount Thorley), where the depth of inundation would occur to a maximum of six metres during a 1% AEP flood event due to backwater flooding from the river. All other changes to access tracks would not result in changes to existing flood conditions for the amended project compared to the exhibited project.	Saddlers Creek Loder Creek

Revised flooding behaviour at the Eraring substation under existing conditions

The existing flood conditions at the Eraring substation have been remodelled using information received from Origin Energy. A revised description of the existing flooding behaviour is provided in *Table 5.76*, alongside the description as presented in the EIS.

Table 5.76 Revised flooding behaviour at the Eraring substation under existing conditions

Project element	Description of existing flood conditions in EIS	Revised flooding conditions with additional information from Origin Energy
Eraring substation upgrade	Drainage channels that run in a southerly direction through the Eraring substation upgrade site convey major overland flows, with flood depths along the channel in the eastern portion of the Eraring substation upgrade site typically between 0.4 to 0.7 metres during a 10% AEP event, and typically between 0.7 to 1.1 metres during a 1% AEP event. A catch drain that runs in a southerly direction through the western portion of the Eraring substation upgrade site conveys overland flows from the existing substation, with flood depths up to 0.4 metres during a 10% event and 0.5 metres up to a 1% event.	A major overland flowpath runs in a southerly direction through the eastern portion of the site of the Eraring substation extension, where depths occur to a maximum of 0.7 metres during a 10% AEP design storm (consistent the EIS), increasing to 0.9 metres during a 1% AEP design storm (0.2 metres less than that presented in the EIS). The site of the Eraring substation extension is also inundated by local catchment runoff from the existing substation that is conveyed along a catch drain that runs in a southerly direction through the western portion of the site, where depths of inundation occur to a maximum of 0.4 metres during a 10% AEP design storm, increasing to a maximum of 0.5 metres during a 1% AEP design storm (consistent with the EIS).

5.13.3 Assessment of potential impacts

Construction impacts

Potential flood risk within the amended construction impact area

As outlined in *section 5.13.2*, parts of the amended construction impact area are subject to flooding under existing conditions. The extent to which the 10 per cent and one per cent AEP flood events would affect each project element across the amended construction impact area is shown in *Figure 5-7*.

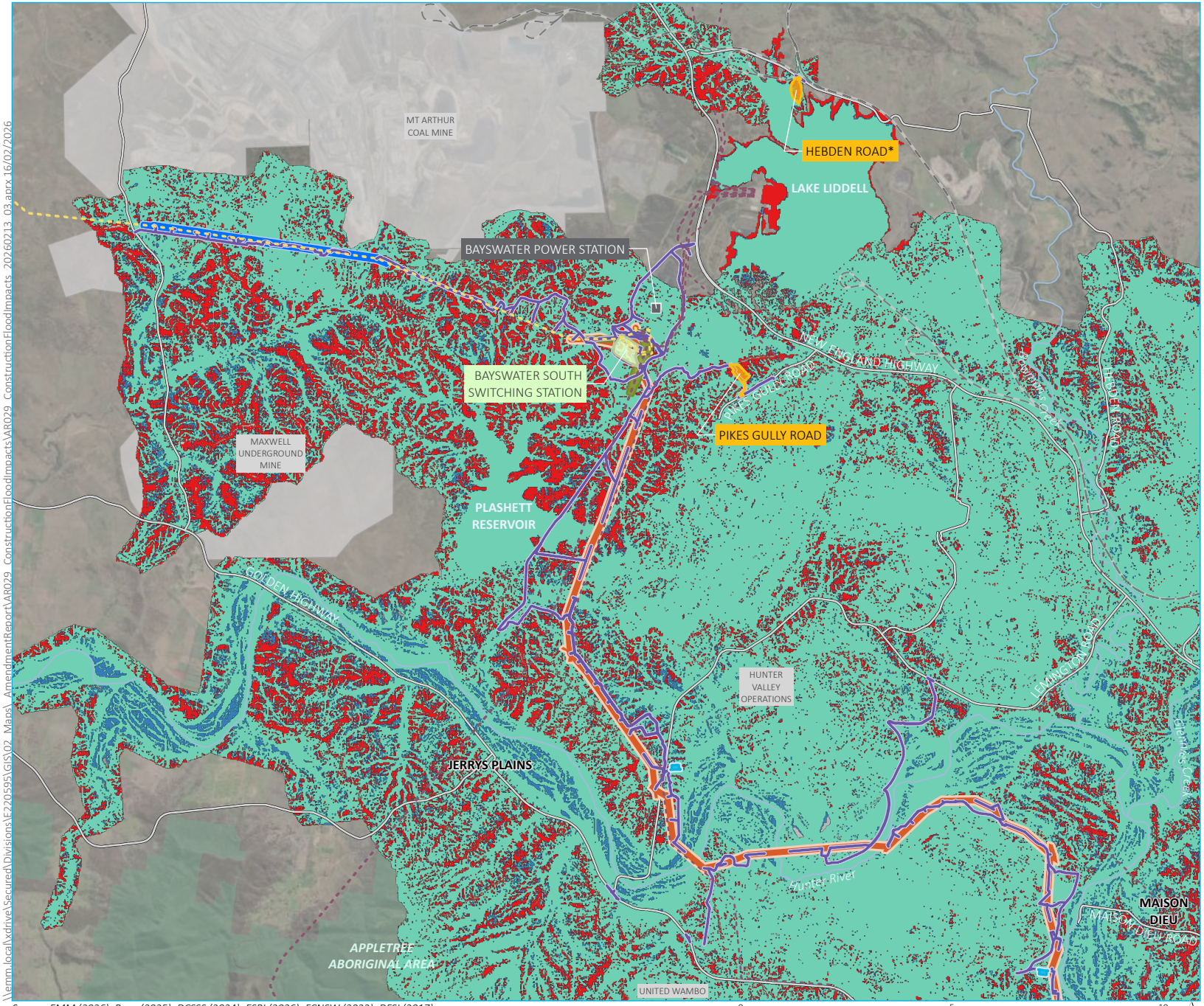
In addition to the flood risks to construction activities that are described for the exhibited project, the amended project would also include the following flood risks during construction as a result of project amendments and refinements:

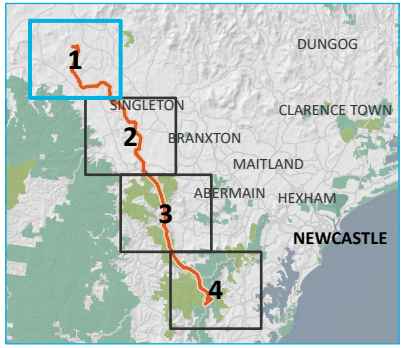
- The reconfiguration of the Wollombi Road construction support site to include temporary worker accommodation would have the potential to increase flood risk during construction as it would introduce an added risk to workers should a flood occur overnight. However, as is outlined in *Appendix L (Flooding impact assessment addendum)*, the finished floor level of temporary buildings that would be used for worker accommodation would be located a minimum of 0.5 metres above the peak one per cent AEP level, which is consistent with the flood planning

levels (FPLs) that are prescribed in the development control plans of the relevant councils. Flood emergency management measures for construction of the project will be prepared and incorporated into relevant environmental and/or safety management documentation, including for construction facilities and temporary worker accommodation, and flood related risks to personal safety and damage to construction facilities and equipment will be managed.

- Trenching between the Bayswater substation and the Bayswater South switching station and at the Eraring substation would cross drainage lines, catch drains and channels that are subject to inundation during rainfall events. At these locations, construction activities would need to be staged and timed to manage flows through and around the work area, while also managing the discharge into the receiving drainage lines.
- Changed flood risks at laydown areas as a result of the relocation of two laydown areas within State forests. These new laydown areas would experience minor overland flows under existing conditions during a one per cent AEP flood event. This presents a minor flood risk at these laydown areas, however these risks are consistent with those described for the exhibited project.
- Changes to access tracks would increase the total length of access tracks that would be inundated as part of the amended project compared to the exhibited project, however the extent and depth of inundation to access tracks due to a one per cent AEP Hunter River flood would be similar to the exhibited project.
- Consistent with the exhibited project, all locations identified for intersection upgrades have the potential to be inundated by floodwater to varying degrees. As provided in the mitigation measures, further flood assessment would be undertaken during detailed design to inform the design of drainage measures that would be required to control any adverse impacts to flood behaviour.

All other amendments and refinements would not result in changed flood risks to construction activities compared to the exhibited project.





KEY

Indicative flood extent

- 10% AEP
- 1% AEP
- PMF

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); FCNSW (2022); DFSI (2017)

0 5 10 km

GDA2020 MGA Zone 56

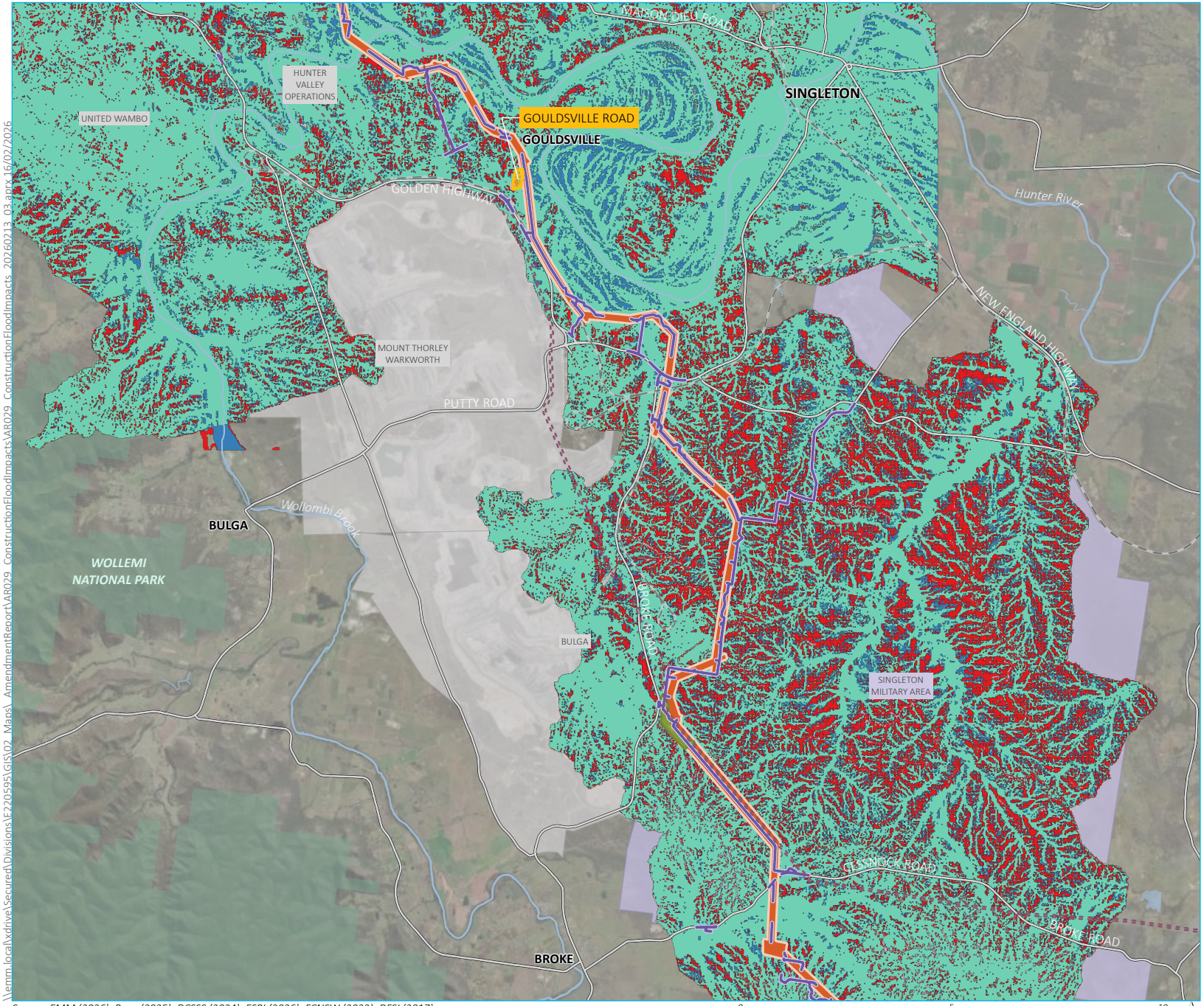
N

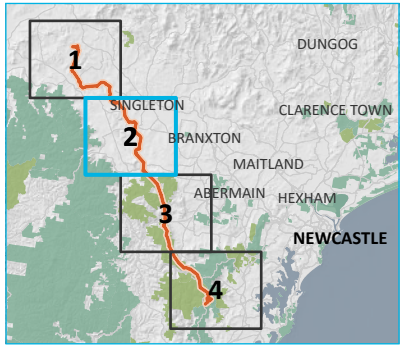
Potential flood impacts during construction of the amended project- 10% AEP and 1% AEP Map 1 of 4

Hunter Transmission Project
Amendment Report
Figure 5.7

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR029_ConstructionFloodImpacts\VAR029_ConstructionFloodImpacts_20260213_03.aprx 16/02/2026





KEY

Indicative flood extent

- 10% AEP
- 1% AEP
- PMF

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); FCNSW (2022); DFSI (2017)

0 5 10 km

GDA2020 MGA Zone 56

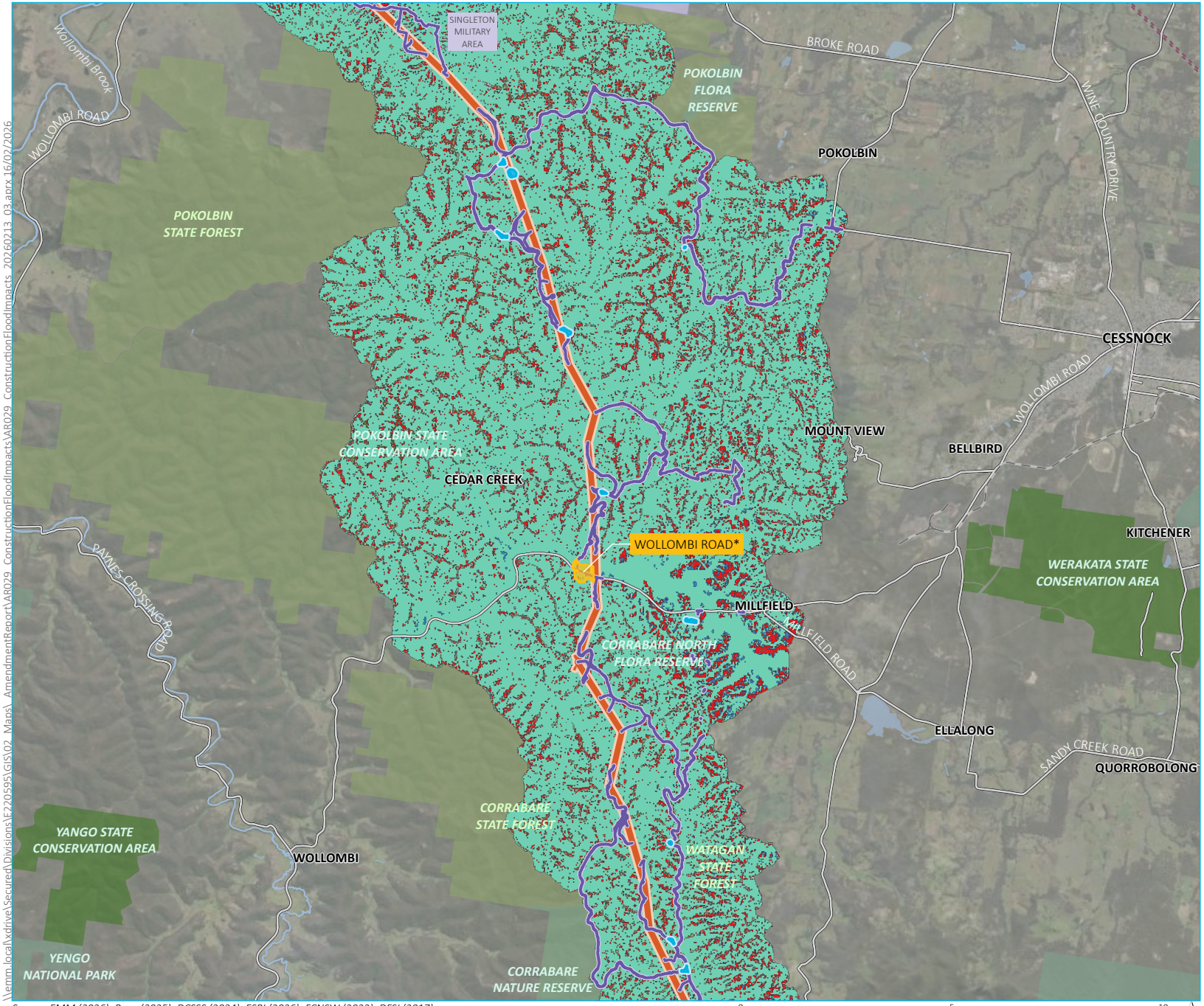
N

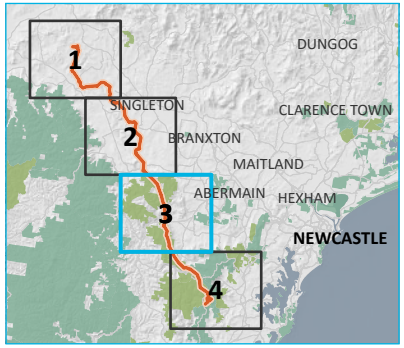
Potential flood impacts during construction of the amended project- 10% AEP and 1% AEP
Map 2 of 4

Hunter Transmission Project
Amendment Report
Figure 5.7

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR029_ConstructionFloodImpacts\VAR029_ConstructionFloodImpacts_20260213_03.aprx 16/02/2026





KEY

Indicative flood extent
- 10% AEP
- 1% AEP
- PMF

Amended project impact area
- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Existing environment
- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence

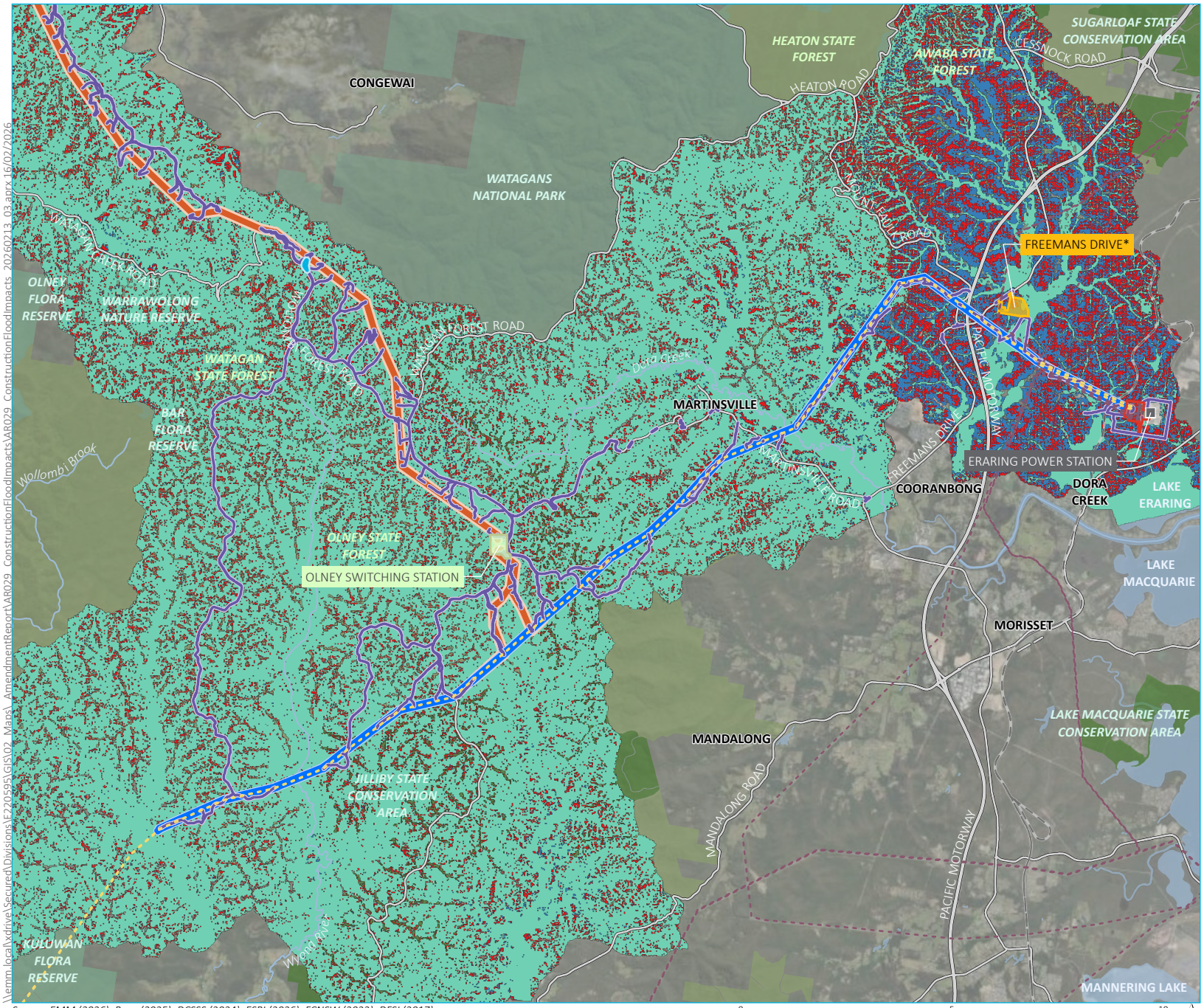
Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); FCNSW (2022); DFSI (2017)

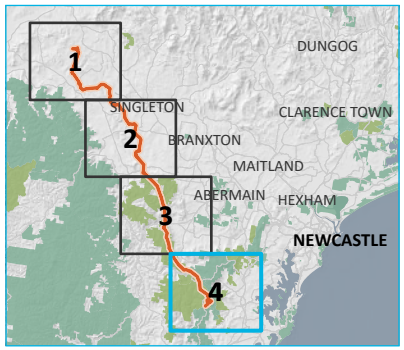
\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR029_ConstructionFloodImpacts\VAR029_ConstructionFloodImpacts_20260213_03.aprx 16/02/2026

Potential flood impacts during construction of the amended project- 10% AEP and 1% AEP
Map 3 of 4

Hunter Transmission Project
Amendment Report
Figure 5.7

EMM
creating opportunities





KEY

Indicative flood extent

- 10% AEP
- 1% AEP
- PMF

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest

Potential flood impacts during construction of the amended project- 10% AEP and 1% AEP
Map 4 of 4

Hunter Transmission Project
Amendment Report
Figure 5.7

EMM
creating opportunities

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026); FCNSW (2022); DFSI (2017)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\VAR029_ConstructionFloodImpacts\VAR029_ConstructionFloodImpacts_20260213_03.aprx 16/02/2026

Potential impacts on flood behaviour

During construction, the amended project would generally have a minimal impact on flood behaviour for events up to one per cent AEP in intensity, consistent with the EIS. A comparison of the impact of construction activities on flood behaviour between the exhibited project and the amended project for the relevant amendments and refinements to the project is included in *Table 5.77*.

Table 5.77 Comparison of potential impacts on flood behaviour between the exhibited project and the amended project

Project construction element	Change to potential impacts on flood behaviour compared to the exhibited project
Construction support sites	There would be no change to the potential impacts of construction activities at construction support sites on flood behaviour compared to the exhibited project. While the Wollombi Road construction support site would be reconfigured to include a temporary worker accommodation, this would not result in changes to the potential impacts on flood behaviour as outlined in *section 19.3* of the EIS.
Laydown areas	The Trig Road / Flick Road laydown area would have a similar potential impact on flood behaviour as the Trig Road / Mf1 Road / North Road laydown area in the EIS which it replaces. The Trig Road / Flick Road laydown area would have a minor impact on flood behaviour given the minor nature of overland flow that runs through the site under existing conditions during a 1% AEP flood event. Construction activities within the Watagan Forest Road / Burma Road laydown area would have no impact on mainstream flooding or major overland flow during flood events up to 1% AEP. The potential impacts on flood behaviour as part of the exhibited project from construction activities at the Wollombi Forest Road (south of Halls Road) laydown area, which the Watagan Forest Road / Burma Road laydown area replaces, are no longer applicable. Activities within the reconfigured Flick Road emergency helicopter landing area are expected to have only a minor impact on flood behaviour given the minor nature of overland flow that runs through the site under existing conditions during a 1% AEP flood event. This is consistent with potential impacts described for the exhibited project. The potential impacts on flood behaviour for all other laydown areas as part of the amended project would be consistent with those described for the exhibited project.
Switching stations and substations	Similar to the exhibited project, activities within the Eraring substation as part of the amended project have the potential to obstruct flows in the drainage lines, catch drains and channels that run through the site. In addition, trenching at Eraring substation as part of the amended project has the potential to obstruct or divert flows in the drainage line that it crosses. Trenching between the Bayswater substation and Bayswater South switching station has the potential to obstruct or divert the flows in the drainage line, catch drain and channel that it would cross. The potential impacts on flood behaviour as a result of all other construction activities for the amended project at the Bayswater substation and Bayswater South switching station would be consistent with those of the exhibited project.

Project construction element	Change to potential impacts on flood behaviour compared to the exhibited project
	There would be no change to the potential impacts of construction activities as part of the amended project on flood behaviour at the Olney switching station compared to the exhibited project.
Transmission corridor	Although the transmission line has been realigned as part of the amended project at Mount Thorley and Gouldsville, the potential impacts on flood behaviour from construction of the transmission line would be consistent with the exhibited project, with construction activities having the potential to obstruct flows in the creeks, watercourses and local drainage lines that cross the amended HTP corridor.
Access tracks	Consistent with the exhibited project, construction of new and upgraded access tracks as part of the amended project has the potential to obstruct flows in the creeks, watercourses and local drainage lines that cross the construction impact area.

Operation impacts

The EIS included an assessment of flood risk to the project, as well as the impact it could have on flood behaviour during its operation if appropriate mitigation measures are not incorporated into its design. The project elements considered as part of the assessment of operational flood impacts for the exhibited project included the Bayswater South switching station, the Olney switching station, the Eraring substation, the new 500 kV transmission line and towers between Bayswater and Olney, and adjustments and upgrades to existing transmission lines.

For the amended project during operation, there would be no change to the layout of the Bayswater South switching station, the Olney switching station, the Eraring substation and upgraded or adjusted transmission lines. As such, the operational flooding impacts associated with these project elements would be consistent with those described in *section 19.4* of the EIS.

Appendix L (Flooding impact assessment addendum) of this Amendment Report includes an assessment of potential changes to operational flooding impacts from the exhibited project as a result of changes to the transmission line alignment at Mount Thorley and Gouldsville. For the realignment of the transmission line at Gouldsville the depth and velocity of flooding would be similar to the exhibited project, meaning changes as a result of this amendments would not result in increased flood risk to the project or changes to flood behaviour during operation.

For the realignment of the transmission line at Mount Thorley, the number of indicative transmission towers impacted by potential Hunter River flooding would be consistent with the exhibited project. In addition, the overall level of flooding would be similar to the exhibited project, with increases in flooding occurring at some towers and decreases in flooding occurring at others (refer to *Appendix L (Flooding impact assessment addendum)* for further information on increases and decreases in flood levels). Mitigation measures proposed for the exhibited project, including the use of scour protection to protect transmission towers during a one per cent AEP flood event and the implementation of structural design for towers located on the floodplain to manage the risk of failure of the transmission line due to damage from flooding, remain applicable to the realignment of the transmission line at Mount Thorley.

Revised operational impacts at Eraring substation

Updated changes in flood levels as a result of the upgrade works at the Eraring substation during the one per cent AEP and PMF events, using additional information on site drainage systems provided by Origin Energy, are summarised in *Table 5.78*. New text is denoted in **bold**, and text no longer relevant to the assessment of flooding is included as ~~strikethrough~~.

Table 5.78 Changes in flood behaviour at Eraring substation extension

Flooding feature	Change in flood behaviour
Peak flood levels	During storms with AEPs of 10% and 1%, there would be a reduction in the depth of inundation along the section of the eastern overland flowpath where it runs to the north (upstream) of the Eraring substation extension. This can be attributed to the increased efficiency of the culvert that is proposed to run under the eastern portion of the substation extension, which in turn would also lead to an increase in the rate and depth of flow in areas downstream of the Eraring substation extension as outlined below: • During the 10% AEP event, flood levels would increase along the section of the eastern overland flowpath where it runs north (upstream) of the substation extension by up to 0.06 metres on an existing depth of 0.~~8~~**7** metres. During a 1% AEP event, the flooding depth would increase by up to 0.~~17~~**08** metres on an existing depth of about 0.9 metres. ~~In both AEP events,~~ • The depth of inundation would extend downstream to the inlet of the culvert that runs under the Main Northern Railway during the 10% and1% AEP event would remain consistent with the findings of the EIS. During the 1% AEP event, there would be an increase in the flooding depth at the inlet to the culvert under the Main Northern Railway to the west (downstream) of the substation extension by up to 0.~~06~~**03** metres, however the post-project flood level would still be about one metre below the level of the rail line. • During the PMF, peak flood levels would increase along the eastern overland flowpath immediately north (upstream) of the substation extension by up to 0.2 metres, on an existing depth of 1.~~8~~**5** metres, which is considered minor. Peak flood levels would increase along the eastern overland flowpath immediately next to the Eraring Power Station by up to 0.~~15~~**06** metres, on an existing depth of ~~1.51~~**1.2** metres. • During detailed design, ~~all efforts will be made to engage~~ **consultation would continue** with Origin Energy to confirm the impact that an increase in the depth of inundation could have on the operation of the Eraring Power Station and to inform the scope of mitigation measures that may be required.
Peak flow velocities	**Consistent with the EIS,** increases in peak flow velocities in areas upstream and downstream of the substation extension would be increased by less than 10 per cent during both 10% and 1% AEP events. The peak velocities would be less than one metre per second. On this basis, the substation extension would not have a significant impact on scour potential in the drainage lines and overland flowpaths upstream and downstream of the Eraring substation extension.
Duration and extent of inundation	**Consistent with the EIS,** Changes in the duration of inundation along the eastern overland flowpath where it runs to the south (downstream) of the substation extension would be less than one hour for 10% and 1% AEP events.

5.13.4 Updated or additional mitigation measures

The updated mitigation measures that would be implemented for the amended project to minimise potential flooding impacts are listed in *Table 5.79*. The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text).

Table 5.79 Updated mitigation measures – flooding

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
FL1	Risk of flooding to construction support sites	Detailed construction planning will consider flood risk at construction support sites, including: • reviewing construction site layouts and staging construction activities in order to avoid or minimise obstruction of overland flow paths and limiting the extent of flow diversion required • designing the layout of construction ancillary facilities and implementing stormwater management controls during their establishment in order to manage the impact of flooding on construction personnel, equipment and materials • identifying and applying measures to not worsen flood impacts on the community and on other property and infrastructure during construction up to and including the 1% AEP event where reasonable and feasible. Where warranted by the scale and nature of the proposed works this will include flood modelling and assessment to assess the extent of potential impacts and therefore the scope of mitigation measures that may be required • measures to mitigate alterations to local runoff conditions due to construction activities.	Detailed design Construction	All locations
FL2	Risk of flooding to stockpiles	Spoil stockpiles will be located in areas that are not subject to frequent inundation by floodwater, ideally outside the 10% AEP flood extent. The level of flood risk accepted at stockpile sites will depend on the duration of stockpiling operations, the type of material stored, the nature of the receiving drainage lines and also the extent to which it would impact flooding conditions in adjacent development.	Detailed design Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
FL3	Flood risks during construction	Construction ancillary facilities (including ~~temporary worker accommodation~~ **offices**, workshops and staff facilities) will be located to manage the risk of construction personnel and machinery being exposed to hazardous flooding conditions during floods up to 1% AEP in magnitude based on the flood hazard vulnerability thresholds set out in *Flood Risk Management Guideline FB03 – Flood Hazard* (DPE 2023).	Detailed design Construction	All locations
FL4	**Flood risks during construction**	**The finished floor level of new buildings that are to be used for temporary worker accommodation will be a minimum of 0.5 metres above the peak 1% AEP flood level.**	**Detailed design** **Construction**	**All temporary worker accommodation locations**
FL~~4~~**5**	Flood risks during construction	Flood emergency management measures for construction of the project will be prepared and incorporated into relevant environmental and/or safety management documentation. This will include: • contingency planning for construction ancillary facilities that are located in areas that are inundated by mainstream flooding or major overland flow during a 1% AEP event • for construction facilities **(including temporary worker accommodation)** located within the floodplain (i.e. within the PMF extent) the identification of how flood related risks to personal safety and damage to construction facilities and equipment will be managed • procedures to monitor accurate and timely weather data and disseminate warnings to construction personnel of impending flood producing rain.	Detailed design Construction	All locations
FL~~5~~**6**	Impact on existing flood behaviour	The impact of the project on flood behaviour will be confirmed during detailed design. This will include consideration of future climate change.	Detailed design	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
FL~~6~~7	Impact on existing flood behaviour	The project will be designed to minimise changes in the frequency, depth, velocity and duration of inundation that would lead to adverse flood related impacts on: • surrounding development for storms up to 1% AEP in intensity • critical infrastructure, vulnerable development or increases in risk to life due to a significant increase in flood hazard for floods up to the PMF.	Detailed design	All locations
FL~~7~~8	Impact on existing flood behaviour	The substation upgrades extension and new switching stations will be designed to manage adverse impacts on the receiving drainage lines as a result of changes in the depth, velocity, extent and duration of flow during storms up to 1% AEP event in intensity.	Detailed design	Substations and switching stations
FL~~8~~9	Impact on existing flood behaviour	The impact of the Eraring substation extension on flood behaviour at the existing Eraring Power Station will be confirmed during detailed design. Consultation will continue to be carried out with Origin Energy to confirm the effect that any residual flood impacts could have on the operation of the Eraring Power Station for all floods up to the PMF, and to inform the scope of mitigation measures that may be required.	Detailed design	Eraring substation extension
FL~~9~~10	Impact on existing flood behaviour	The substation and switching stations, including their access road connections to existing roads, will be designed to ensure that the existing level of flood immunity of the road network is maintained and increases in flood depths and hazards along the road network are minimised.	Detailed design	Substations and switching stations
FL~~10~~11	Impact on existing flood behaviour	Localised increases in flow velocities around transmission line towers, at drainage outlets from the substation and switching stations, and at watercourse crossings along access tracks will be mitigated through the provision of scour protection and energy dissipation measures.	Detailed design	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
FL~~11~~12	Flooding impacts at transmission corridor	Transmission towers located on the floodplain (i.e. within the PMF extent) will be designed to manage the risk of failure of the transmission line network due to damage from flooding.	Detailed design	HTP corridor
FL~~12~~13	Flood impacts at access tracks	Drainage control measures will be incorporated into the upgraded access tracks and new access tracks to manage runoff and the impact it could have on scour to the tracks and surrounding areas. These drainage control measures will be implemented in accordance with the following guidelines: • *Guidelines for the Planning, Construction and Maintenance of Tracks* (Department of Land & Water Conservation 1994) • *Managing Urban Stormwater: Soils and Construction – Volume 2C Unsealed Roads* (Department of Environment and Climate Change 2008b). Scour protection will be provided to manage localised increases in flow velocities upstream and downstream of watercourse crossings along the upgraded or new access tracks, while the access tracks will be lined or stabilised where required to manage scour of the track and the impact this could have on the displacement of sediment into the downstream watercourse.	Detailed design Construction	Upgraded or new access tracks
FL~~13~~14	Flood impacts at road and intersection upgrades	Further flood modelling will be undertaken during detailed design to assess the impact that road and intersection upgrades will have on flood behaviour. During detailed design, detailed 3-dimensional layouts of the proposed road and intersection upgrades will be developed, which will be used to inform the layout of the associated drainage measures that are aimed at controlling external catchment runoff. The detailed 3-dimensional layouts of the proposed road and intersection upgrades will also be used to undertake an assessment of the impact that the proposed works would have on flooding	Detailed design	Road and intersection upgrades

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
		patterns and to identify the scope of additional drainage measures that would be required to manage any resulting adverse impacts due to changes in the depth, velocity and duration of inundation external to the road corridor.		
FL15	Impact of future climate change of flood behaviour	To manage the impact of flooding on the safe operation of the switching stations and substation extension, a 0.5 metre freeboard would be applied to the 1% AEP peak flood level when setting the minimum level of the platforms containing the switchyards, reactors, transformers, control buildings and associated infrastructure.	Detailed design	Switching stations and substation

5.14 Soils and contamination

Chapter 20 (Soils and contamination), *Technical Report 9 – Soils and land impact assessment* and *Technical Report 13 – Contamination preliminary site investigation* of the EIS assessed the potential impacts of the construction and operation of the exhibited project on soils and contamination. Additional assessment has been undertaken to identify changes to soils and contamination impacts associated with the amended project and to respond to feedback received during exhibition of the EIS. The findings of the additional assessment are described in this section.

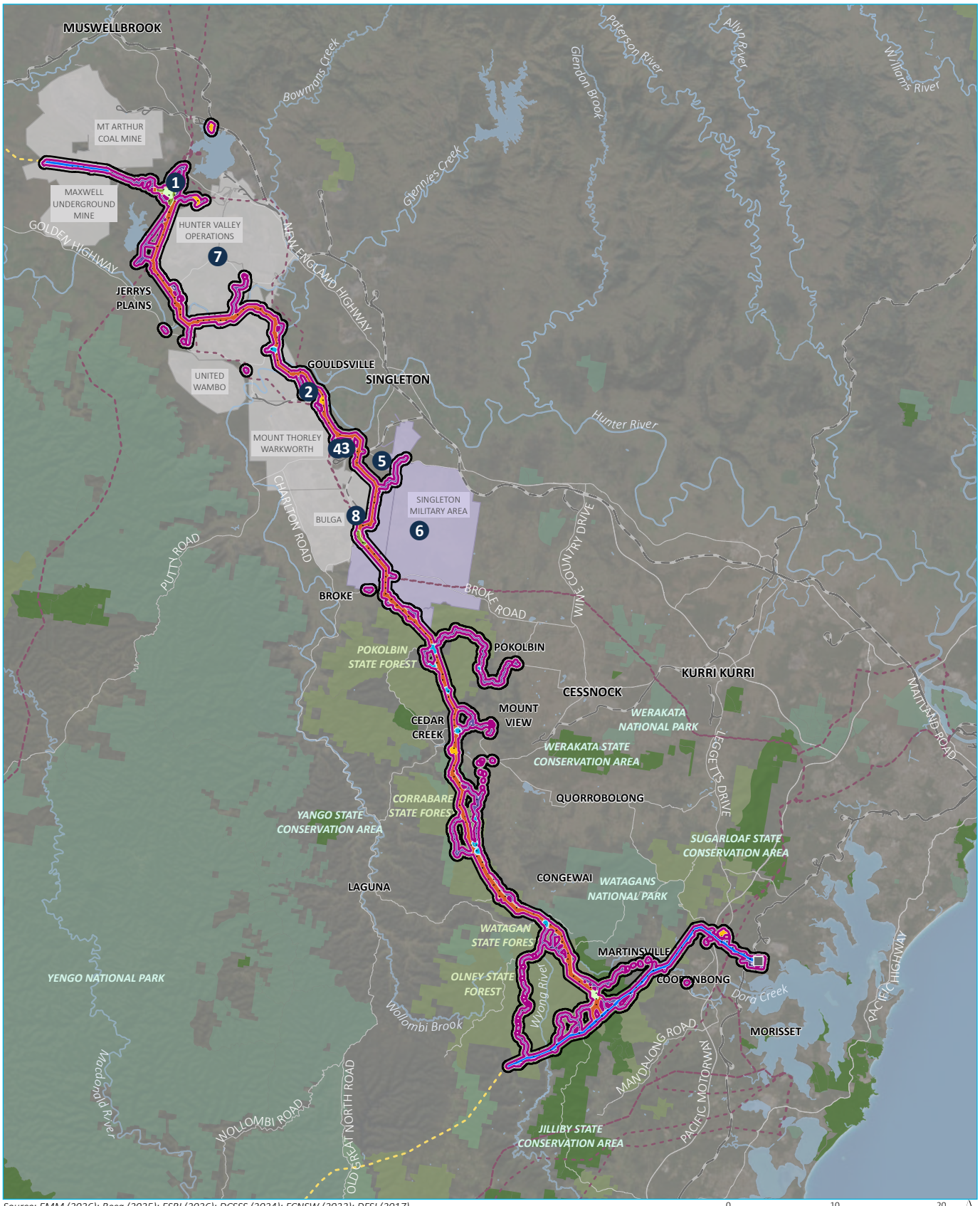
5.14.1 Assessment approach

The methodology for the assessment of soils and contamination impacts of the proposed amendments and refinements is consistent with the methodology detailed in *section 20.1.3* of the EIS.

This consistent methodology was applied to an amended study area for the assessment of soils and contamination impacts, which applied the same criteria as the study area outlined in *section 20.1.2* of the EIS, including:

- the amended project impact area for the assessment of potential impacts of the amended project on soils and land capability
- the amended project impact area with a 500-metre buffer for the assessment of potential contamination impacts.

The amended study area for the assessment of soils and contamination impacts is shown in *Figure 5-8*.



Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); DFSI (2017)

0 10 20 km

GDA2020 MGA Zone 56

N

KEY

Site inspection location

ID	Name
1	Bayswater Power Station
2	Dyno Nobel Warkworth
3	Dyno Nobel Mt Thorley
4	Mount Thorley Industrial Estate
5	Mushroom Composters
6	Singleton Military Area
7	Hunter Valley Operation
8	Bulga Coal Mine Deep Pit

Contamination study area

Soil study area

Amended project impact area

HTP corridor

Switching station

Construction support site

Laydown area

Adjustment to existing transmission line

Upgrades to existing transmission line

Access tracks, road upgrades and intersection upgrades

Existing environment

Power station

330 kV transmission line

500 kV transmission line

Railway

Major road

Named watercourse

Named waterbody

NPWS reserve

State conservation area

State forest

Defence

Energy

Amended soils and contamination study area

Hunter Transmission Project
Amendment Report
Figure 5.8

EMM
creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR024_ContaminationStudyArea\AR024_ContaminationStudyArea_20260213_03.aprx 2/16/2026

5.14.2 Existing Environment

Soil landscapes

Soil landscapes are described in *section 20.2.1* of the EIS. The amendments and refinements to the project would result in minor changes in disturbance to soil landscapes throughout the amended project impact area. The changes to proportions of soil landscapes within the amended project area compared to values presented in the EIS are summarised in Table 5.80.

Table 5.80 Change in proportions of soil landscapes within the amended project impact area

Soil Landscape	Area within exhibited project impact area (ha)	Proportion of exhibited project impact area (%)	Area within amended project impact area (ha)	Proportion of amended project impact area (%)
Watagan	548	23	547	23
Dochra	320	14	336	14
Singleton	151	6	130	5
Ravensworth	164	7	163	7
Sydney Town	158	7	160	7
Wollangambe	148	6	149	6
Branxton	115	5	115	5
Sandy Hollow	111	5	111	5

Soil management units

The amended project would be located within the soil management units (SMUs) identified in the EIS, with minor changes to the proportions of SMUs intersected as a result of changes to 500 kV transmission line infrastructure and changes to access roads and tracks. The proportions of the amended project impact area intersected by each of these SMUs, as well as a comparison to the exhibited project, are outlined in
Table 5.81. No additional soil management units would be intersected by the amended project impact area.

Table 5.81 Changes to the proportion of soil management units in the amended project impact area

SMU	Name	Proportion of project impact area (%)	
		Exhibited project	Amended project
1	Uncleared rises, hills and escarpments	40	46
2	Undulating mid lands	48	44
3	Alluvial Plains	7	3
4	Disturbed and rehabilitated land	5	7

Soil salinity and sodicity

The EIS identified risks for localised salinity hazard in SMU 2, with evidence of salting at Bayswater Power Station, Mount Thorley Warkworth and the Bulga mining complex. The amended project impact area is generally mapped as an area with localised significant sodicity based on mapping maintained by Geological Survey of Australia (2024) and is consistent with the findings of the EIS.

Contamination

The potential current and former contaminant sources within the amended study area are consistent with those assessed within the EIS.

Feedback received through engagement with Origin Energy identified that the description of Eraring Power Station as an area of contamination concern should be updated to include additional potential contaminants of concern. The revised description of the Eraring Power Station as an area of contamination concern is provided in *Table 5.82*, with new text denoted in **bold**.

Table 5.82 Updated description of the Eraring Power Station area of contamination concern

Area of contamination concern	Within project impact area	Reason for concern	Potential sensitive receivers	Potential contaminants of concern	Likelihood for contamination
Eraring Power Station Project connection into existing switchyard	Yes	• Spills from maintenance activities on-site • Potential leaks associated with fuel/transformer oil storage	• Construction/maintenance workers • Aquatic ecosystems • Terrestrial ecosystems near the substation • Off-site agricultural users on adjacent farming land	PCBs, BTEXN, TRH and PFAS **and heavy metals**	High

All other areas of contamination concern would be consistent with the findings of the EIS, with no additional areas of contamination concern being identified as a result of the amended project.

Acid sulfate soils and naturally occurring asbestos

The realignment of the transmission line at Mount Thorley would result in a minor reduction in acid sulfate soil risk from 'low probability / very low confidence' to 'extremely low probability / very low confidence' at this location. The remaining existing environment in relation to acid sulfate soils and naturally occurring asbestos for the amended project would be consistent with the summary included in *section 20.2.2* of the EIS.

5.14.3 Assessment of potential impacts

Construction impacts

Soils

The impacts described in *section 20.3.1* of the EIS in relation to the potential erosion and sedimentation, salinity, acid sulfate soils and naturally occurring asbestos are applicable to the amended construction impact area.

Disturbance of existing contamination

The risk ratings assigned to areas of contamination concern and construction activities based on the potential for the activities to cause exposure of sensitive receivers to contamination outlined in *section 20.3.2* of the EIS are applicable to the amended project.

Consistent with the exhibited project, most of the amended project impact area is considered to have a low contamination risk, with the exception of eight areas of contamination concern within the amended project impact area identified as having a medium to high contamination risk. Disturbance of existing contaminated areas within the amended project impact area would result in consistent potential risks to those described in *section 20.3.2* of the EIS, including in areas such as mining areas, power station areas, Dyno Nobel Mount Thorley, Dyno Nobel Warkworth, the Singleton Military Area and other areas.

Potential risk to the amended project from existing sources of contamination

The potential risks to the amended project from existing sources of contamination would be consistent with those described in *section 20.3.3* of the EIS, including risks from naturally occurring asbestos, soil contamination, surface water and groundwater contamination, and per- and polyfluoroalkyl substances (PFAS). While the realignment of the transmission line at Mount Thorley would result in the HTP corridor moving around 600 metres closer to Dyno Nobel Warkworth and Dyno Nobel Mount Thorley's northern boundary, this would not be significant enough to alter risk ratings described in the EIS.

Potential contamination risk from construction activities

The EIS identified a number of contaminants of concern at the Eraring Power Station including PCBs, BTEXN, TRH and PFAS. During further consultation with Origin, heavy metals have also been identified as a contaminant of concern which may be encountered during the installation of infrastructure at this site. Existing mitigation measures are considered sufficient to manage any heavy metals that may be encountered during this work.

All other potential contamination risks from construction of the amended project would be consistent with those outlined in *section 20.3.4* of the EIS. As above, the realignment of the transmission line at Mount Thorley would result in the HTP corridor moving closer to Dyno Nobel Warkworth and Dyno Nobel Mount Thorley, however this would not be significant enough to alter contamination risks from construction activities described in the EIS.

Operation impacts

Potential impacts associated with soils and contamination risks during operation of the amended project would be consistent with those described in *section 20.*4 of the EIS. Operation of the amended project is unlikely to result in any significant impacts on soils, and contamination risks would remain consistent with those described in the EIS, including increased runoff from new impervious surfaces, accidental spillage of petroleum, chemicals or other hazardous materials, and risks to surface water features and their associated groundwater acquifers.

5.14.4 Updated or additional mitigation measures

There are no changes to soils and contamination mitigation measures compared to the exhibited project. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

5.15 Bushfire

Chapter 21 (Hazards and risk) and *Technical Report 14 – Bushfire risk assessment* of the EIS included assessment of the potential bushfire impacts of the construction and operation of the exhibited project. A bushfire risk assessment addendum has been prepared to identify changes to potential bushfire impacts from construction and operation of the amended project and is provided as *Appendix M (Bushfire risk assessment addendum)* of this Amendment Report. The findings of the bushfire risk assessment addendum are described in this section.

5.15.1 Assessment approach

The bushfire risk assessment addendum prepared to assess the amended project (refer to *Appendix M* (*Bushfire risk assessment addendum)*) was prepared in accordance with the same legislation and guidelines as the exhibited bushfire risk assessment, including *Planning for Bushfire Protection* (NSW RFS 2019), *AS3959:2018 Construction of buildings in bushfire-prone areas* (Australian Standards 2018), and relevant network safety standards.

Study area

The study area used as part of the bushfire risk assessment addendum is largely consistent with that used for the exhibited bushfire risk assessment, with minor changes to account for the amendments and refinements to the project impact area. These amendments and refinements result in minor changes to the overall project impact area, but do not extend outside of the landscape areas assessed and described in the exhibited bushfire risk assessment.

Assessment methodology

The methodology used for assessing bushfire risk as part of the bushfire risk assessment addendum consisted of desktop assessment consistent with the methodology described in the exhibited bushfire risk assessment. No additional field surveys were required. The proposed amendments and

refinements were screened for relevance to bushfire risk, and subsequently assessed due to their potential to alter risk profiles.

The proposed works at Eraring substation that were included in the EIS were not assessed in the exhibited bushfire risk assessment due to the upgrades being confined to the augmentation and modifications of the existing substation. However, the changes to substation infrastructure as part of the amended project at the Eraring substation have been incorporated into the bushfire risk assessment addendum due to the increase in the amended project impact area at this location.

5.15.2 Existing environment

The existing bushfire environment of the exhibited project, including bushfire landscape context, bushfire history, ignition sources and fire behaviour potential, does not change as a result of the amended project.

5.15.3 Assessment of potential impacts

Construction impacts

Risk of bushfire from the project

Risks to public safety

Consistent with the EIS, the amended project would have negligible impacts on the existing landform, vegetation cover and weather conditions within the amended construction impact area. Although vegetation clearance and construction works would be undertaken within parts of the HTP corridor, at switching station sites and at construction support sites, these works are not at a scale which would materially alter risks to public safety from bushfires compared to the exhibited project.

Risks to bushfire ignition

Some construction activities have potential to start fires, meaning diligent control of potential fire ignition risks during construction would be required. Construction activities with the potential to ignite fires were outlined in Table 21.2 of the EIS. These potential ignition sources are applicable to the amended project.

Risk to the project from bushfire

Bushfire safety risk to the construction workforce

The amended project would traverse bushfire prone land, consistent with the exhibited project. No changes to the bushfire safety risks identified in the EIS would occur as a result of the amended project, and the implementation of the mitigation measures included in *section 5.15.4* would ensure the bushfire risk to workers during construction would be as low as reasonably practicable, consistent with the EIS.

Bushfire risk to temporary worker accommodation facilities

The temporary worker accommodation at the Wollombi Road construction support site as part of the amended project would include modular portable building types and would require the maintenance of an APZ to 'Bushfire Attack Level' (BAL) 10 specification, consistent with the temporary worker

accommodation included as part of the exhibited project at the Hebden Road, Gouldsville Road and Freemans Drive construction support sites. To meet a BAL of 10 at the Wollombi Road construction support site temporary worker accommodation, an APZ (including vegetation to be cleared) of 67 metres is required due to the surrounding forested topography, which would be an increase of 36 metres from the exhibited project.

Table 5.83 below provides an overview of the APZ associated with the Wollombi Road construction support site as amended. The APZ detailed would only apply to the temporary worker accommodation, with APZs for temporary site offices and laydown uses at the site remaining consistent with those previously detailed in *section 21.3.1* of the EIS.

Table 5.83 APZ required to achieve BAL 10 compliance at Wollombi Road construction support site for the amended project

Direction from boundary	APZ width (exhibited project)	APZ width (amended project)
North	36 metres (BAL10 – temporary site offices)	67 metres (BAL 10 – accommodation buildings) 36 metres (BAL10 – temporary site offices)
East	36 metres (BAL10 – temporary site offices)	67 metres (BAL 10 – accommodation buildings) 36 metres (BAL10 – temporary site offices)
South	36 metres (BAL10 – temporary site offices)	67 metres (BAL 10 – accommodation buildings) 36 metres (BAL10 – temporary site offices)
West	36 metres (BAL10 – temporary site offices)	67 metres (BAL 10 – accommodation buildings) 36 metres (BAL10 – temporary site offices)

Bushfire risk at construction support sites

No change to the location of, or APZ requirements for, the other construction support sites would occur as part of the amended project.

Operation impacts

Risk of bushfire from the project

Risks to public safety

Consistent with the EIS, electricity transmission infrastructure that forms part of the amended project, including transmission lines, transmission towers and switching stations, would have a negligible impact on the factors which affect bushfire severity, including fuels, landform and weather.

The maintenance of existing access tracks, and the addition of new access tracks (for accessing transmission towers and easements) associated with the amended project would improve emergency access and egress for firefighting agencies undertaking fire management operations

within and surrounding the amended project impact area, consistent with the risks to public safety identified for the exhibited project.

Likelihood of bushfire ignition during operation

Potential ignition sources from operation of high voltage transmission infrastructure identified in the EIS would not change as a result of the amended project. With systematic risk controls addressing each of the fire ignition risks in place, the likelihood of fire ignition and spread during operation would be very low. These risk controls and management measures are outlined in *section 5.15.4* and remain unchanged from the EIS.

Risk to emergency egress and evacuation

No changes to the risk to emergency access and evacuation would occur as a result of the amended project.

Similar to the project design for the exhibited project, the amended project has, as far as practicable, avoided the colocation of the HTP corridor with major strategic access and egress roads. Consistent with the EIS, the amended project would not prevent firefighters from using strategic trails for fire management operations, including:

- Broken Back Road in the Pokolbin State Forest
- North Road / Trig Road / Cabans Road in the Corrabare State Forest
- Watagan Forest Road and Wollombi Forest Road in the Olney State Forest.

The amended project would continue to provide additional access tracks (for accessing transmission towers and easements) and some upgrades to existing roads to provide improved access for operation. These works would improve access and egress in the area surrounding the amended operation impact area. In relation to the Olney switching station, new access tracks would provide access around the western side of the switching station to provide strategic access for firefighting in that location.

Risk to the project from bushfire

Bushfire safety risk to workforce

Operational bushfire safety risks to the workforce as a result of the amended project would remain unchanged to those identified in the exhibited bushfire risk assessment.

Exposure to bushfire impact – 500 kV towers and transmission lines

Risks to project infrastructure from bushfire during operation of the amended project are anticipated to be low, consistent with the EIS. 500 kV transmission line infrastructure and easements of the amended project are designed to achieve high network resilience to bushfire impact, consistent with the EIS. The transmission line design of the amended project, including the materials selected for project infrastructure, contributes to the provision of passive resilience of the project to bushfire.

Exposure to bushfire impact – switching stations

The location of the Olney and Bayswater South switching stations as part of the amended project remain unchanged from the EIS, and no change to the APZ requirements have been identified. The footprint of the changes to the Eraring substation as part of the amended project sit outside areas mapped as being bushfire prone, and as a result, do not require consideration of an APZ.

Transmission system outage potential due to bushfire impact

The potential for the amended project to experience transmission system outages from a bushfire is consistent with the EIS. Consistent with the EIS, vegetation with mature growth heights up to two metres can remain as part of the amended project, while vegetation exceeding two metres would be managed to maintain these clearance heights.

5.15.4 Updated or additional mitigation measures

No additional operational bushfire mitigation measures are required as a result of the amendments and refinements to the project. Commitments to vegetation management, hazard-tree control, access/egress maintenance and network reliability practices identified in the EIS remain appropriate, with additional mitigation measures identified to manage bushfire risk associated with temporary worker accommodation.

The updated mitigation measures that would be implemented for the amended project to avoid and/or minimise potential bushfire impacts are listed in *Table 5.84.* The changes are presented in **bold** text (for new text) or strikethrough text (for deleted text). The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

Table 5.84 Updated mitigation measures - bushfire

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
BF1	Bushfire emergency and evacuation	A bushfire emergency management and evacuation plan (BEMEP) will be prepared and implemented in accordance with the risk management measures detailed in *Chapter 7 (Management)* of *Technical Report 14 - Bushfire risk assessment* and the requirements of NSW RFS. The BEMEP will outline procedures for: • monitoring forecast fire danger ratings, alerts and warnings, and any fire incidents, and communicating this information to the construction and operational workforce • evacuating the project impact area in response to fire warnings or incidents, including protocols for authorising and supervising evacuations and identifying off-site refuge locations and evacuation routes (including alternative emergency evacuation routes in forested areas) • reporting fire and smoke sightings to the NSW RFS, FCNSW, and the Singleton Military Area Range Control • determining when it is safe to returns to the project impact area following an evacuation • training for emergency response and evacuation management.	Detailed design Construction Operation	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
BF2	Bushfire	A bushfire safety system will be prepared and implemented in accordance with the risk management measures detailed in *Chapter 7 (Management)* of *Technical Report 14 - Bushfire risk assessment*. The bushfire safety system will detail restrictions and procedures to prevent accidental fire ignition during construction and operation, and contingency arrangements for workers to extinguish accidental fire ignitions at the source while the fire can still be controlled with portable extinguishers and on-site equipment. In particular, the bushfire safety system will include: • engagement protocols with NSW RFS and FCNSW fire teams • a hot works management system for implementation during construction • a smoking prohibition and a designated smoking area protocol • fire-safe work procedures for earthmoving and drilling works • protocols for driving and parking vehicles off established roads to minimise the potential for accidental fire ignition from vehicle exhausts • measures to minimise worker exposure to bushfire risk, including exclusion of works during elevated fire danger conditions, active fire weather and incident monitoring, and a clearly communicated bushfire evacuation plan with primary and alternative trafficable routes.	Detailed design Construction Operation	All locations
BF3	Bushfire (fire prevention quality assurance)	A works quality auditing process will be applied to construction contractors and will incorporate audit criteria assessing the implementation of the required fire prevention, preparedness and response-readiness measures detailed in *Chapter 7 (Management)* of *Technical Report 14 - Bushfire risk assessment*.	Construction	All locations

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
BF4	Bushfire (project design, operation and maintenance)	The project will be designed, operated and maintained to reduce bushfire risk to and from project infrastructure in accordance with the applicable standards detailed in *Chapter 7 (Management)* of *Technical Report 14 - Bushfire Risk Assessment*, including: • transmission lines will be designed to meet or exceed design standards in Australian Standard AS/NZS 7000:2016 Overhead line design • easements will meet or exceed design standards in Australian Standard AS/NZS 7000:2016 Overhead line design – Appendix CC • switching stations will meet or exceed design standards in Australian Standard AS 2067:2008 Substation and high voltage installations exceeding 1 kV AC • maintenance and operation of the transmission infrastructure will be carried out in line with Australian Standard AS 5577:2013 Electricity Network Safety Management Systems • asset management will be carried out in line with ISO 55001:2014 Asset Management – Management Systems – Requirements.	Detailed design Construction Operation	All locations
BF5	Bushfire (asset protection zones)	APZs will be established for Bayswater South and Olney switching stations, temporary worker accommodation and project office buildings at construction support sites, in accordance with the requirements of Planning for Bushfire Protection 2019 (NSW RFS 2019) and NSW RFS standards for APZ, and as detailed in *Technical Report 14 -Bushfire Risk Assessment*. Routine inspection and control of vegetation will be carried out for APZ maintenance.	Detailed design Construction Operation	Construction support sites Switching stations
BF6	Bushfire (Olney switching station)	A fire trail will be installed and maintained within the APZ on the western side of Olney switching station, providing connection to Watagan Forest Road.	Construction Operation	Olney switching station
BF7	Bushfire (vegetation maintenance)	Cyclic inspections and control of vegetation within transmission line easements and hazard tree zone will be carried out in accordance with Transgrid standard for Maintenance of Easements and Access Tracks.	Construction Operation	HTP corridor and hazard tree zone

Reference	Impact	Mitigation measures	Timing	Relevant location(s)
BF8	Bushfire (firefighting water supply)	Where reticulated (mains) water supply is not available, a static water supply (tank) will be provided ~~at~~ **in proximity to, but outside of the boundary of** ~~Bayswater South and~~ Olney switching stations**, at a location agreed with FCNSW,** in accordance with the requirements of *Planning for Bushfire Protection 2019* (minimum capacity of 20,000 litres). **Water supply at the Bayswater South switching station will be through the utilisation of nearby non-potable open water sources in close proximity.** Design details will be confirmed during detailed design. Where reticulated (mains) water supply is available, hydrant spacing, design and sizing is to comply with the relevant clauses of AS 2419.1:2021.	Detailed design Construction Operation	Bayswater South and Olney switching stations
BF9	**Bushfire protection (asset protection zone)**	**The temporary worker accommodation within the Wollombi Road construction support site will be designed and located to ensure APZs in all directions achieve a BAL of no greater than BAL 10.**	**Detailed design Construction**	**Wollombi Road construction support site**
BF10	**Bushfire**	**Where temporary worker accommodation is proposed, a site manager is required on site who is aware of the bushfire risk and emergency response procedures during the construction phase of the project.**	**Construction**	**Temporary worker accommodation**

5.16 Aviation

Chapter 21 (Hazards and Risk) and *Technical Report 16 – Aviation impact assessment* of the EIS assessed the potential impacts of the construction and operation of the exhibited project relating to aviation. Additional assessment has been undertaken to identify changes to aviation impacts associated with the amended project. The findings of the additional assessment are described in this section.

5.16.1 Assessment approach

The methodology for the updated aviation impact assessment of the amended project is consistent with that undertaken for the exhibited project.

Study area

The study area used to assess the potential impacts of the amended project is largely consistent with that used for the exhibited aviation impact assessment, with minor changes to account for the amendments and refinements to the project impact area. The study area considers aviation facilities and operations up to 30 nautical miles (or around 56 kilometres) from the amended project impact area.

Assessment methodology

The proposed amendments and refinements were screened for relevance to aviation-related risks and impacts and were compared to the findings of the exhibited aviation impact statement. Amendments and refinements considered relevant to the assessment of potential impacts to aviation included changes to the 500kV transmission infrastructure.

5.16.2 Existing environment

The existing environment as it relates to aviation has not changed as a result of the amended project. The amendments and refinements to the project, particularly the realignment of the transmission line at Mount Thorley and Gouldsville, would not change the certified aerodromes within 30 nautical miles (55.56 kilometres), or non-certified aerodromes within 5.4 nautical miles (10 kilometres) of the amended project impact area.

Amendments and refinements would similarly not introduce any additional types of airspace, interact with any additional types of existing aerial operations or air routes within or near the amended project impact area.

Manual of Standards Part 173 – Standards Applicable to Instrument Flight Procedure Design (Civil Aviation Safety Authority 2022) prescribes that a minimum obstacle clearance of 1000 feet (305 metres) below the published lowest safe altitude (LSALT) be maintained along each air route. A protection area 13 kilometres (seven nautical miles) laterally either side of an air route is used to assess the LSALT for the air route. Consistent with the EIS, there are nine air routes overhead and

within seven nautical miles of the amended project impact area (refer to *Table 5* of *Technical Report 16 - Aviation impact assessment* of the EIS).

5.16.3 Assessment of potential impacts

Construction impacts

Amendments and refinements to the project would not change the potential construction-related aviation risks of the project. Consistent with the EIS:

- the amended project would not impact any obstacle limitation surface (OLS) from the construction of transmission line towers and/or the use of cranes
- potential impacts to aerial operations from the construction of transmission towers and the use of cranes would be negligible
- no procedures for air navigation services – aircraft operations (PANS-OPS) surfaces would be infringed during the construction of the project by transmission towers or cranes
- risks to aerial operations would remain unchanged from the EIS and would be minimised with the implementation of mitigation measures provided in *Appendix D (Updated mitigation measures)*.

Operation impacts

Consistent with the EIS, the transmission line and transmission towers would not infringe on any certified airport OLS or PANS-OPS surfaces during operation. Similarly, operational infrastructure would not impact air routes, and would not impact aviation navigation and communication facilities which are a sufficient distance from the amended operation impact area (the closest being at Maitland Aerodrome).

Impacts to aerial operation from the amended project would remain unchanged from the potential impacts identified in the EIS. It is expected that ongoing consultation with landholders would identify areas where regular aerial application operations occur. The operation of the project is not anticipated to impact local aerial operations.

The operation of the amended project is not anticipated to impact aerial firefighting operations or aeromedical services. Most emergency aviation services organisations have formal risk management programs to assess the risks associated with their operations and to implement applicable treatments in order to maintain an acceptable level of safety.

5.16.4 Updated or additional mitigation measures

No additional mitigation measures to manage the potential aviation risks of the project are required as a result of the amendments and refinements to the project. However, some changes to mitigation measures have been included with regards to the management of potential aviation impacts of the project in response to feedback received during exhibition of the EIS.

The consolidated list of mitigation measures for the amended project, including those changes made in response to feedback received during exhibition of the EIS, are provided in *Appendix D (Updated mitigation measures)*.

5.17 Air quality

Chapter 22.1 (Air quality) and *Technical Report 18 – Air quality and greenhouse gas impact assessment* of the EIS included assessment of the potential air quality impacts from construction and operation of the exhibited project. Additional assessment has been undertaken to identify changes to air quality impacts associated with the amended project. The findings of the additional assessment are described in this section.

5.17.1 Assessment approach

Legislation, plans, policies and guidelines

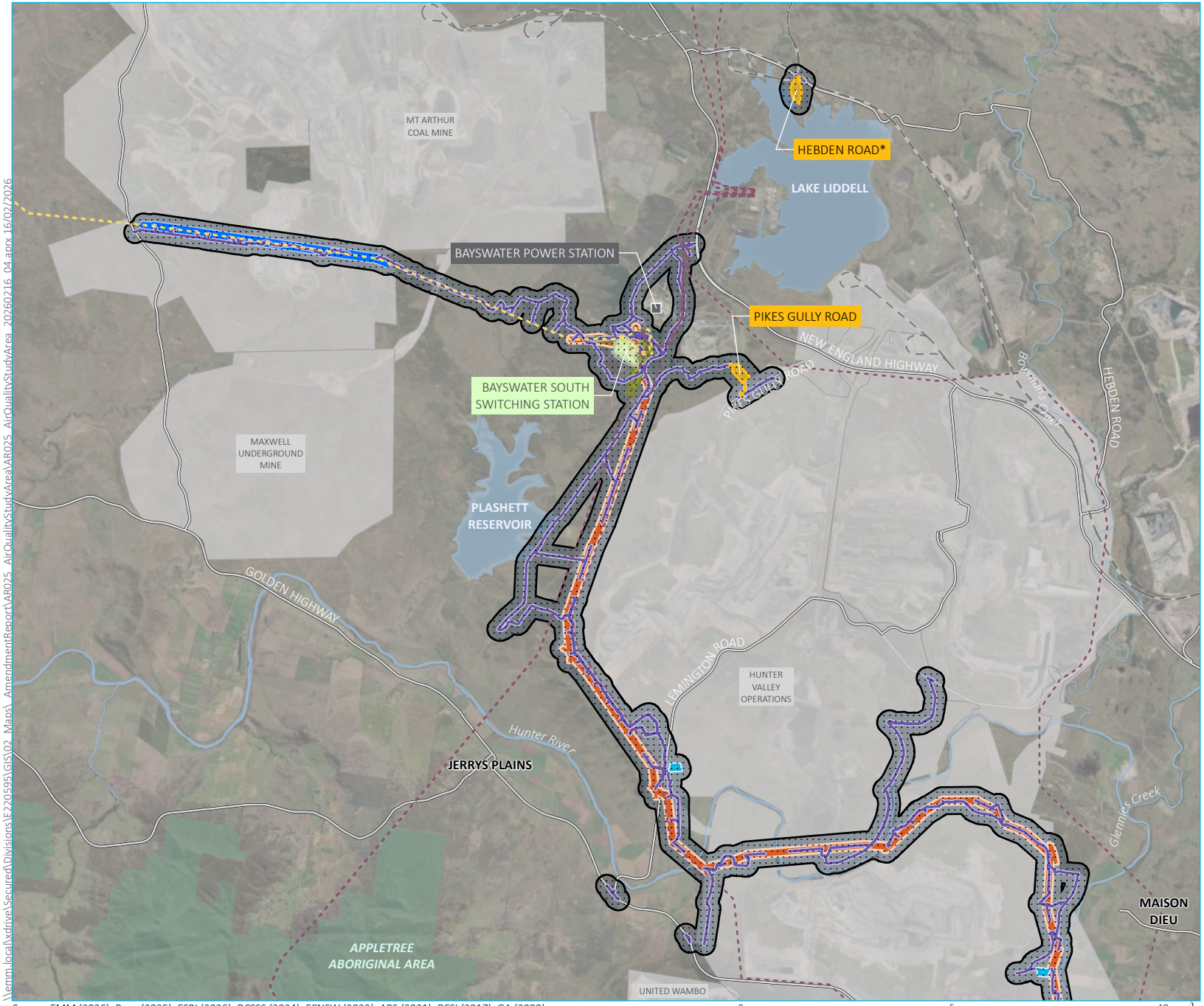
The assessment of air quality impacts for the amended project has been prepared in accordance with consistent legislation, policies, plans and guidelines as the exhibited air quality and greenhouse gas assessment.

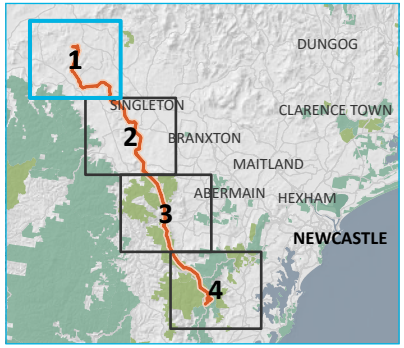
Study area

The methodology for defining the amended air quality study area was consistent with the air quality study area outlined in *section 21.1.1* of the EIS. The amended air quality study area includes:

- a 250-metre buffer to the amended project impact area
- sealed public roads within 250 metres of amended project elements which would be used by construction vehicles to access the amended project impact area and the adjoining land up to 50 metres from the road.

The amended air quality study area is shown in *Figure 5-9*.





KEY

- Amended air quality study area

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy

Amended air quality study area
Map 1 of 4

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

0 5 10 km

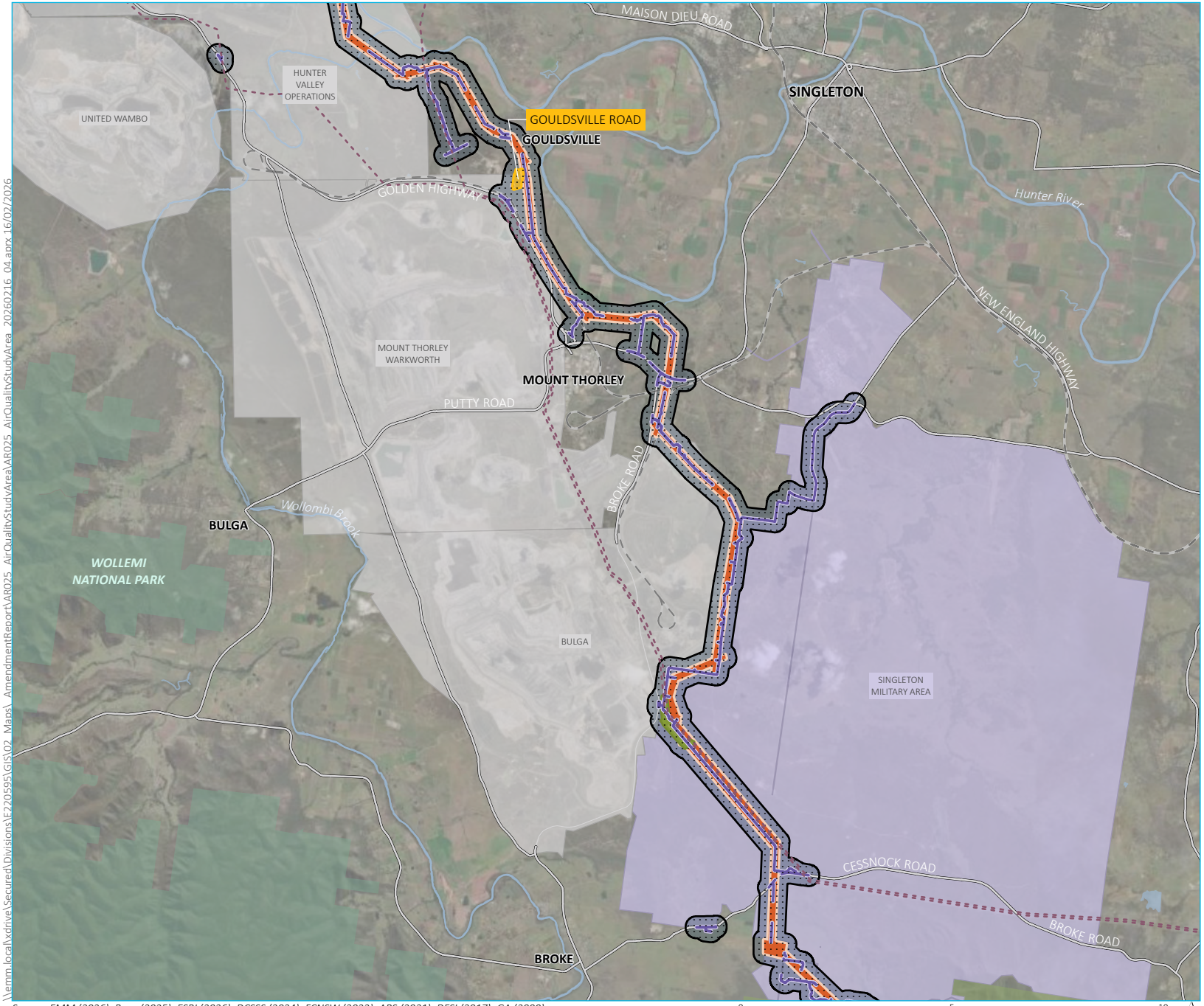
GDA2020 MGA Zone 56

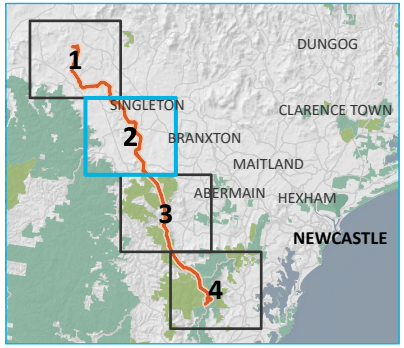
N

Hunter Transmission Project
Amendment Report
Figure 5.9

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR025_AirQualityStudyArea\AR025_AirQualityStudyArea_20260216_04.aprx 16/02/2026





KEY

- Amended air quality study area

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy

Amended air quality study area
Map 2 of 4

Hunter Transmission Project
Amendment Report
Figure 5.9

EMM
creating opportunities

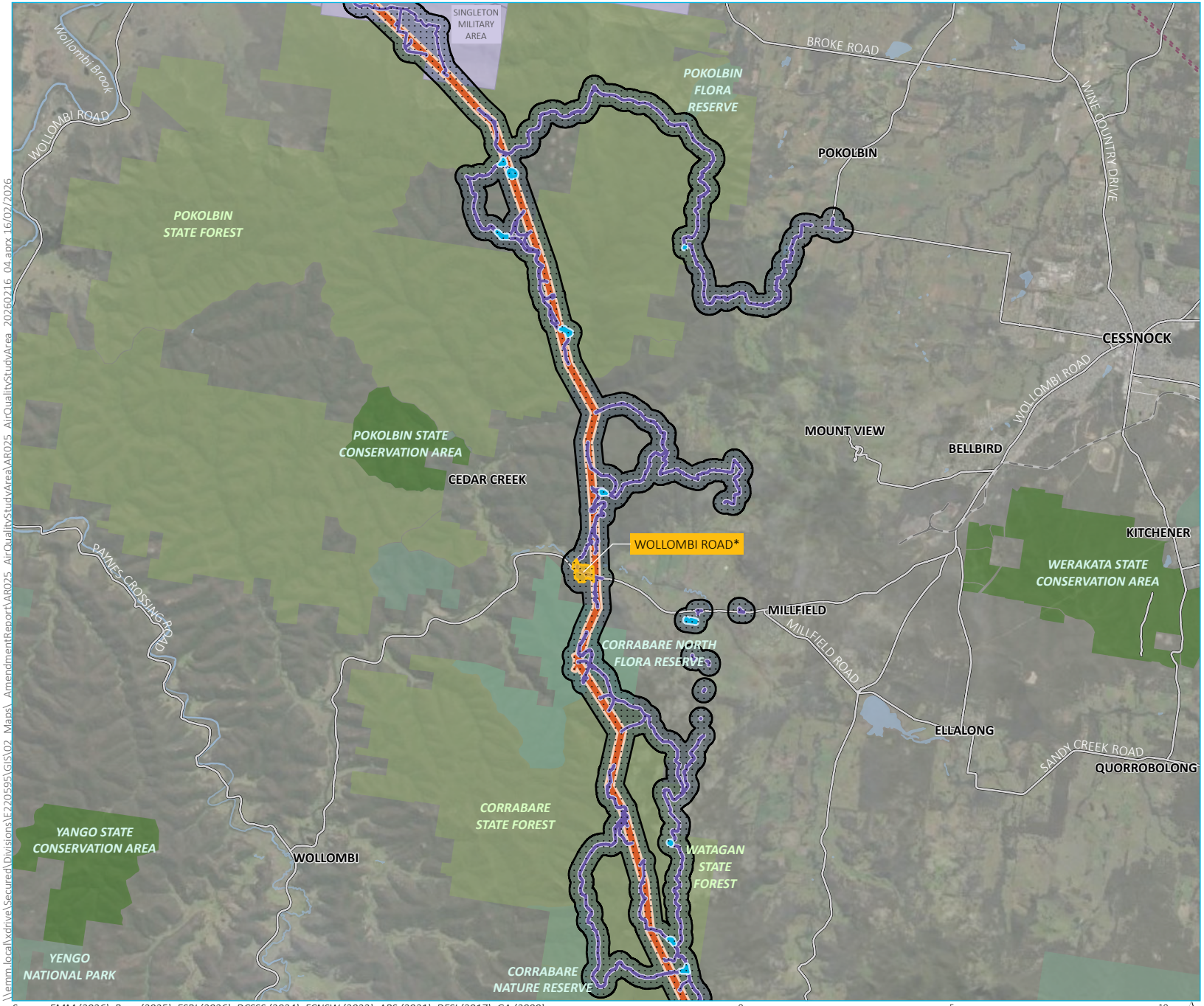
Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

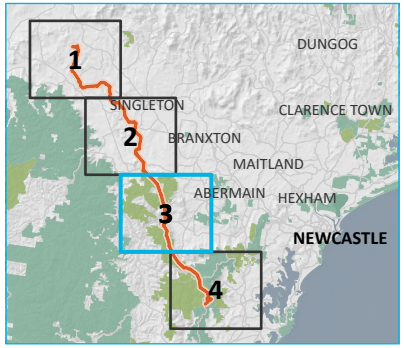
0 5 10 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR025_AirQualityStudyArea\AR025_AirQualityStudyArea_20260216_04.aprx 16/02/2026





KEY

- Amended air quality study area

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence

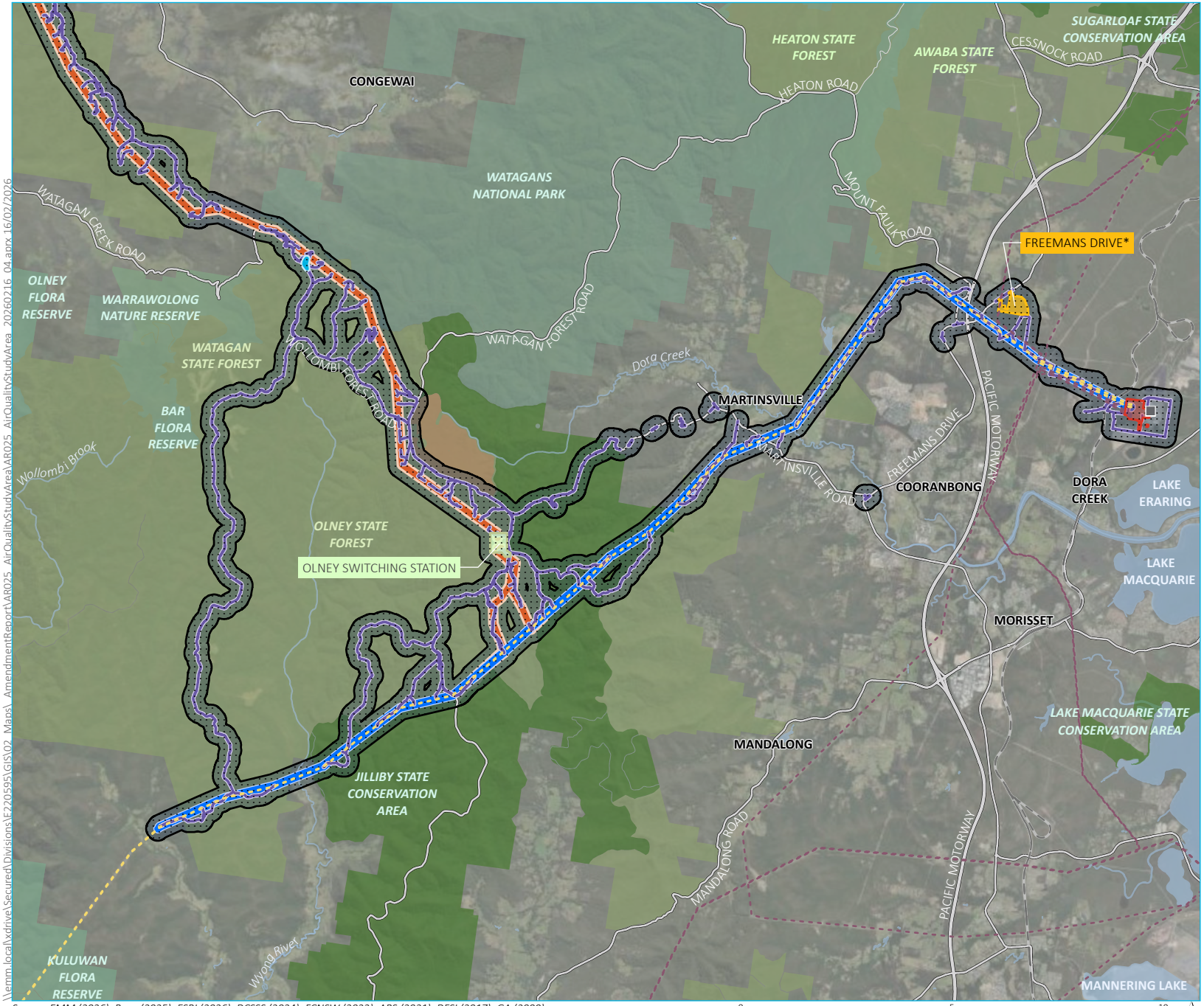
Amended air quality study area
Map 3 of 4

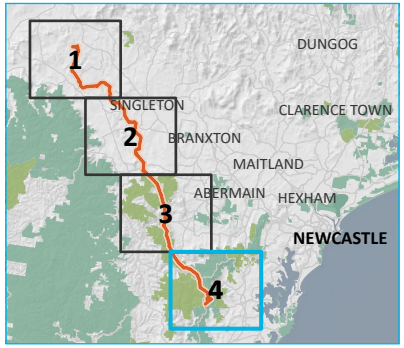
Hunter Transmission Project
Amendment Report
Figure 5.9

EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR025_AirQualityStudyArea\AR025_AirQualityStudyArea_20260216_04.aprx 16/02/2026





KEY

Amended air quality study area

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Minor road
- Named watercourse
- Named waterbody
- Recreation area
- NPWS reserve
- State conservation area
- State forest

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

0 5 10 km

GDA2020 MGA Zone 56

N

Amended air quality study area
Map 4 of 4

Hunter Transmission Project
Amendment Report
Figure 5.9

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR025_AirQualityStudyArea\AR025_AirQualityStudyArea_20260216_04.aprx 16/02/2026

Assessment methodology

The methodology for the assessment of potential air quality impacts of the amended project is generally consistent with the methodology detailed in *section 22.1.1* of the EIS. The assessment methodology included:

- an updated screening assessment to identify any new human and ecological receivers near the amended project impact area within the buffers set out in *Guidance on the assessment of dust from demolition and construction* (Institute of Air Quality Management (IAQM) 2024) (IAQM guidance). The screening assessment conducted in line with the IAQM guidance in the EIS remains applicable to the amended project, in which a detailed construction dust assessment should be undertaken if:
  - a human receptor is located within 250 metres of the amended construction impact area
  - an ecological receptor is located within 50 metres of the amended construction impact area
  - a human/ecological receptor is within 50 metres of a sealed road used by construction vehicles and within 250 metres from a work site entrance
- updates to the qualitative risk-based assessment of potential dust impacts during construction of the amended project for the updated human and ecological receivers in accordance with IAQM guidance for amenity-based, human health and ecological impacts.

While not strictly defined in the IAQM guidance, consideration has also been given to receivers within 250 metres from unsealed access tracks as well as proposed road upgrades along unsealed roads. This has been carried out to respond to submissions received from the community during public exhibition of the EIS relating to concerns about dust impacts resulting from road upgrades and the use of unsealed roads in proximity to residential and commercial receivers, including roads like Pokolbin Mountains Road.

Operational air quality impacts for the amended project were reviewed and addressed quantitatively, consistent with the exhibited air quality and greenhouse gas impact assessment.

5.17.2 Existing environment

The existing air quality environment for the amended project is largely consistent with that outlined in *section 22.1.2* of the EIS, including existing topography, land use and ambient air quality.

The screening assessment carried out as part of the construction dust assessment for the amended project showed 75 human receivers within 250 metres of the amended project impact area (compared to 31 human receivers for the exhibited project impact area). This increase is mainly due to error in the assessment of Pokolbin Mountains Road in the EIS (refer to *section 3.4.1* of this Amendment Report for more information), changes in proposed unsealed access tracks and the inclusion of some additional access track upgrades.

These 75 human receivers include 61 residential receivers, eight commercial receivers, one utility receiver, and six recreational receivers. Consistent with the EIS, human receivers are largely within 250 metres of the transmission towers or access tracks, making up 62 of the receivers identified, with residential receivers within 250 metres of construction support sites and laydown areas making up 13 of the receivers identified.

Sensitive ecological receivers in proximity to the amended project impact area are largely consistent with those identified in the EIS, with minor adjustments to ecological receivers in State forests to account for the amended locations of laydown areas and changes to access tracks.

5.17.3 Assessment of potential impacts

Construction impacts

Consistent with the EIS, an assessment of potential dust impacts from the construction of the amended project included the following dust-generating activities in line with IAQM guidance:

- demolition, which is any activity that involves the removal of existing structures
- earthworks, which covers the processes of soil stripping and vegetation removal, ground levelling, excavation and landscaping
- construction, which is any activity that involves the provision of new transmission infrastructure, including the construction of towers, transmission lines, switching stations, access tracks and construction support sites. This would also involve the use of helicopters during stringing activities
- track-out, which involves the transport of dust and dirt by vehicles from the construction site and unsealed roads onto the public road network (sealed roads), where it may be deposited and then re-suspended by vehicles using the network. Therefore, track-out is only considered for receivers along sealed roads which connect to unsealed roads used for access to the amended construction impact area.

The project elements carried forward to the detailed construction dust assessment based on the initial screening in line with IAQM guidance for the amended project based on their proximity to human or ecological receivers (within 250 metres and 50 metres respectively) align with those carried forward to the detailed assessment as part of the EIS. Road upgrades of unsealed roads have been included alongside access tracks. As such, the project elements identified for detailed construction dust assessment include:

- Bayswater South switching station
- Olney switching station
- Hebden Road construction support site
- Pikes Gully Road construction support site
- Gouldsville Road construction support site
- Wollombi Road construction support site
- Freemans Drive construction support site
- Hayes Road laydown area
- Lemington Road laydown area
- transmission line, including access tracks and road upgrades.

The anticipated dust generating activities from these project elements, including demolition activities, earthworks quantities, construction activities and vehicle track-out, would be consistent with those outlined in *section 22.1.3* of the EIS, with the exception of minor increases in the

anticipated earthworks requirements for the transmission line. These increases account for the realignment of the transmission line in Mount Thorley and Gouldsville and changes to the disturbance area at Olney.

The estimated changes to earthworks volumes for the amendments to the transmission line, expressed as a total for three tower pads, are as follows:

- an increase of 294 cubic metres in the mean excavation volume to a total of 3235 cubic metres, increasing from 2941 cubic metres for the exhibited project
- an increase of 250 cubic metres in the mean filling volume to a total of 2750 cubic metres, increasing from 2500 cubic metres for the exhibited project.

In line with the assessment methodology carried out in the EIS, the sensitivity of nearby human and ecological receivers was combined with the anticipated magnitude of dust emissions from dust-generating activities at each of the assessed project elements to determine an overall unmitigated risk of dust impacts during construction of the amended project for receivers within the relevant buffer distances.

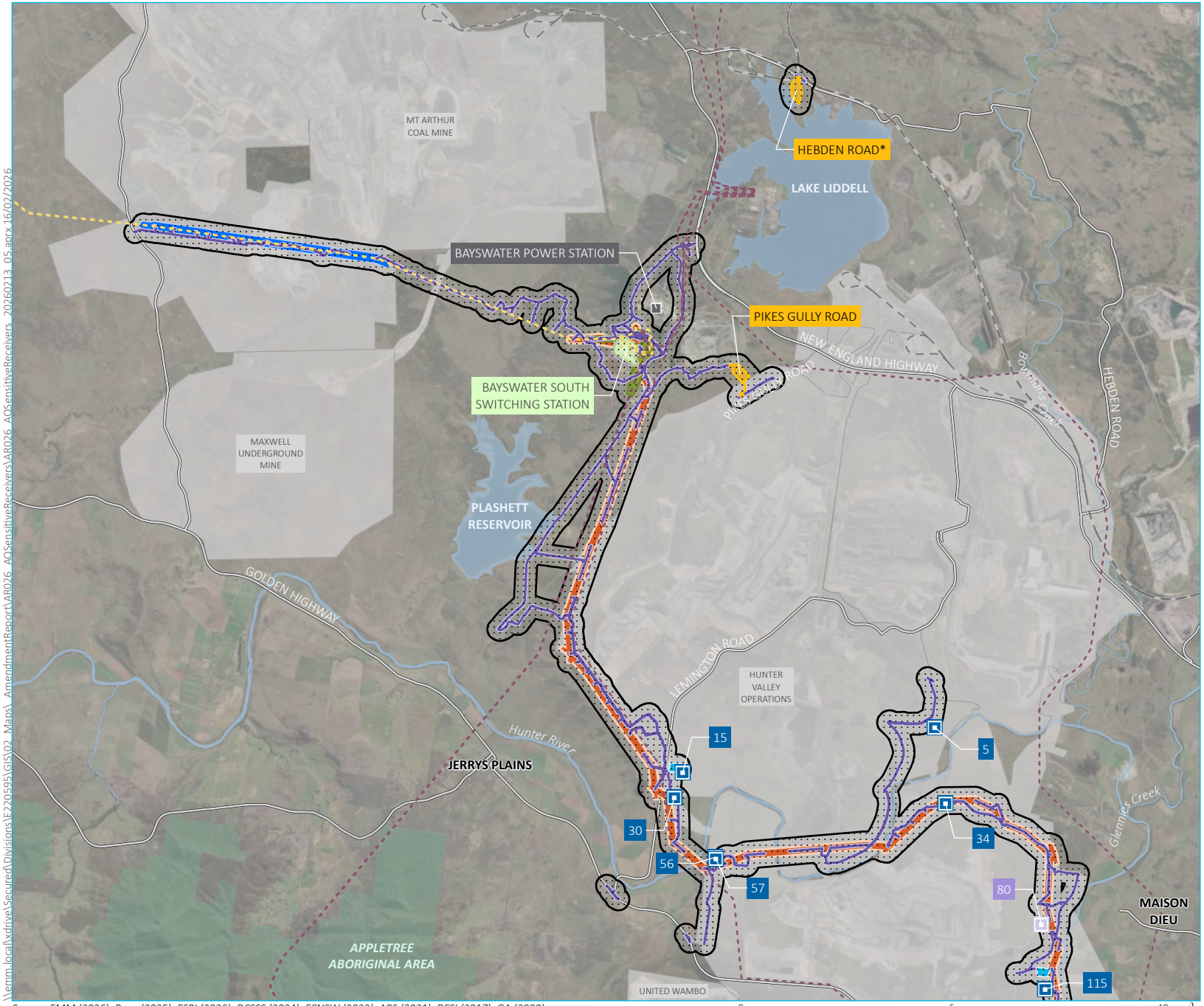
A summary of dust risks from the construction dust assessment of the amended project with and without mitigation is included in Table 5.85. The unmitigated risk ratings presented are useful to help focus and target mitigation measures (refer to *section 5.17.4*), such that all impacts from the risks identified would be negligible. The unmitigated and mitigated dust risks presented in *Table 5.85* are consistent with the ratings outlined in the EIS for all project elements (i.e. there is no change), however the applicable sensitive receivers have been updated in line with the approach to considering receivers within 250 metres from unsealed access tracks as well as proposed road upgrades along unsealed roads. These changes from the EIS are highlighted in **bold** text. The locations of human receivers assessed in *Table 5.85* for unmitigated and mitigated risk of dust impacts as part of the construction dust assessment are shown in *Figure 5-10*.

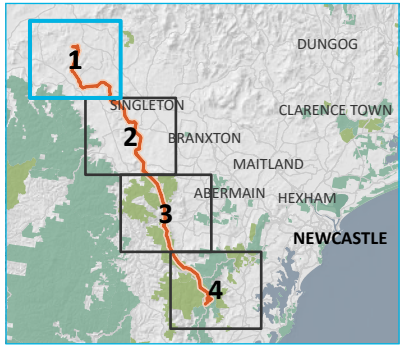
Table 5.85 Construction dust assessment summary for the amended project

Activity	Unmitigated risk of dust impacts			Mitigated risk of dust impacts	Applicable sensitive receivers
	Dust soiling	Human health	Ecological		
Bayswater South switching station					
Demolition	-	-	-	-	Ecological receivers
Earthworks	-	-	Medium	Negligible	
Construction	-	-	Medium	Negligible	
Track-out	-	-	-	-	
Olney switching station					
Demolition	-	-	-	-	Ecological receivers
Earthworks	-	-	Low	Negligible	
Construction	-	-	Low	Negligible	
Track-out	-	-	-	-	

Activity	Unmitigated risk of dust impacts			Mitigated risk of dust impacts	Applicable sensitive receivers
	Dust soiling	Human health	Ecological		
Hebden Road construction support site					
Demolition	-	-	-	-	Ecological receivers
Earthworks	-	-	Low	Negligible	
Construction	-	-	Low	Negligible	
Track-out	-	-	-	-	
Pikes Gully Road construction support site					
Demolition	-	-	-	-	Ecological receivers
Earthworks	-	-	Medium	Negligible	
Construction	-	-	Medium	Negligible	
Track-out	-	-	Medium	Negligible	
Gouldsville Road construction support site					
Demolition	-	-	-	-	Ecological receivers
Earthworks	-	-	Medium	Negligible	
Construction	-	-	Medium	Negligible	
Track-out	-	-	-	-	
Wollombi Road construction support site					
Demolition	-	-	Negligible	Negligible	Ecological receivers
Earthworks	-	-	Low	Negligible	
Construction	-	-	Low	Negligible	
Track-out	-	-	-	-	
Freemans Drive construction support site					
Demolition	Negligible	Negligible	Negligible	Negligible	One residential receiver Ecological receivers
Earthworks	Low	Low	Low	Negligible	
Construction	Low	Low	Low	Negligible	
Track-out	Medium	Low	Low	Negligible	

Activity	Unmitigated risk of dust impacts			Mitigated risk of dust impacts	Applicable sensitive receivers
	Dust soiling	Human health	Ecological		
Hayes Road laydown area					
Demolition	-	-	-	-	Nine residential receivers Two commercial receivers Ecological receivers
Earthworks	Negligible	Negligible	Negligible	Negligible	
Construction	Low	Low	Low	Negligible	
Track-out	Low	Medium	Low	Negligible	
Lemington Road laydown area					
Demolition	-	-	-	-	One residential receiver Ecological receivers
Earthworks	Low	Low	Low	Negligible	
Construction	Low	Low	Low	Negligible	
Track-out	-	-	-	-	
Transmission line, including access tracks					
Demolition	-	-	-	-	**49 residential receivers** **Six commercial receivers** **One utility receiver** **Six recreational receivers** Ecological receivers ~~29 human receivers~~
Earthworks	Low	Low	Low	Negligible	
Construction	Low	Low	Low	Negligible	
Track-out	Low	Medium	Medium	Negligible	





KEY

- Amended air quality study area

Sensitive receiver (receiver ID)

- Industrial
- Residential

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy

Locations of sensitive human receivers assessed as part of the construction dust assessment
Map 1 of 4

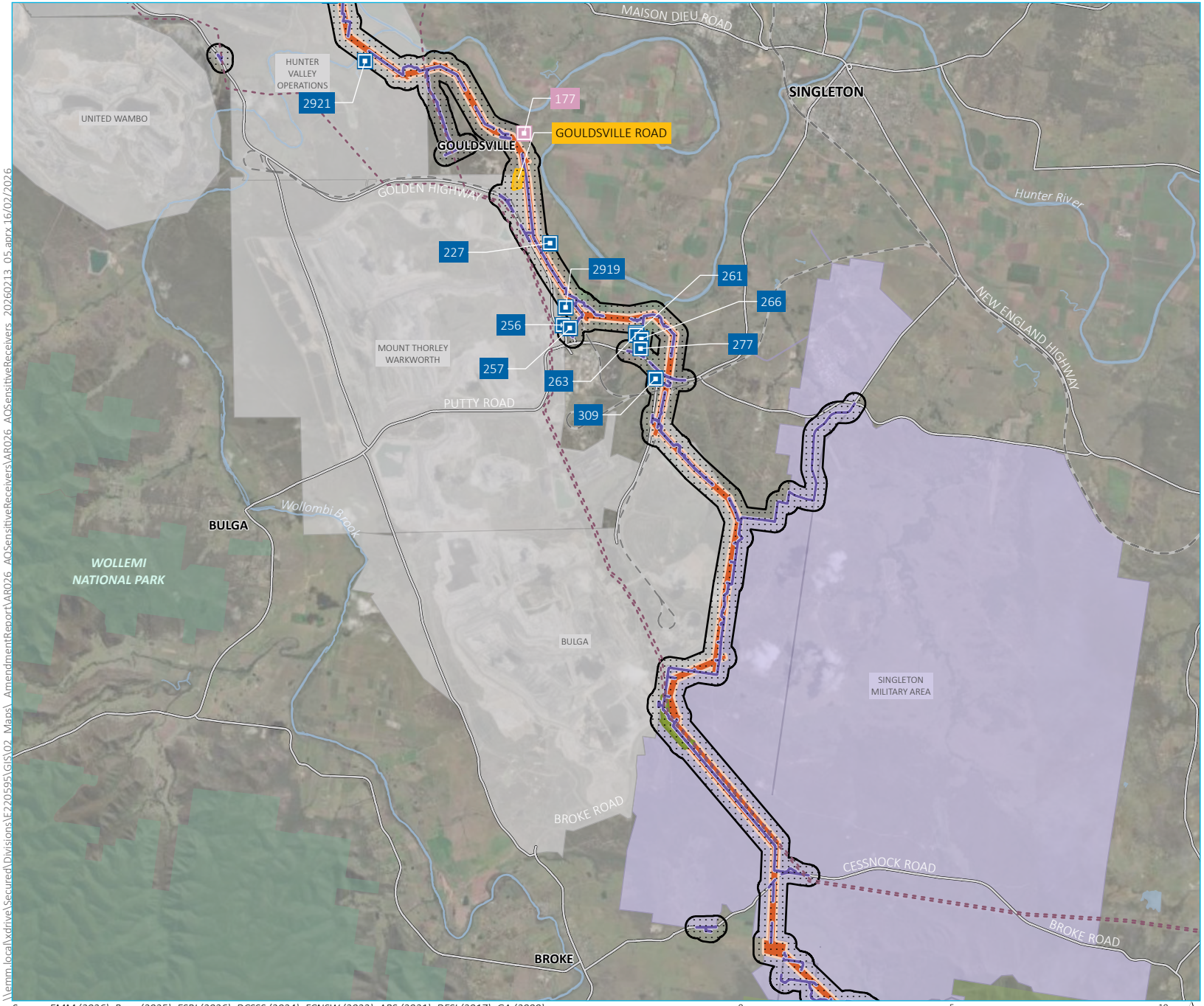
Hunter Transmission Project
Amendment Report
Figure 5.10

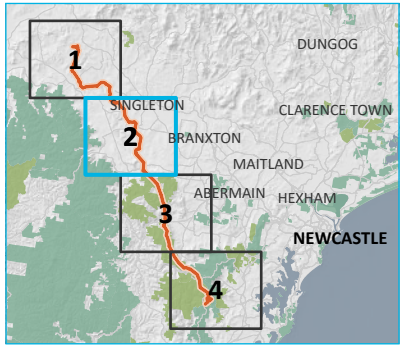
EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

0 5 10 km
GDA2020 MGA Zone 56
N

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR026_AQSensitiveReceivers\AR026_AQSensitiveReceivers_20260213_05.aprx 16/02/2026





KEY

- Amended air quality study area
- Sensitive receiver (receiver ID)
  - Private
  - Residential
- Amended project impact area
  - HTP corridor
  - Construction support site (*with temporary worker accommodation)
  - Adjustment to existing transmission line (line 81)
  - Access tracks, road upgrades and intersection upgrades
- Existing environment
  - 330 kV transmission line
  - Railway
  - Major road
  - Named watercourse
  - Named waterbody
  - NPWS reserve
  - State forest
  - Defence
  - Energy

Locations of sensitive human receivers assessed as part of the construction dust assessment
Map 2 of 4

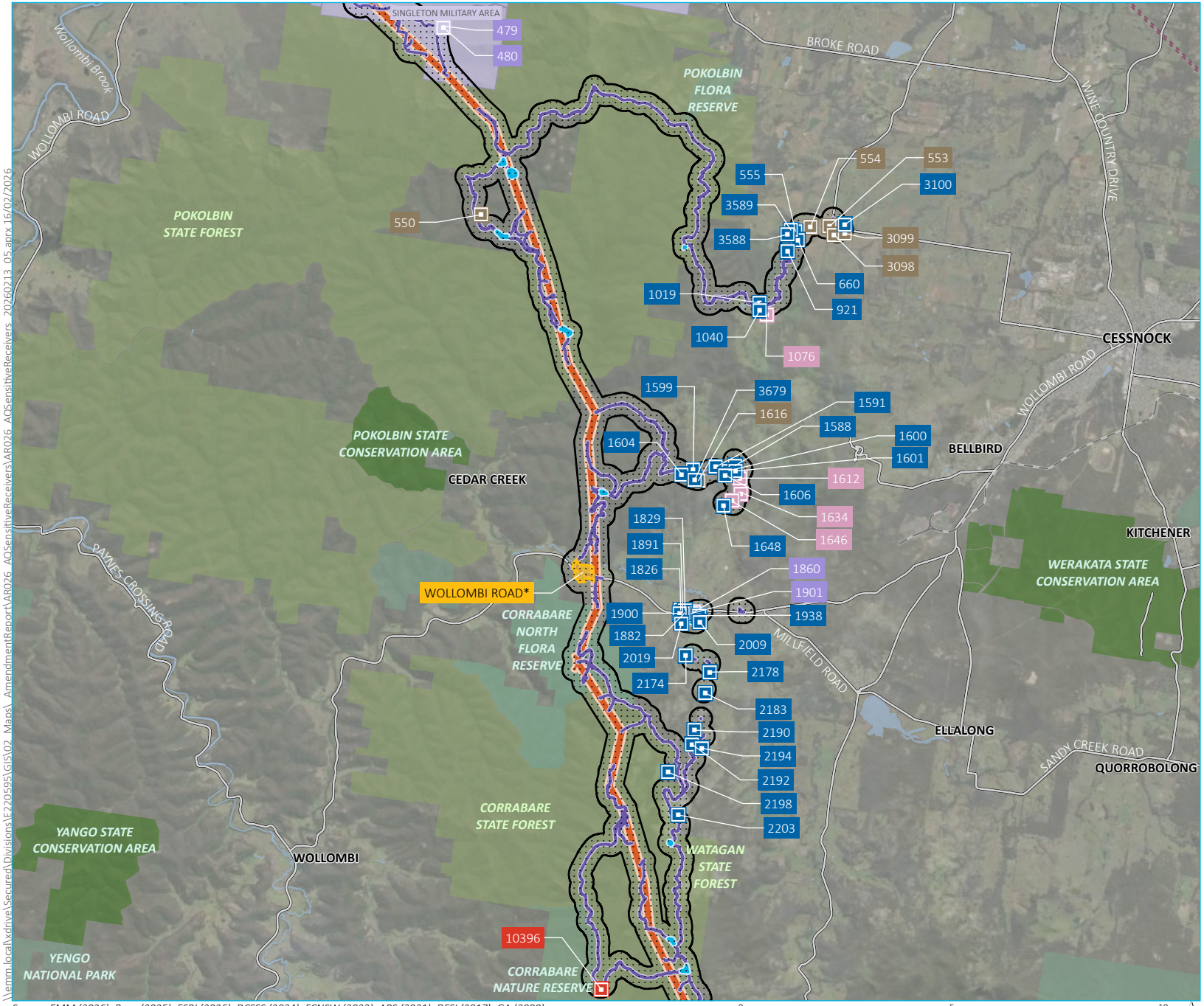
Hunter Transmission Project
Amendment Report
Figure 5.10

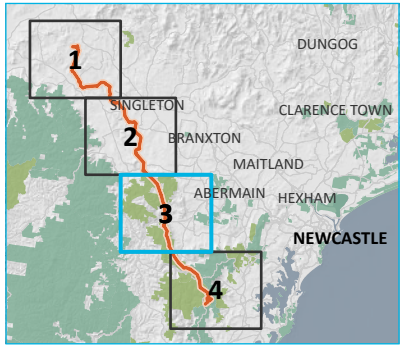
Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

0 5 10 km
GDA2020 MGA Zone 56
N

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR026_AQSensitiveReceivers\AR026_AQSensitiveReceivers_20260213_05.aprx 16/02/2026





KEY

- Amended air quality study area

Sensitive receiver (receiver ID)

- Commercial
- Industrial
- Private
- Recreation
- Residential

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Access tracks, road upgrades and intersection upgrades

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Defence

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

Locations of sensitive human receivers assessed as part of the construction dust assessment

Map 3 of 4

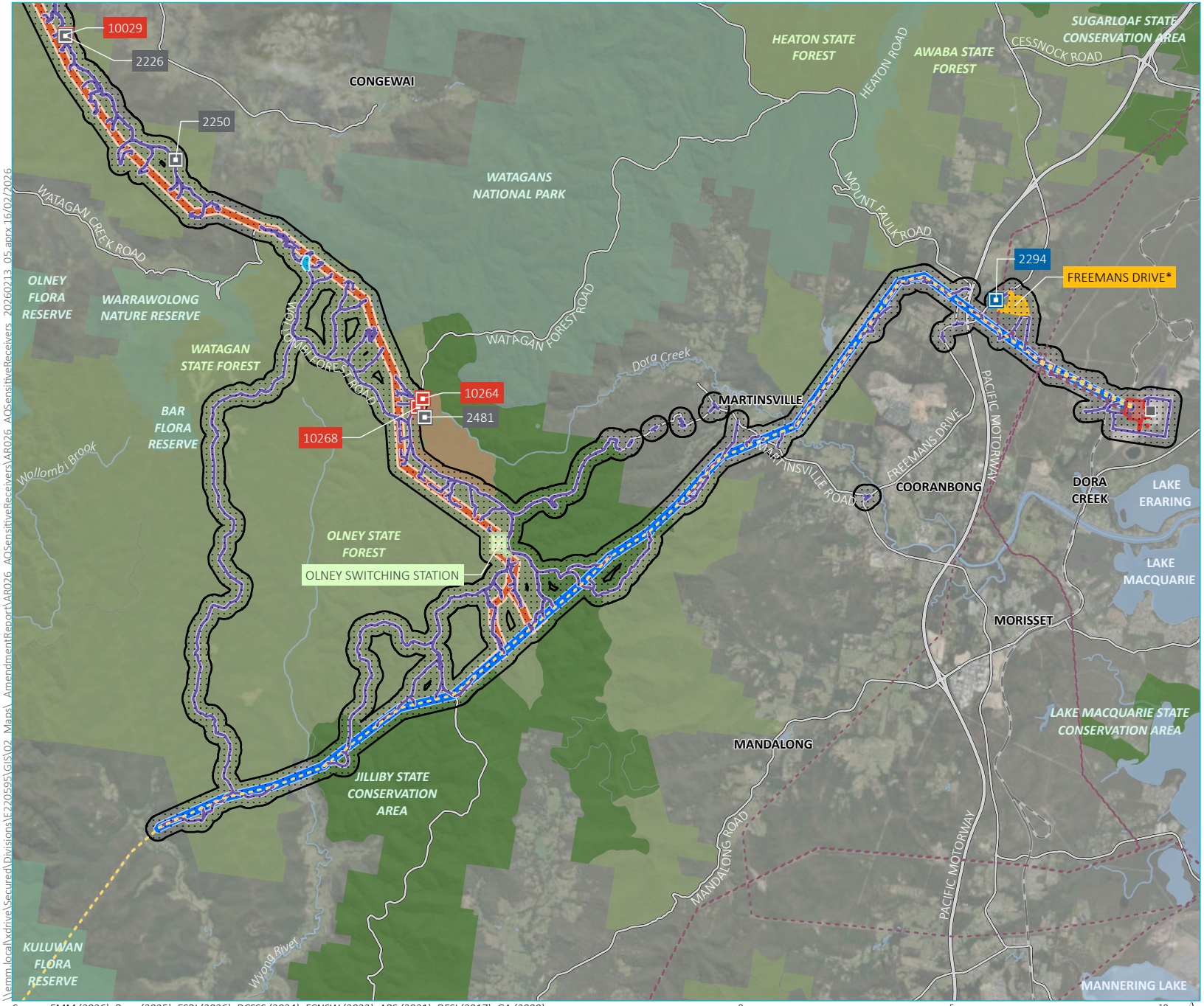
Hunter Transmission Project

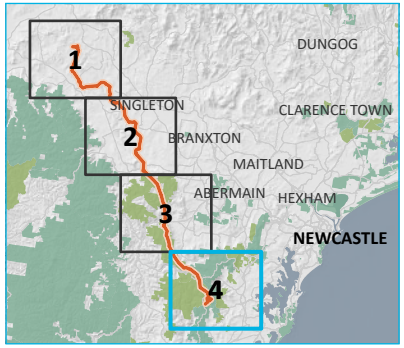
Amendment Report

Figure 5.10

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR026_AQSensitiveReceivers\AR026_AQSensitiveReceivers_20260213_05.aprx 16/02/2026





KEY

- Amended air quality study area

Sensitive receiver (receiver ID)

- Recreation
- Residential
- Utility

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- Recreation area
- NPWS reserve
- State conservation area
- State forest

Source: EMM (2026); Beca (2025); ESRI (2026); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009)

Locations of sensitive human receivers assessed as part of the construction dust assessment
Map 4 of 4

Hunter Transmission Project
Amendment Report
Figure 5.10

EMM creating opportunities

\\emm.local\xdrive\Secured\Divisions\E220595\GIS\02_Maps_AmendmentReport\AR026_AQSensitiveReceivers\AR026_AQSensitiveReceivers_20260213_05.aprx 16/02/2026

The results of the construction dust assessment indicate the varying levels of risk from negligible to medium for dust soiling, human health and ecological impacts across the assessed project elements before mitigation measures are applied for the amended project. The unmitigated risk ratings from the construction dust assessment for the amended project are consistent with the EIS.

The amended project would follow conventional construction methods and be guided by a construction air quality management plan to effectively manage environmental impacts.

In addition to the construction works themselves, the construction support sites including temporary worker accommodation would have diesel generators on-site to provide back-up power in the event of a mains outage during construction of the project. Recommended separation distances for generators greater than or equal to 100 kilowatts, but less than 10 megawatts in aggregate, is 500 metres (NTEPA 2017). It is assumed that a minimum distance of 500 metres between these generators and sensitive receivers would be achieved. Additionally, it is anticipated that the operation of the generators, and hence emissions, would be rare and of short duration. It is therefore unlikely that these generators would have a significant impact on local air quality.

Operation impacts

Potential air quality impacts of the amended project during operation would be consistent with the impacts identified for the exhibited project.

5.17.4 Updated or additional mitigation measures

There are no changes to air quality mitigation measures as a result of the amended project, however some changes to mitigation measures have been included with regards to the management of potential air quality impacts in response to feedback received during exhibition of the EIS.

The consolidated list of mitigation measures for the amended project, including those changes made in response to feedback received during exhibition of the EIS, are provided in *Appendix D (Updated mitigation measures)*.

5.18 Greenhouse gas

Chapter 22.2 (Greenhouse gas) and *Technical Report 18 – Air quality and greenhouse gas impact assessment* of the EIS included assessment of the potential greenhouse gas (GHG) impacts of the construction and operation of the exhibited project. Additional assessment has been undertaken to identify changes to greenhouse gas impacts associated with the amended project. The findings of the additional assessment are described in this section.

5.18.1 Assessment approach

The methodology for the updated GHG impact assessment is largely consistent with that undertaken for the exhibited project.

A desktop assessment was carried out to assess the amendments and refinements to the project. Some changes to emissions calculations were carried out to incorporate the amendments and refinements to the project. In addition, a number of relevant documents used in calculating the GHG emissions for the exhibited project have been updated since the exhibition of the EIS and have been incorporated into the assessment methodology of the updated assessment, where required. These include:

- *Australian National Greenhouse Accounts Factors* (NGAF) 2025 (Australian DCCEEW 2025b)
- *Australia's emissions projections 2025* (Australian DCCEEW 2025c)
- *Australia's National Greenhouse Accounts: State and territory emission inventories* (Australian DCCEEW 2025d).

The calculation of GHG emissions for the amended project has been undertaken in line with the most up to date versions of the abovementioned documents.

For the calculation of GHG emissions from the amended project, the reconfiguration of the Wollombi Road construction support site has been factored into calculations due to anticipated changes to GHG emissions resulting from the addition of the temporary worker accommodation's operational requirements (e.g. power, maintenance, ablution facilities). In addition, changes to vegetation clearing as a result of project amendments and refinements (as identified in *Appendix E (Revised biodiversity development assessment report)*) have been factored into updated GHG emissions calculations. All other amendments and refinements to the project are not anticipated to result in changes to GHG emissions and so have not factored into updated calculations.

The calculation of estimated scope 2 GHG emissions for operation of the amended project have also been updated to included transmission losses not factored in during the EIS in response to feedback received through additional community engagement activities during exhibition of the EIS. Transmission losses between the Olney switching station and the Bayswater South switching station were estimated to be 39 gigawatt hours per year (aligning with estimates made on other similar projects). Estimated scope 2 emissions from transmission and distribution losses were

calculated using the emission factor for New South Wales and Australian Capital Territory of 0.02 kg CO_2-e/kWh, presented in Table 25 of the 2025 NGAF (DCCEEW 2025).

5.18.2 Existing environment

The amendments and refinements would not result in any changes to the existing GHG environment, meaning the existing environment described in *section 22.2.2* of the EIS remains applicable.

5.18.3 Assessment of potential impacts

Construction impacts

The estimated annual GHG emissions for the construction of the amended project are outlined in Table 5.86. The estimated GHG emissions from the Scope 1, Scope 2 and Scope 3 emissions during construction of the amended project are estimated to be up to 678,750 tonnes of CO_2-e per year (compared to 644,384 tonnes of CO_2-e per year for the exhibited project). Consistent with the EIS, GHG emissions from pre-construction minor works in 2027 are anticipated to be negligible and so have not been quantified.

Table 5.86 GHG emissions during construction of the amended project

Year	Annual GHG emissions (tonnes of CO_2-e/year) by scope									
	Scope 1			Scope 2	Scope 3					Total (all scopes)
	Diesel use	Petrol use	Vegetation clearing	Electricity use	Diesel use	Petrol use	Fuel use (material transport)	Electricity use	Embodied emissions	
2027	9,914	496	79,755	486	2,443	126	2,885	19	243,366	339,492
2028	19,828	992	159,511	739	4,886	252	5,771	39	486,732	678,750
2029	19,828	992	159,511	467	4,886	252	5,771	19	486,732	678,458

Scope 3 emissions make up the majority of emissions during construction of the amended project, representing 73 per cent of the total (compared to 77 per cent for the exhibited project). Embodied emissions from production materials make up the majority of Scope 3 emissions during construction of the amended project. Scope 1 and 2 emissions for the amended project collectively account for around 27 per cent of total GHG emissions during construction (compared to 23 per cent for the exhibited project), with the majority of emissions coming from the loss of carbon sink through vegetation clearing.

The significance of annual GHG emissions relative to State and national GHG emissions has been determined by comparing annual average GHG emissions for the amended project against the most recent available total GHG emissions inventories (calendar year 2023) for NSW (114,455 kt CO2-e) and Australia (452,391 kt CO2-e). Relative to 2023 emission inventory totals, Scope 1 and Scope 2 GHG emissions generated by the construction of the amended project during the peak construction

year (2028) would represent around 0.16 per cent of NSW total emissions and 0.04 per cent of national total emissions on an annual average basis.

Operation impacts

The estimated GHG emissions from the Scope 1, Scope 2 and Scope 3 emissions during operation of the amended project are estimated to be up to 1026 tonnes of CO_2-e per year (compared to 942 tonnes of CO_2-e per year for the exhibited project). The change in GHG emissions between the exhibited project and the amended project is due to the inclusion of electricity transmission and distribution loss emissions in response to feedback received during community engagement activities, which were not included in GHG emissions calculations as part of the exhibited project.

The significance of annual GHG emissions relative to State and national GHG emissions has been determined by comparing annual average GHG emissions for the amended project against the most recent available total GHG emissions inventories (calendar year 2023) for NSW (114,455 kt CO_2-e) and Australia (452,391 kt CO_2-e). Relative to 2022 emission inventory totals, Scope 1 and Scope 2 GHG emissions generated by the operation of the amended project for annual operations would represent around 0.0002 per cent of NSW total emissions and 0.0008 per cent of national total emissions on an annual average basis.

Additionally, the operation of the amended project would still contribute to the reduction of GHG emissions through the provision of electricity transmission infrastructure to enable the delivery of renewable energy to the national electricity market. This would contribute to the efforts of the Australian and NSW Governments to meet emissions reduction targets.

5.18.4 Updated or additional mitigation measures

There are no changes to greenhouse gas mitigation measures as a result of the amended project. The consolidated list of mitigation measures for the amended project, including those changes made in response to feedback during exhibition of the EIS are provided in *Appendix D (Updated mitigation measures)*.

5.19 Economics

Chapter 22.4 (Economics) and *Technical Report 19 - Economic impact assessment* of the EIS included assessment of the potential economic impacts from construction and operation of the exhibited project. Additional assessment has been undertaken to identify changes to economic impacts associated with the amended project and to respond to feedback received during exhibition of the EIS. The findings of the additional assessment are described in this section.

5.19.1 Assessment approach

The methodology for the updated economic impact assessment of the amended project is consistent with that undertaken for the exhibited project. Given the nature of the potential impacts of the amended project compared to the exhibited project, no detailed assessment was undertaken, with updates to the results of the previous assessment provided where necessary.

Further qualitative assessment of the potential impacts of the project on the mining industry and NSW as a result of the loss of coal royalties was undertaken in response to feedback received during exhibition of the EIS.

5.19.2 Existing environment

The amendments and refinements would not result in any changes to the existing economic environment, meaning the existing environment described in *section 22.4.2* of the EIS remains applicable.

5.19.3 Assessment of potential impacts

Construction impacts

Consistent with the exhibited project, the construction of the amended project would generate economic activity within the regional and NSW economy and would also result in some contraction in agricultural and State forest land within the amended construction impact area.

Construction expenditure and workforce

The amendments and refinements would not result in any material changes to the assessed construction expenditure and workforce impacts outlined in *section 22.4.3* of the EIS.

Agricultural land displacement

The amended project would result in some minor changes to the area of non-irrigated agricultural land and irrigated land impacted during construction with a reduction in overall gross value of production impacted ($352,878 per year for the amended project compared to $404,738 per year for the exhibited project). Consequently, there would be some minor reductions in the direct and indirect regional and NSW economic impacts of foregone agriculture during construction as identified in *Table 5.87* and *Table 5.88*, respectively.

Table 5.87 Annual regional economic impacts of displaced agricultural land during construction

Economic indicator	Direct	Indirect	Total effect
Output ($ million)	~~0.4~~ 0.35	~~0.25~~ 0.22	~~0.65~~ 0.57
Value-added ($ million)	~~0.19~~ 0.16	~~0.12~~ 0.11	~~0.31~~ 0.27
Income ($ million)	~~0.05~~ 0.04	0.06	~~0.11~~ 0.1
Employment	~~0.84~~ 0.73	~~0.85~~ 0.74	~~1.69~~ 1.47

Table 5.88 Annual NSW economic impacts of displaced agricultural land during construction

Economic indicator	Direct	Indirect	Total effect
Output ($ million)	~~0.4~~ 0.35	~~0.58~~ 0.51	~~0.99~~ 0.86
Value-added ($ million)	~~0.19~~ 0.16	~~0.29~~ 0.26	~~0.48~~ 0.42
Income ($ million)	~~0.06~~ 0.05	~~0.16~~ 0.14	~~0.22~~ 0.19
Employment	~~0.84~~ 0.73	~~1.85~~ 1.61	~~2.69~~ 2.34

State forest land displacement

The amended project would result in a minor increase of 22 hectares in the amount of the amended project impact area that is located within the State forests. A comparison of potential displacement that may occur within State Forests during construction is provided in *Table 5.89* below.

The annual forestry cost (foregone revenue ignoring salvage value of cleared timber) during the construction of the amended project would increase from $34,468 per annum as part of the exhibited project (this impact was erroneously reported as $35,902 in the EIS) to $35,522 per annum for the amended project as a result of the changes to the extent of State Forest land that would be displaced.

As per the economic assessment included in the EIS, the regional impacts associated with this level of reduced economic activity are considered negligible, with the change in project impact area within the State forests considered inconsequential to the impact assessment.

Table 5.89 Potential extent of State Forest land displacement during construction of the project

State forestry plantation type	Exhibited project (ha)	Amended project (ha)
Production native forests	661	688
Plantation forest	49	43

Other potential impacts

The amendments and refinements to the project would not change other potential economic impacts during construction, including the demand for regional labour resources and inputs into production, associated increases in construction wages and labour shortages in other areas of the economy, and rising costs as firms pass wages onto consumers. Consistent with the EIS, this represents the operation of the market system where scarce resources are reallocated to where they are most highly valued and where society will benefit the most from them.

Operation impacts

The assessment of the economic impacts of the operation of the project is detailed in *section 22.4.4* of the EIS. The operation of the project would result in economic activity in the Electricity Transmission, Distribution, On Selling and Electricity Market Operation sector. Operation would also result in some contraction in agricultural activity in part of the amended operation impact area due to the loss of agricultural land where permanent infrastructure would be established. However, for areas within the permanent transmission line easement, agricultural activities such as grazing and cropping would be able to continue subject to certain restrictions (refer to *section 13.4* of the EIS).

Operational expenditure and workforce

The amendments and refinements would not result in any material changes to the assessed operational expenditure and workforce.

Agricultural land displacement

The amended project would result in some minor changes to the area of non-irrigated agricultural land and irrigated land impacted during operation with an increase in the overall gross value of production impacted by the project by $18,906 per annum ($107,843 per annum for the amended project compared to $88,937 per annum for the exhibited project).

Consequently, there would be some increase in the direct and indirect regional and NSW economic impacts of foregone agriculture during operation as identified in *Table 5.90* and *Table 5.91*. The revised impacts are denoted in **bold**, while the exhibited impacts no longer considered relevant to the assessment of the amended project are denoted in ~~strikethrough~~. The changes in economic impact would not change the assessment outcomes described in the EIS.

Table 5.90 Annual regional economic impacts of displaced agricultural land during operation

Economic indicator	Direct	Indirect	Total effect
Output ($ million)	~~0.09~~ **0.11**	~~0.05~~ **0.06**	~~0.14~~ **0.17**
Value-added ($ million)	~~0.04~~ **0.05**	0.03	~~0.07~~ **0.08**
Income ($ million)	0.01	~~0.01~~ **0.02**	~~0.02~~ **0.03**
Employment	~~0.19~~ **0.22**	~~0.18~~ **0.23**	~~0.37~~ **0.45**

Table 5.91 Annual NSW economic impacts of displaced agricultural land during operation

Economic indicator	Direct	Indirect	Total effect
Output ($ million)	~~0.09~~ **0.11**	~~0.13~~ **0.15**	~~0.22~~ **0.26**
Value-added ($ million)	~~0.04~~ **0.05**	~~0.07~~ **0.08**	~~0.11~~ **0.13**
Income ($ million)	0.01	~~0.04~~ **0.05**	~~0.05~~ **0.06**
Employment	~~0.19~~ **0.22**	~~0.4~~ **0.5**	~~0.59~~ **0.72**

State forest land displacement

The amended project would result in a minor increase in the amount of the project impact area that is located within the State forests (refer to *section 5.6.3*).

The annual forestry cost (foregone revenue ignoring salvage value of cleared timber) during the operation of the amended project would increase from $18,683 per annum for the exhibited project (corrected from $23,387 as outlined in the EIS) to $20,818 per annum for the amended project. The regional impacts associated with this level of increased economic activity are immaterial.

These very small costs are negligible when compared with the substantial economic stimulus generated by the project, including up to $168 million in annual direct construction-related output, 486 average annual direct regional jobs during peak construction, and $13 million per year in direct operational economic output. Consequently, the modest change in project impact area within the State forests does not materially alter the economic findings of the EIS and remains inconsequential to the overall impact assessment.

Impacts on the mining industry

As reported in *Technical Report 19 – Economic impact assessment* of the EIS, coal mining forms the main industry sector of employment for the Muswellbrook and Singleton LGAs and is the top industry sector of employment across the economic study area, accounting for 4.8 per cent of total employment across the LGAs within which the project is located. Coal mining is also the largest exporting industry from the regional economy, accounting for $41 billion in exports, and is responsible for $31 billion in value-added for the regional economy, equating to 50 per cent of the proportion of value-added for the regional economy.

The amended project impact area intersects 499 hectares of mine leased land, including across Mount Arthur Coal Mine, Maxwell Underground Coal Mine, Hunter Valley Operations, Mount Thorley Warkworth, Bulga Coal Mine and Centennial Coal/Newstan. The impacts on the operations of these mining complexes would be managed by agreement between the network operator and the mining operators so as to minimise direct impacts on mining operations as far as practicable. In relation to impacts on the broader mining industry as a result of the potential loss of coal royalties from the presence of project infrastructure within mining land, these impacts are anticipated to be negligible. This has been estimated based on the area of mine lease land within the regional economy (assumed to be the five LGAs within which the amended project impact area is located), which amounts to 175,377 hectares. As such, the amended project impact area intersects 0.3 per cent of the total mine lease land within the regional economy. Applying the assumption that the area of mine lease land equates to revenue for the coal mining industry, the intersection of the amended project impact area with 0.3 per cent of the total mine lease land within the regional economy would have a negligible impact on the $41 billion in exports and $31 billion in value added of the coal mining industry within the regional economy.

Other potential impacts

The amendments and refinements would not change other potential economic impacts during operation, including the small demand for regional labour resources and regional inputs into production relative to the construction of the project.

5.19.4 Updated or additional mitigation measures

No changes to mitigation measures identified in the EIS are required to address the potential economic impacts of the amended project. The consolidated list of mitigation measures for the amended project is provided in *Appendix D (Updated mitigation measures)*.

5.20 Cumulative impacts

Chapter 23 (Cumulative impacts) of the EIS assessed the potential of the project to generate cumulative impacts in the region in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2021) (cumulative impact guidelines). Additional assessment has been undertaken to identify additional relevant future projects to be considered within the cumulative impact study area based on community feedback and the availability of additional information since exhibition of the EIS.

5.20.1 Legislation, policies, plans and guidelines

The cumulative impact assessment was prepared in accordance with the cumulative impact guidelines.

5.20.2 Assessment methodology

The proposed amendments and refinements were screened for relevance to the cumulative impact assessment for the amended project, which identified the amendments and refinements that would be subject to additional assessment based on their potential interaction with relevant future projects.

Study area and screening of future projects

The amended project would not change the study area of the cumulative impact assessment as presented in *section 23.1.4* of the EIS. The study area conservatively includes all LGAs that the project traverses, being Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie.

The screening criteria used to identify relevant future projects which have the potential to interact with the project in a manner to create potential cumulative impacts remains consistent with the EIS. Criteria considered relate primarily to location, construction and operational timeframes, and resources. The screening criteria used to identify potentially relevant future projects included approved or yet to be approved projects.

The list of future projects identified for further consideration has been reviewed since the exhibition of the EIS to account for when further information has become available and/or where feedback from the exhibition of the EIS has identified additional future projects. The updated cumulative impact screening is provided in *Table 5.92*.

In addition to these projects listed in *Table 5.92* and in response to feedback from TfNSW, additional consideration has been given to potential traffic cumulative impacts on the New England Highway and the Golden Highway as a result of proposed renewable energy projects within REZs or elsewhere in NSW. Further information is provided in *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.

Table 5.92 Updated cumulative impact screening of relevant future projects

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
New England REZ Transmission Project	EnergyCo	✓	Construction of new network infrastructure to connect energy generation and storage projects within the New England REZ to the existing electricity network. The transmission project is proposed to connect to the existing Bayswater substation in the south and four energy hubs within the New England REZ located in the Northern Tablelands region of NSW.	New England REZ Transmission Project physically intersects the project impact area at the existing Bayswater substation (Muswellbrook LGA).	A revised Scoping Report was submitted in December 2025. The EIS is currently being prepared. The New England REZ Project has a six-year construction program. Stage 1 of this construction would include transmission line construction from Bayswater substation.	There is the potential for concurrent and consecutive construction activity in the Muswellbrook LGA, including use of the same major transport routes.
Liddell Future Land Use and Enabling Works	AGL	-	To support the proposed closure strategy of Liddell Power Station, the proponent is seeking to undertake works for the demolition of the Liddell Power Station and associated infrastructure and preparation of the site for ongoing industrial land use.	Liddell Future Land Use and Enabling Works is located around one kilometre north of the project impact area near Lake Liddell in Muswellbrook (Muswellbrook LGA).	The project was determined in January 2025. Works commenced in mid-2025. The development of the future land use program would extend over a 20-year period, meaning there would be an overlap between HTP construction and some aspect of the future land use program.	The future land use program and the HTP are both developments associated with the energy transition occurring within the same time period within the Muswellbrook LGA drawing on similar resources and infrastructure.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Hunter Valley Operations (HVO) continuation projects (HVO North Open Cut Coal Continuation Project and HVO South Open Cut Coal Continuation Project)	Hunter Valley Operations	✓	The HVO continuation projects involve continuation of mining at the HVO North open cut coal mining complex until 2050, including extension of approved mining areas, mining of deeper coal seams and realignment of Lemington Road, and continuation of mining at the HVO South open cut mining complex until 2045, including a reduction in maximum extraction rate.	The HVO continuation projects would intersect the project impact area at the existing HVO operations (Singleton LGA).	An EIS was submitted to DPHI in December 2022 and following requests for further information, HVO decided to amend their project. HVO Continuation Project Amendment Reports were submitted and on exhibition in September 2025. The proposed life of mining operations at HVO North will be to 2045 and at HVO South will be to 2042. Construction activities related to the continuation projects are assumed to commence in 2027, which would overlap with HTP construction.	Based on information available, the timing of the HVO continuation projects would need to be co-ordinated with the HTP construction to avoid duplication of impacts or design revisions.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Maison Dieu Solar Farm	Terrain Solar	-	The construction, operation and decommissioning of a large-scale solar photovoltaic generation facility, including an integrated battery energy storage system, a high-voltage electricity substation, connection to the national electricity market through the existing Ausgrid substation, and associated infrastructure. This project would generate and supply 60 MW of clean, renewable electricity to the grid with a storage capacity of 40 MW/80 MWh.	Maison Dieu Solar Farm is located around one kilometre east of the project impact area in Maison Dieu (Singleton LGA).	This project is currently in the response to submissions phase.	Construction of the solar farm may overlap with HTP construction with construction of the solar farm beginning in 2026 and overlapping with the HTP in 2027 Maison Dieu Solar Farm would be operational when HTP is also operational The Maison Dieu Solar Farm and the HTP are both developments associated with the energy transition occurring within the same time period within the Singleton LGA drawing on similar resources and infrastructure.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Mandalong Road Upgrades	Transport for NSW (TfNSW)	✓	The project involves the replacement of roundabouts with new traffic lights and other road and pedestrian safety improvements at two intersections on Mandalong Road, Morriset.	Mandalong Road is within the project impact area (Lake Macquarie LGA).	TfNSW has published a project Review of Environmental Factors (May 2025).	The project will influence the construction routes for the HTP. An overlap of construction programs is likely with construction of the project anticipated to start in Q1 2026 and extend in 2027; however, this will be coordinated with TfNSW.
Hunter-Central Coast REZ Transmission Project	EnergyCo	✓	Provision of 2 new 132 kV substations as well as upgrades to existing 132 kV transmission lines.	This project would be located within existing Ausgrid easements between Muswellbrook and Kurri Kurri and would cross the HTP corridor in three locations (Muswellbrook, Singleton and Cessnock LGAs).	Ausgrid published a project Review of Environmental Factors in April 2025 and determined the project in August 2025. Construction is anticipated to take place between early 2026 and mid-2028.	Construction of the Hunter-Central Coast REZ Transmission Project would overlap with HTP construction and would be operational when HTP is also operational. The Hunter-Central Coast REZ Transmission Project and the HTP are both transmission projects associated with the energy transition occurring within the same time period within three overlapping LGAs drawing on similar resources and public infrastructure.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Muswellbrook Solar Farm	OX2	-	A large-scale solar photovoltaic generation facility and associated infrastructure. The proposed solar farm would have generation capacity of approximately 135 MW and would produce around 347 GWh of energy annually, which is enough to power approximately 79,000 homes.	Muswellbrook Solar Farm would be located around 14 kilometres north of the project impact area on the eastern side of Muswellbrook (Muswellbrook LGA).	This project was referred to the Independent Planning Commission in February 2025. The Independent Planning Commission approved the project subject to conditions as of 27 May 2025. Construction is planned to last for 31 months, which means some overlap with HTP construction is likely.	No direct interface between the solar farm and HTP however both projects are associated with the energy transition occurring within the same time period within the Muswellbrook LGA drawing on similar resources and public infrastructure.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Bowmans Creek Wind Farm	Ark Energy	-	Stage 1 of the Bowmans Creek Wind Farm would involve 54 wind turbines. Stage 2 would involve a further 21 wind turbines.	Bowmans Creek Wind Farm would be located around nine kilometres north of the project impact area on the eastern side of the Muswellbrook LGA.	Stage 1 of Bowmans Creek Wind Farm was determined in February 2024, while an EIS is currently being prepared for Stage 2 after having been issued SEARs. Stage 2 has been determined to be a controlled action by Commonwealth DCCEEW for assessment under the bilateral agreement. Construction of Stage 2 is anticipated to take around 18 months and would be commissioned by mid-2028 (Renew Economy, 2024). As such, overlap with HTP construction is likely.	No direct interface between the wind farm and HTP however both projects are associated with the energy transition occurring within the same time period within the Muswellbrook LGA drawing on similar resources and public infrastructure.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Central-West Orana REZ Transmission Project	EnergyCo	✓	This project would involve new transmission network infrastructure, including transmission lines and energy hubs, which would transfer power generated by solar and wind farms in the Central-West Orana REZ to electricity consumers.	The Central-West Orana REZ Transmission Project would be located between the proposed substations at Merotherie and Elong Elong and the Wollar substation, around 80 kilometres from the project impact area.	Construction of this project commenced in June 2025 and is expected to be completed in 2028. As such, overlap with HTP construction is likely.	Given the distance of this development from the project impact area there is no direct interface with HTP. Operationally, cumulative benefits would result from this project alongside HTP due to increased transmission capacity and greater renewable energy transmission in the National Energy Market (NEM).
Bayswater Power Station Upgrade	AGL	✓	Improvement of the management of ancillary processes over the remaining operating life of Bayswater Power Station including the augmentation of the existing ash disposal areas and creation of a salt cake disposal landfill.	Bayswater Power Station Upgrade intersects the project impact area where the HTP is proposed to connect to Bayswater Power Station.	The project began construction 2022. Construction activities for Stage 1 Ravensworth Ash Pipeline were completed in 2023. No work has commenced for the Stages 2 to 5 of the Bayswater Power Station Upgrade.	Construction of the Bayswater Power Station Upgrade is anticipated to be mostly completed before construction commences for the HTP. Construction of the HTP would however contribute to impacts to biodiversity values in the Muswellbrook LGA associated with the Bayswater Power Station Upgrade.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Edderton Solar Project	EDF Renewables	-	This project includes the construction, operation and decommissioning of a solar photovoltaic energy generating facility with an estimated capacity of 350 MW and battery energy storage system (BESS).	Edderton Solar Project is located around 5 km to the west of the project impact area in Denman and Jerrys Plains (Muswellbrook and Singleton LGA).	An EIS is currently being prepared for this project. A scoping report was submitted in April 2024 and SEARs were issued in May 2024. If approved, construction of this project is anticipated to take approximately 20 months.	No direct interface between the solar project and HTP however both projects would be constructed and operated within the Muswellbrook and Singleton LGA drawing on similar resources and public infrastructure. Construction of the project is anticipated to start as soon as necessary approvals are obtained.
Newcastle Logistics Precinct - Intertrade Project	EnergyCo	✓	This project would involve construction of a hardstand on government land near the Port of Newcastle associated with the transport of materials to renewable energy projects.	The project would be located around 30 kilometres northeast of the project impact area in Newcastle (Newcastle LGA).	An EIS is currently being prepared for this project. A scoping report was submitted in April 2025 and SEARs were issued in May 2025. Construction is targeted for late 2026, with operations to commence in 2027.	Given the distance from the project impact area there is no direct construction interface between the Intertrade Project and HTP, however OSOM movements for the HTP would originate from the Port of Newcastle where the Intertrade project is located.

Relevant project	Proponent	Updated since EIS	Scope	Location (LGA)	Status	Interface with HTP
Muswellbrook Pumped Hydro Energy Storage Project	AGL Energy Pty Limited Idemitsu Renewable Developments Australia Pty Ltd	-	This project would involve the development of a 500 MW pumped hydro power station, upper and lower reservoirs, grid connection and ancillary infrastructure.	The project would be located four kilometres northeast of Muswellbrook (Muswellbrook LGA).	A scoping report has been prepared, and SEARs were issued in November 2024. If approved, construction of this project is anticipated to take approximately four years, overlap with the HTPs construction program is possible.	Given the distance from the project impact area there is no direct interface between the Muswellbrook Pumped Hydro Energy Storage Project. However, both projects would draw similar resources and public infrastructure in the Muswellbrook LGA.
Muswellbrook Bypass	Transport for NSW	✓	Transport proposes to build a New England Highway bypass of Muswellbrook. The proposal is located to the east of Muswellbrook and connects the New England Highway to the north and south of Muswellbrook. This would include around nine kilometres of new highway (the bypass) with a single lane in each direction and a wide centreline treatment.	The project would be located around 1 kilometre east of Muswellbrook (Muswellbrook LGA)	An addendum REF has been prepared, which indicates main works are expected to start in late 2024 to early 2025 and would take around three and a half years to complete, however as noted within the submission received from Muswellbrook Shire Council on the EIS, construction is expected to commence in late 2027. As such, overlap with the HTP construction program is anticipated.	The construction of HTP and the Muswellbrook Bypass are anticipated to overlap, and given the proximity of the two projects, cumulative impacts are possible.

Issue-specific cumulative impact assessment

Section 23.2 of the EIS identified the types of issue-specific matters that required further consideration and identified a number of other matters that were excluded from the cumulative assessment.

Matters not carried forward for further assessment related to historic heritage, soils and surface water, groundwater, flooding, contamination and hazards and risk (including bushfire). The proposed amendments and refinements to the project have not changed the justification for the exclusion of these matters, noting that the impacts would be largely consistent with the EIS.

Matters carried forward for further assessment in the EIS have been reviewed, and, where relevant, have been supported by revised technical assessments. This section presents the key findings of this assessment in relation to revised screening of relevant future projects (see *Table 5.92*). These findings are summarised in *Table 5.93*.

Table 5.93 Updated issue-specific cumulative impact assessment

Relevant future project	Project updated since EIS exhibition	Type of cumulative impact with the project								
		Biodiversity	Aboriginal heritage	Landscape and visual	Traffic and transport	Land use and property	Social	Noise and vibration	Air quality / greenhouse gas	Economic
New England REZ Transmission Project	✓	-	-	✓	✓	✓	✓	-	-	✓
Liddell Future Land Use and Enabling Works		-	-	-	✓	✓	✓	-	-	-
Bayswater Power Station Upgrade	✓	✓	-	-	-	-	-	-	-	-
HVO continuation projects	✓	✓	✓	-	✓	✓	✓	✓	✓	✓
Maison Dieu Solar Farm		✓	-	✓	✓	✓	✓	-	-	✓
Hunter-Central Coast REZ Transmission Project	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
Muswellbrook Solar Farm		-	-	-	-	✓	✓	-	-	✓
Bowmans Creek Wind Farm		-	-	-	-	✓	✓	-	-	✓
Central-West Orana REZ Transmission Project	✓	-	-	-	-	-	✓	-	-	✓

Relevant future project	Project updated since EIS exhibition	Type of cumulative impact with the project								
		Biodiversity	Aboriginal heritage	Landscape and visual	Traffic and transport	Land use and property	Social	Noise and vibration	Air quality / greenhouse gas	Economic
Edderton Solar Project		✓	-	-	-	✓	✓	-	-	✓
Newcastle Logistics Precinct - Intertrade Project	✓	-	-	-	✓	-	-	-	-	✓
Muswellbrook Pumped Hydro Energy Storage Project		-	-	-	✓	-	✓	-	-	✓
Mandalong Road Upgrades	✓	-	-	-	✓	-	✓	-	-	-
Muswellbrook Bypass	✓	✓	✓	-	✓	✓	✓	-	-	✓

Biodiversity

As described in *section 23.2.1* of the EIS, the potential cumulative impacts to threatened ecological communities (TECs) or threatened species would primarily be the result of vegetation clearing and disturbance compounding existing or future impacts to habitat and biodiversity values. In addition to the relevant projects identified as having potential cumulative biodiversity impacts alongside the project in *section 23.2.1* of the EIS, Muswellbrook Bypass has also been recognised as having potential cumulative impacts to TECs and threatened species alongside the project. Muswellbrook Bypass would impact the following TECs:

- Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions
- Central Hunter Ironbark-Spotted Hum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions
- Hunter Floodplain Red Gum Woodland in the New South Wales North Coast and Sydney Basin Bioregions
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the New South Wales North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, New South Wales South Western Slopes, South Eastern Corner and Riverina Bioregions
- Central Hunter Valley eucalypt forest and woodland.

Additionally, Muswellbrook Bypass would impact the following threatened species:

- Southern Myotis
- Squirrel Glider
- Koala.

Consistent with the EIS, the interaction of the amended project with other projects has the potential to contribute to cumulative impacts such as further habitat fragmentation. Impacts to habitat connectivity are expected to only occur in the short term where affected flora and fauna would disperse from the amended project impact area after having adjusted to the new transmission corridor. Consistent with the EIS, habitat connectivity for bird and bat species were assessed to largely be unaffected as a result of the amended project.

Aboriginal heritage

The cumulative impact on Aboriginal cultural heritage remains generally consistent as described in *section 23.2.2* of the EIS, noting the sites and places considered in the cumulative assessment remain within the amended project impact area and mitigation measures would continue to apply.

Additional survey and assessment since the exhibition of the EIS has provided further understanding of the cultural assemblage within the amended project impact area and potential impacts. When considered in the regional context, the project would continue to primarily impact isolated and/or low densities of stone artefacts, which are considered to be well represented across the region. However, there remains the potential for impacts to highly and moderately significant sites, which would result in cumulative impacts if impacted by the project.

Additionally, while there would be cumulative impacts to the Warkworth Sands system, the amended project does reduce the potential impacts to the broader Warkworth Sands system, with around 43 per cent (around 50 hectares) of these deposits unlikely to be impacted by the amended project impact area compared with the values presented in the exhibited ACHA. Mitigation measures for the project are proposed to minimise or avoid impacts to high and moderate significant sites, where feasible.

Landscape and visual amenity

The amended project would not change the potential cumulative landscape and visual amenity impacts as identified in *section 23.2.3* of the EIS given the scope and/or location of the proposed amendments and refinements relative to the future projects identified in the screening assessment.

Traffic and transport

As identified in *section 23.2.4* of the EIS, the future identified projects have the potential to cause cumulative traffic impacts with the project as they are likely to use similar construction access routes, including vehicles originating from the Port of Newcastle associated with the Newcastle Logistics Precinct, or have overlapping construction programs with these projects.

To further consider these impacts, and in response to feedback from TfNSW concerning the cumulative impacts on the New England Highway and Golden Highway, an additional intersection performance assessment was completed that included:

- construction traffic from future projects identified in the screening assessment, where traffic routes and volumes were available
- construction traffic assumptions for renewable energy projects located beyond the study area that may use the highways to access the Port of Newcastle.

This assessment presents a worst-case scenario as it assumes identified projects occur concurrently with the project in 2028 and is inclusive of renewable energy projects that have not yet been granted access rights. Further detail in the methodology and projects considered is provided in *Appendix H (Revised traffic and transport impact assessment)* of this Amendment Report.

The cumulative assessment found that the majority of the highway intersections would continue to perform at a similar level of service. The nominal volume movements at the England Highway / Hebden Road, New England Highway / Lemington Road, New England Highway / Pikes Gully Road, and Golden Highway / Range Road intersections continue to operate at LoS E/F. Whereas, the Golden Highway (Putty Road) / Broke Road intersection would deteriorate to a LoS E during the AM period with the addition of cumulative traffic volumes. All remaining intersection movements operate with minimal delays. Where intersections are forecast to deteriorate in the cumulative scenario, limitations on the use of these intersections by the project have been identified in the revised mitigation measures.

For the cumulative turn warrant assessment, no further intersection adjustments would be required over and above those identified for the 'project only' scenario as summarised in *section 5.5.3* of this Amendment Report.

Social

As described in *section 23.2.5* of the EIS, the interaction of the project with other relevant future projects has the potential to result in both positive and negative localised social impacts.

With consideration of the future projects identified in this section alongside the proposed amendments and refinements, the amended project would not result in any additional or altered social cumulative impacts compared to those identified in the EIS. There would remain the potential for high and medium unmitigated cumulative impacts (e.g. housing availability or competition for workforce and skills), as well as high and medium positive impacts (benefits) (e.g. regional business participation). These impacts will continue to be managed or enhanced through the mitigation measures as identified in *Appendix D (Updated mitigation measures)* of this Amendment Report.

Further detail on the potential cumulative impacts is provided in *Appendix I (Social impact assessment addendum)* of this Amendment Report.

Land use and property

The amended project would result in some changes in the total area of land impacted by the project, and the types of agricultural land impacted by the project. However, this would not be of a scale that would alter the outcomes of the cumulative assessment as presented in *section 23.2.6* of the EIS.

For Muswellbrook Bypass, the assessment provided minimal detail on impacts to agricultural land and productivity, identifying limited permanent impacts to agricultural properties. As such, the project would likely have a minor contribution to cumulative impacts in the Muswellbrook LGA when considered together with the project.

Noise and vibration

While the amended project has resulted in some isolated changes to the predicted noise impacts during construction or operation, potential cumulative impacts as identified in *section 23.2.7* of the EIS would not change given the nature and location of the proposed amendments and refinements relative to the relevant future projects.

Air quality and greenhouse gas

While the amended project has resulted in some changes to the air quality (dust) impacts during construction, the potential cumulative impacts as a result of the amended project would remain consistent with the impacts as identified in *section 23.2.8* of the EIS. It is anticipated that the implementation of the mitigation measures identified in this Amendment Report would minimise potential cumulative impacts to air quality.

Similarly, the revised greenhouse gas emissions generated during construction and operation of the project would remain generally consistent with the values presented in *section 23.2.8* of the EIS. The project, collectively with the operation of relevant future projects, will contribute to the reduction of GHG emissions through the provision of renewable energy generation and storage and transmission infrastructure to enable the delivery of renewable energy to the NEM.

Economic

The amended project would not change the potential cumulative impacts as identified in *section 23.2.9* of the EIS, including short term economic impacts associated with demand for labour, housing, materials and equipment. The project in combination with relevant renewable energy generation, transmission and storage projects within the region would promote long-term investment, specialisation and job growth.

Combined impacts

Consistent with the EIS, the combined cumulative impact of the amended project and other relevant future projects would contribute to negative impacts in the cumulative impact study area. These include:

- shortages associated with the increased competition for labour and skills from overlapping construction programs for major projects such the Hunter-Central Coast REZ Transmission Project, New England REZ Transmission Project and other energy generation development projects
- skilled labour shortages and wage competition leading to project delays and the need to procure non-local skilled labour
- excess demand for short and long-term accommodation and housing with the potential to displace community members such as seasonal workers that depend on access to short-term housing and accommodation
- cumulative impacts to road services and infrastructure for several key routes such as the Golden Highway, Great North Road, Wollombi Road, Hebden Road and the New England Highway
- increased traffic and heavy vehicle movements on local and arterial roads with impacts to community safety and amenity especially in rural and semi-rural areas subject to cumulative traffic growth.

Combined benefits

Consistent with the EIS, there are many benefits associated with the combination of the amended project and other relevant future projects. These include:

- the clustering of renewable energy generation developments in the region, which would promote flow-on effects for both the production and consumption for goods and services that service the renewable energy sector
- continued growth and investment in the region associated with the growth of electricity generation, transmission, and storage solutions, which would contribute to improved livelihoods for local business owners
- benefits for local and regional communities, which would also be realised through the promotion of training and employment opportunities in the construction, civil, and environmental services sectors that support a growing renewable energy industry.

5.20.3 Updated or additional mitigation measures

No additional mitigation measures to manage cumulative impacts have been proposed for the amended project. Mitigation measures aimed at mitigating issue-specific cumulative impacts are described in their respective Amendment Report chapters and revised technical reports and consolidated in *Appendix D (Updated mitigation measures).*

Additional mitigation measures have been developed to facilitate engagement and coordination with the proponents/key stakeholders of relevant future projects with the aim of identifying and avoiding potential cumulative impacts associated with concurrent construction timeframes and activities during detailed design and construction.

The consolidated list of mitigation measures for the amended project, including those changes made in response to feedback received during exhibition of the EIS, are provided in *Appendix D (Updated mitigation measures)*.

6

Environmental Management

6 Environmental management

6.1 Approach to environmental management

The approach to environmental management for the project has undergone minor updates since exhibition of the EIS. The approach will be consistent with:

- the objective of avoiding and minimising impacts throughout all stages of the project
- the relevant conditions of approval for the project (if approved)
- mitigation measures and management plans proposed in the environmental impact statement (EIS) or as otherwise updated in this Amendment Report
- an early works management plan
- the construction environmental management plans (CEMPs) (for construction)
- environmental management system (EMS) (for the construction contractor for pre-construction minor works for the network operator for operation) to be implemented for the project.

The environmental management approach for the project is illustrated in *Figure 6-1*.

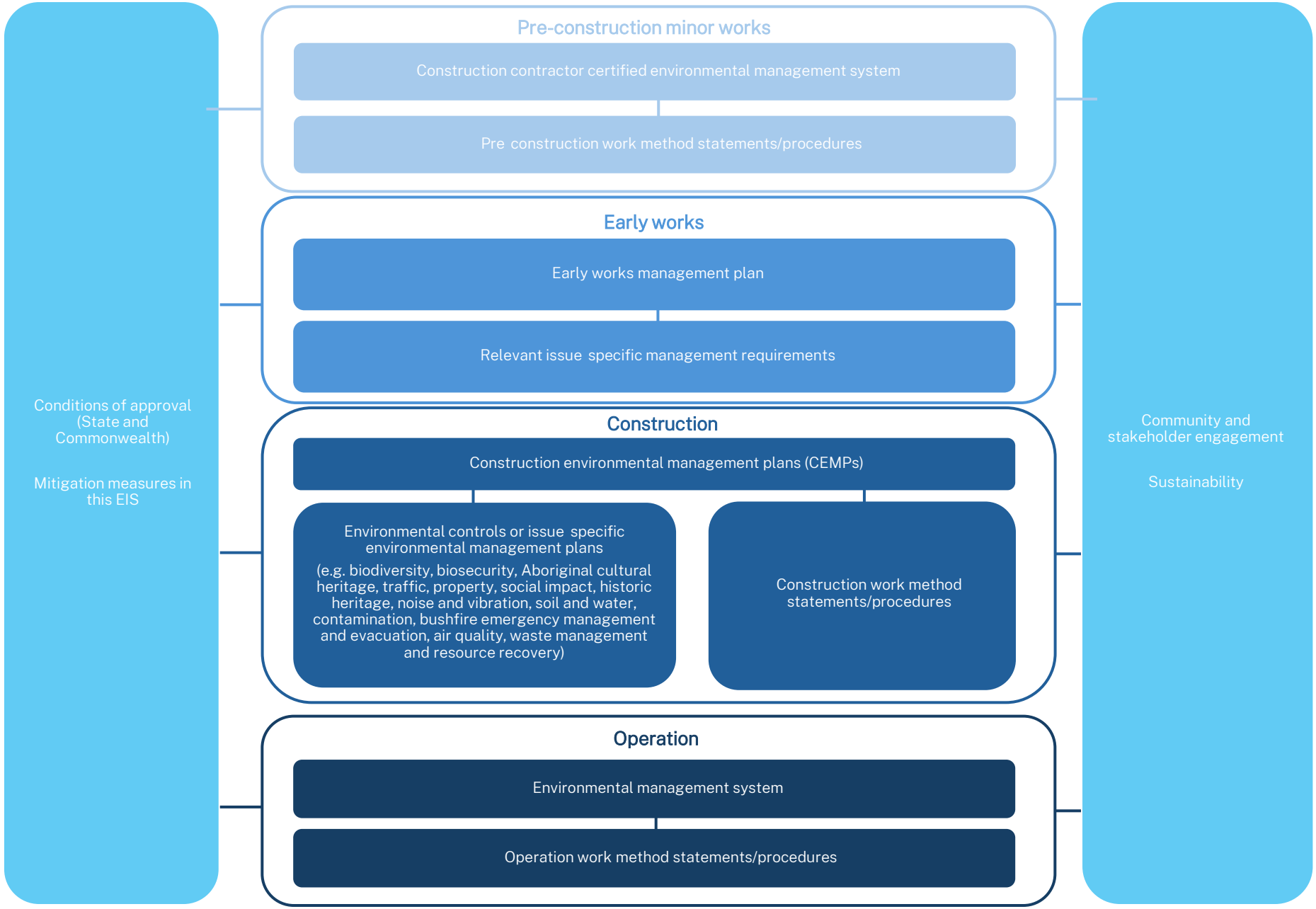


Figure 6-1 Environmental management of the HTP

The approach to community and stakeholder engagement for the amended project is consistent with the approach described in *section 24.1* of the EIS.

6.2 Pre-construction minor works

Pre-construction minor works are low impact activities carried out in accordance with the project planning approval ahead of main construction work. These activities may include (but not be limited to):

- delivery of equipment to construction support sites/laydown areas (excluding oversize equipment)
- installation of certain mitigation measures (e.g. erosion and sediment controls, temporary exclusion fencing for sensitive areas, monitoring equipment)
- preparation of existing access roads that require minimal work such as road grading and vegetation trimming
- property surveys and the installation of property fencing and security gates, as required
- utility investigations.

The conditions of approval for critical State significant infrastructure (CSSI) projects typically require that all construction activities occur in accordance with an approved CEMP. Typical conditions of approval, however, often exclude certain pre-construction minor work and activities with low potential for environmental and community impacts (minor/low impact activities) from the definition of construction. When this occurs, the minor impact activities can occur prior to approval of a CEMP.

The pre-construction minor work will be carried out in accordance with the construction contractor(s) certified environmental management system and will be subject to the relevant mitigation measures detailed in *Appendix D (Updated mitigation measures)*. The contractor(s) will prepare construction work method statements/procedures or similar documents for these activities.

Any work that is not considered to be of minor/low environmental impact or otherwise provided for in the conditions of approval will be carried out as part of the main construction work and in accordance with an approved CEMP.

6.3 Early works

Early works are activities required to facilitate the main construction works and therefore by their nature need to occur prior to main construction. These works would be completed under an early works management plan. The type of activities that may be included in early works (subject to confirmation by design and construct contractors) include:

- establishing construction support sites (including temporary worker accommodation) and laydown areas
- road and intersection upgrades and access track work as required and in accordance with an agreed staging plan

- utility works such as:
  - protecting underground and overhead utilities (where required)
  - relocating or adjusting existing services (as needed) involving excavation, installation of pipes and conduits, backfilling of excavation, compaction, and concreting (where required).

6.4 Main construction

The project would be delivered by two separate design and construct contractors for transmission line construction and substation (including switching stations) construction respectively. Main construction would be carried out in accordance with approved CEMPs.

6.4.1 Transmission line construction

Main construction works for the transmission line and adjustments to existing transmission lines may include the following typical activities (to be confirmed by design and construct contractor(s)):

- operation of construction support sites and occupancy of temporary worker accommodation
- vegetation clearing in line with approved clearing areas and limits under the BDAR, the Biodiversity Management Plan and SODA
- road upgrades and access track establishment to and within the transmission corridor and construction of temporary or permanent access gates (in accordance with an approved staging plan and the TTMP)
- use of laydown areas
- transmission tower construction
- stringing the transmission line between towers
- assembling and installing the adjusted transmission towers
- turning the existing transmission line off and disconnecting the transmission line from the old towers (an outage of the transmission line would be required)
- connecting the transmission line to the new switching stations
- testing the transmission line
- commissioning the transmission line
- demobilising the construction site and rehabilitating temporary disturbance.

6.4.2 Substations and switching stations construction

Main construction works for new switching stations may include (subject to confirmation by design and construct contractor(s)):

- vegetation clearing with erosion and sediment control measures as required in accordance with approved BMP and SODA
- undertaking civil works to establish the pads for the new switching stations and associated infrastructure and services

- constructing the new switching stations
- installation of perimeter fencing and other works
- connecting the new transmission line to the new switching stations, and the new switching stations to the existing transmission network
- testing the new switching stations
- commissioning the switching stations
- demobilising the construction site and rehabilitating temporary disturbance.

Main construction works at existing substations may include (subject to confirmation by design and construct contractor(s)):

- demolishing and removing redundant electrical equipment
- undertaking earthworks to form or extend the substation bench
- modifying drainage structures
- installing foundations, electrical equipment and security
- commissioning.

6.5 Construction environmental management

A CEMP will be developed to avoid/minimise impacts on people and the environment during construction of the project. Given the proposed staging of the project and the possibility that two construction contractors (one to construct the transmission line and the other to construct the new switching stations/upgrade to existing substations) would deliver the project, these will likely include one or possibly two main works CEMPs.

The CEMP(s) will:

- describe the role, responsibility, authority and accountability of key personnel involved in the environmental management of the project
- describe the interface with the other project contractor(s)
- set out the procedures that will be implemented to:
  - keep the local community, stakeholders and relevant agencies informed about the project status and environmental performance of the project
  - receive, handle, respond to and record complaints
  - resolve any disputes that may arise
  - respond to any non-conformances and non-compliances
  - respond to environmental incidents and emergencies
  - carry out site inspections and auditing
- include references to strategies, plans and programs approved under the conditions of approval
- include a clear plan showing the monitoring to be carried out in relation to the project, including the monitoring and reporting obligations under the conditions of approval.

The CEMPs will include either environmental controls embedded within the CEMP or issue-specific environmental management plans appended to the CEMP (e.g. for the main works CEMPs). The issue-specific environmental management plans are discussed further in *section 6.5.1*.

The CEMPs will be developed to be consistent with applicable guidelines, policies and standards, as well as mitigation measures and commitments detailed in the EIS and the conditions of consent (both State and Commonwealth) for the project.

Construction cannot commence until the CEMPs are approved by the Planning Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI).

6.5.1 Issue-specific environmental management plans (sub plans)

The issue-specific environmental management plans (sub plans to CEMP(s)) for the amended project are generally consistent with those described in *section 24.3.2* of the EIS. However, early works are no longer included in the CEMP and associated issue specific sub plans but will be addressed within an Early Works Management Plan (refer *section 6.3*). Further to this, additional sub plans are proposed based on the submissions received and amendments made to the project. These additional sub plans include:

- utilities management plan
- interface management plans(s) (e.g. for Hunter Valley Operations).

6.6 Operation

6.6.1 Operation environmental management

Operation of the amended project through an accredited environmental management system will be consistent with the approach described in *section 24.4.1* of the EIS.

6.6.2 Work method statements/procedures

Operation of the amended project using work method statements/procedures contained within the environmental management system will be consistent with the approach described in *section 24.4.2* of the EIS.

6.7 Updated summary of mitigation measures

An updated compilation of mitigation measures is provided in *Appendix D (Updated mitigation measures).* These mitigation measures will be incorporated into the Early Works Management Plan, the CEMPs, sub plans, and work method statements/procedures developed for construction and operation of the project.

6.8 Effectiveness and costs of mitigation

The effectiveness and costs of mitigation for the amended project will be consistent with that described in *section 24.6* of the EIS.

6.9 Change management

Change management for the amended project will be consistent with that described in *section 24.7* of the EIS.

7

Justification of the amended project

7 Justification of the amended project

This chapter provides the reasons justifying the carrying out of the project, considering the environmental, social and economic impacts assessed in this Amendment Report and the requirements of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). The justification incorporates the strategic need for the amended project, demonstrates how the project objectives are achieved and provides an evaluation of the overall findings of the Amendment Report, including how it addresses the relevant statutory requirements.

7.1 Strategic need

The New South Wales (NSW) energy system is undergoing a once-in-a-generation transformation as we move from reliance on coal-fired power to renewable energy to meet our daily needs.

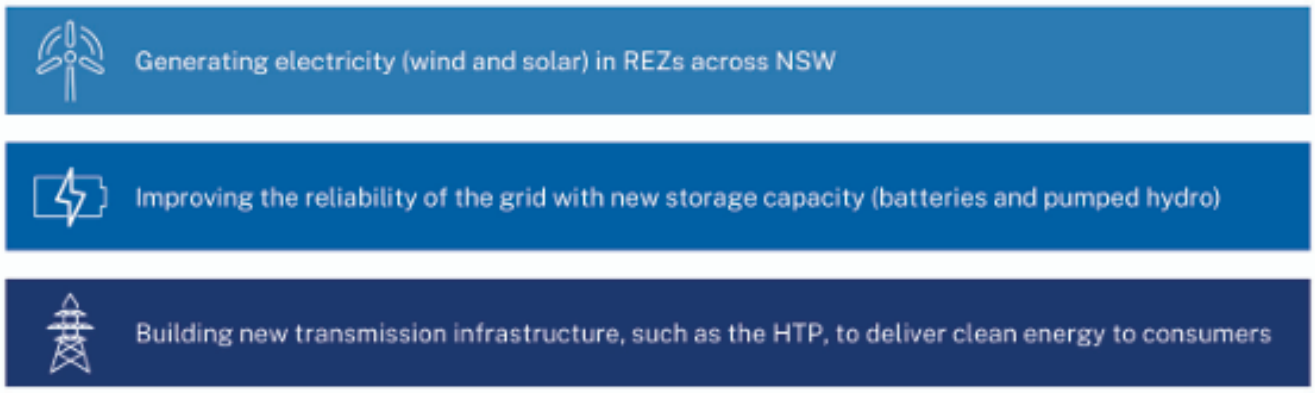
Coal-fired power stations currently provide most of NSW's electricity supply, however most of these power stations are reaching the end of their life and are due to shut in the next 10 years. Liddell Power Station closed in April 2023 with Eraring Power Station to close by 2029 and Bayswater Power Station to close by 2033.

At the same time our electricity demand is increasing as our population grows and we electrify our vehicles, homes, businesses and industry.

This means NSW needs new electricity supply and the required associated transmission infrastructure urgently.

The NSW Government has developed the *NSW Transmission Infrastructure Strategy* (DPE 2018), the *NSW Electricity Strategy* (DPIE 2019) and, most recently, the *NSW Electricity Infrastructure Roadmap* (the Roadmap) to deliver affordable, sustainable, and reliable electricity.

The Roadmap aims to transition NSW to a cleaner future with new supply coming from renewable energy generation, supported by energy storage, largely concentrated within Renewable Energy Zones (REZs) in regional NSW. This involves:



The Energy Corporation of New South Wales (EnergyCo) as infrastructure planner under the NSW *Electricity Infrastructure Investment Act 2020* (EII Act) is responsible for coordinating the delivery of the Roadmap, including building new transmission lines, like the project, to connect renewable energy generation in REZs to the electricity grid.

The Roadmap aims for at least 12 gigawatts (GW) of new renewable electricity generation to be developed by 2030. EnergyCo's 2023 *Network Infrastructure Strategy* (2023) also targets delivery of 14 GW by 2033. A large majority of this generation (10 GW or more by 2030) is expected to be supplied from the Central-West Orana and New England REZs (AEMO 2024). The implementation of large-scale transmission infrastructure is imperative to ensure the viability of the REZs as they are not located in the immediate vicinity of load centres and, in many cases, existing transmission infrastructure is not equipped to carry the amount of energy expected to be generated. For this reason, the creation of additional transmission infrastructure is required if the REZs are to meet the aims of the *NSW Electricity Strategy* (DPIE 2019).

The project is expected to provide (up to) an additional 5 GW of electricity transfer to the main load centres of the Hunter, Sydney and Illawarra. This would provide a substantial quantity of the necessary transfer capacity for new renewable generation from regional NSW.

The project is critical to unlocking the generation capacity of the Central-West Orana and New England REZs, and:

- is an urgent NSW Actionable Project under the Australian Energy Market Operator's (AEMO) *2024 Integrated System Plan* for the transition of the National Electricity Market (NEM) to renewable energy over the next 20 years
- would receive part of the $4.7 billion allocated to the NSW Government to modernise the electricity grid under the Australian Government's Rewiring the Nation program
- is a 'Deliver Now' project under the *Network Infrastructure Strategy* (EnergyCo 2023) to support the delivery of the NSW Electricity Infrastructure Roadmap (the Roadmap)
- is a Priority Network Infrastructure Project (PNIP) under the NSW *Electricity Infrastructure Investment Act 2020* (EII Act) because it is essential for energy security and avoiding breaches of the NSW Energy Security Target.

Further information on the strategic need for the project is provided in *Chapter 2 (Strategic context)* of the EIS.

7.2 Relevant strategic policies and plans

The project is consistent with key strategic government policies and plans which are described in detail in *Chapter 2 (Strategic context)*. These include:

- *2024 Integrated System Plan* (ISP) (AEMO 2024) – the project is included as an Actionable Project in NSW. This means that it is required to be delivered urgently to contribute to the optimal development path towards a cleaner energy market recognised in the 2024 ISP
- *2023 Infrastructure Investment Objectives Report* (AEMO 2023) – the project is recognised as one of the most critical energy projects in NSW. It acknowledges that the project would unlock up to 5 GW of additional transfer capacity, which is essential to meeting energy demands in NSW. It is recognised as contributing to sufficient renewable energy being available in the NEM
- *Australia's Nationally Determined Contribution Communication 2022* (DISER 2022) and Australia's Long-Term Emissions Reduction Plan (DISER 2021) – the project would facilitate the transition to low emission energy sources as it involves the construction of new transmission infrastructure between Bayswater and Eraring, which would enable the connection of new renewable energy projects in the Central-West Orana and New England REZs into the NEM
- *Network Infrastructure Strategy* (EnergyCo 2023) – the project is a 'Deliver Now' project, meaning it is required to be developed in the near-term to support grid-scale generation and storage in REZs and to maintain the supply of electricity as coal-fired power stations close in NSW
- *Hunter Regional Plan 2041* (DPE 2022a) – the plan recognises the importance of transmission infrastructure within the Hunter region for the transformation of the electricity sector into one that is cheap, clean and reliable. The plan also recognises the potential for new employment in related manufacturing and energy intensive industries as a result of greater electricity capacity, which would result from the project
- *Staying Ahead: State Infrastructure Strategy 2022 -2042* (Infrastructure NSW 2022) – the project is aligned with the strategic objectives set out in the strategy as it would provide the increased transmission capacity that is required for the orderly clean energy transition in NSW
- *Net Zero Plan Stage 1: 2020 -2030* (DPIE 2020a) – the project is a critical transmission infrastructure project that would support the transfer of energy generated within the Central-West Orana and New England REZs. This would encourage the continued expansion of renewable energy generation within these REZs, which would help to facilitate the transition of the NEM to energy sources with lower greenhouse gas emissions
- *NSW Electricity Strategy* (DPIE 2019) – the project would contribute to the delivery of the aims of the strategy through the provision of regional investment in new transmission infrastructure. It would connect new generation projects to the existing transmission network
- *NSW Transmission Infrastructure Strategy* (DPE 2018) – the project would enable the connection of renewable energy projects in the Central-West Orana and New England REZs to the NEM, which would provide certainty to private sector investors and cost savings to energy consumers.

7.3 Efforts to avoid and minimise impacts

The project has been developed following a robust and iterative process including detailed alternatives and options analysis, design, environmental assessment and engagement. Where feasible and reasonable, the project has aimed to avoid and minimise impacts to people and the environment. This has included the iterative refinement of the transmission line corridor, consideration of alternative options suggested by the community and other key stakeholders, as well as assessment of alternative locations for key project components including the switching stations and ancillary infrastructure such as construction support sites and laydown areas.

EnergyCo undertook a detailed assessment of alternatives for the project. This included an analysis of strategic project alternatives through which new transmission line infrastructure was selected as the preferred strategic project alternative. Broad strategic corridors (including route options within the corridors) were assessed against strategic objectives and multidiscipline considerations whereby a preferred route was identified for the project. This was presented in the Scoping Report and was further shaped and refined based on feedback from affected landowners, the wider community and other key stakeholders and the results of preliminary environmental surveys undertaken in 2024 and early 2025.

Refinements included:

- moving the southern switching station to Olney State Forest to reduce the impacts on the Martinsville and Cooranbong communities
- relocating the transmission corridor further away from the major recreation areas in the Olney State Forest
- prioritising existing access tracks over creating new tracks
- selecting laydown area and construction support site locations so as to minimise impacts to people and the environment
- selecting construction access routes based on safety and capacity considerations
- avoiding critical biodiversity and Aboriginal heritage values
- minimising visual and amenity impacts
- minimising impacts on the Forestry Corporation of NSW's hardwood plantations in the Watagan State Forest
- refining the transmission corridor through multiple private properties to minimise the impacts on landowners
- pushing the transmission corridor further west in the Pokolbin and Corrabare State forests to reduce the extent of vegetation clearing, avoid impacts on threatened plants and animals, avoid major ridgelines and sightlines that have cultural significance for Traditional Owners and the local Aboriginal community and minimise visibility of transmission towers
- narrowing the transmission corridor around the coal mines and confirming the transmission line would run through the Hunter Valley Operations coal mine, minimising impacts on the Maison Dieu community.

The refined project impact area best balanced technical and cost requirements and addressed the project objectives whilst avoiding and minimising potential impacts on people and the environment and was presented and assessed in the EIS.

Further engagement since public exhibition of the EIS, consideration of the submissions received on the EIS, further design development and feedback provided by design and construct tenderers for the project has led to amendments and refinements to the project.

The amendments include:

- changes to 500 kV transmission line infrastructure, including:
  - realignment of the transmission line at Mount Thorley
  - realignment of the transmission line at Gouldsville
  - localised easement widening for conductor swing
- changes to substation infrastructure at Eraring
- changes to intersections, access roads and access tracks, including:
  - changes to access track locations
  - minor adjustments to the project impact area for intersection upgrades
  - adjustments to the proposed access routes for construction
- changes to construction methods and facilities, including:
  - reconfiguration of construction support sites and temporary worker accommodation
  - changes to the location of laydown areas within State forests
  - reconfiguration of the Flick Road emergency helicopter landing area
  - removal of a stringing site within Olney State Forest
  - changes to construction plant and equipment types and locations of use.

The refinements include:

- changes at Bayswater substation
- changes to the disturbance area within Olney State Forest.

The proposed amendments and refinements to the exhibited project are described in detail in *Chapter 3 (Description of amendments and refinements)* and *Appendix A (Updated project description)*.

The detailed design of the project would be carried out by design and construct contractors and informed by the assessment completed for the project as well as government, landowner, community and/or other key stakeholder feedback received on the project. During this stage, the mitigation measures documented in this Amendment Report relevant to the detailed design would be implemented to further enable the avoidance and minimisation of potential environmental impacts of the project.

7.4 Community views

Community engagement for the project began in 2022. Stakeholders were engaged using a range of tools and techniques including meetings/briefings, information sessions, workshops, phone calls, letters, emails, website updates and newsletters. These were supported by community feedback mechanisms, including a project-specific phone number and email address.

Other targeted activities were also undertaken to support the technical studies included in this Amendment Report and the EIS. These included social impact surveys and consultation with registered Aboriginal parties (RAPs).

This engagement led to feedback that significantly influenced the design of the project, including construction methodologies, and minimised impacts on people and the environment in the vicinity of the project.

The following key themes and topics were raised during the preparation of the EIS:

- project design, including issues related to route selection and the design of the project. This included suggestions to underground the line, to use existing easements or upgrade existing lines, as well as feedback on where the project crosses private land
- impacts on private land, including land use impacts as well as issues such as acquisition and compensation
- loss of productive land including agricultural land used for grazing and cropping, forestry timber resources and mining (coal) resources as a result of the temporary and permanent elements of the project
- biodiversity, including issues such as vegetation clearing, impacts on native wildlife, and impacts on threatened and endangered species
- Aboriginal cultural heritage, including impacts to places, artefacts and sightlines as well as access to places of value, particularly in the State forests
- traffic and transport, including the need for upgrades to local roads, including Pokolbin Mountains Road and Mount Baker Road, as well as impacts of increased traffic and large vehicles on roads in surrounding communities
- visual impacts, including changes to the scenic landscape as a result of the project (focus of feedback with communities in Millfield and the Congewai Valley and for landowners adjacent to the Singleton Military Area in Broke)
- amenity concerns associated with construction activities in and around Millfield and within key recreational areas of the State forest
- impacts to the future operation of the Hunter Valley Gliding Club as a result of the project alignment.

A summary of the community views and how they were addressed is presented in *Chapter 25 (Justification of the project)* of the EIS with further detail provided in *Chapter 6 (Engagement)* and *Appendix D (Community engagement outcomes)* of the EIS.

During the exhibition of the EIS (27 August to 24 September 2025), submissions to the NSW Department of Planning, Housing and Infrastructure (DPHI) were invited from the community which included members of the public and organisations, government agencies and other stakeholders for consideration in its assessment of the project. EnergyCo was directed to prepare a written response to all issues raised in submissions and agency advice, in accordance with Section 5.17(6)(a) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The key issues raised by the community (including special interest groups and organisations) were:

- social, primarily relating to impacts on community, health and wellbeing and impacts on accessibility and livelihoods and how these impacts would be managed
- traffic and transport impacts during construction, particularly on local roads such as Pokolbin Mountains Road, Mount Baker Road and Mount View Road
- the need for road improvement works to better support construction of the project
- hazards and risks, primarily relating to the increased risk of bushfires and impacts to firefighting operations, and risks associated with electric and magnetic fields (EMF) and aviation safety in and around State forests
- biodiversity, primarily relating to the magnitude of biodiversity impacts (e.g. the extent of clearing and impacts to threatened species and ecological communities, and the methodology used in the assessment and the implementation of the Strategic Offset Delivery Agreement for the project)
- request for support for wildlife rescue efforts during construction
- alternatives and options, primarily relating to the transmission line alignment route selection
- engagement, primarily relating to the consultation carried out during project development and future community and stakeholder engagement
- productive land impacts including agricultural land used for grazing and cropping, forestry timber resources and mining (coal) resources as a result of the temporary and permanent elements of the project
- Hunter Valley Gliding Club operations and the potential impacts to viability of the operation and future of the club following construction of the project
- amenity and safety concerns related to construction activities in and around Millfield including Millfield Public School.

EnergyCo has prepared a Submissions Report which carefully considers the submissions received, and provides responses to the issues raised. The Submissions Report also describes the actions taken since the EIS was placed on public exhibition, including where submission responses have led to changes in the project assessment and/or mitigation measures since the EIS. The Submissions Report should be read in conjunction with this Amendment Report.

7.5 Strategic considerations

Coal-fired power stations currently provide most of our electricity supply however most of these power stations are reaching the end of their life and are due to close in the next 10 years (Liddell Power Station closed in April 2023 with Eraring Power Station to close by 2029 and Bayswater Power Station to close by 2033). At the same time, electricity demand is increasing due to population growth, and increased electrification of vehicles, homes, businesses and industry. This means new electricity supply and the required associated transmission infrastructure is needed urgently.

The existing 500 kV transmission lines in NSW are built around the coal-fired power stations in the Hunter Region with two lines to the east connecting Eraring substation to Kemps Creek substation and two lines in the west connecting Bayswater Power Station via Wollar substation to Mount Piper Power Station and Bannaby substation. The project would close the northern gap between these existing 500 kV transmission lines. It would connect Bayswater to a new switching station in the Olney State Forest near Eraring. From there it would continue to the existing 500 kV line between Eraring and Kemps Creek.

Renewable electricity from the Central-West Orana and New England REZs would be delivered to the core grid via the project. It could then be delivered to NSW consumers, particularly in the Hunter, Sydney and Illawarra where 80 per cent of the State's electricity is used. As coal-fired power stations close, the project is critical for energy security in NSW.

7.6 Biophysical, economic and social considerations

A comprehensive analysis of the key environmental, social and economic impacts associated with the exhibited project is provided in *Chapter 8 (Biodiversity)* through *Chapter 23 (Cumulative impacts)* of the EIS. An assessment of the amendments and refinements to the project, as well as additional assessment to address feedback received from stakeholders during EIS exhibition is presented in *Chapter 5 (Assessment of impacts)* of this Amendment Report.

A summary of the key impacts arising from the amended project is provided in *section 7.6.1* through *section 7.6.4.*

7.6.1 Summary of biophysical impacts

Biodiversity

The most significant impact to the biophysical environment arising from the amended project would be on biodiversity due to the extent of vegetation clearing required to facilitate construction. The transmission corridor has been refined to avoid and minimise impacts to biodiversity where possible, however, based on the disturbance area, this would likely include direct impacts on:

- around 945 hectares of native vegetation
- seven threatened ecological communities (TECs) listed under the NSW Biodiversity Conservation Act 2016 (BC Act)

- three TECs listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- 38 threatened flora species – 24 of these species are listed under the BC Act and EPBC Act, 12 are listed under the BC Act only and two are listed under the EPBC Act only
- 28 threatened fauna species – 15 of these species are listed under the BC Act and EPBC Act and 13 are listed under the BC Act only
- 14 serious and irreversible impact entities known or assumed to occur within the disturbance area.

Notably, in response to submissions from regulator and community on the EIS, refinements to the disturbance area were made between the Olney switching station and Corrabare State Forest to further avoid and minimise impact to the important breeding habitats for frog species, including Littlejohn's Treefrog (*Litoria littlejohni*) and Stuttering Frog. An amphibian management plan will be prepared and implemented for the duration of construction, including areas to be protected for amphibian breeding habitat within Olney State Forest.

Proposed management measures would aim to avoid and minimise impacts on biodiversity. However, there would be some residual impacts that would require offsetting in accordance with the NSW Biodiversity Offsets Scheme and HTP Biodiversity Offset Strategy.

Direct impacts on native vegetation and habitats of threatened species would continue to occur during operation of the amended project. However, these impacts would be minor and substantially less than those that would occur during construction. Impacts would be caused by ongoing vegetation management, which would be required to maintain vegetation clearance and asset protection zones within the new transmission line easement and at switching stations.

Water

Impacts to water quality due to construction activities and ongoing maintenance activities as part of the amended project would be minimal and managed through the implementation of standard mitigation measures such as erosion and sedimentation controls and procedures for the safe handling of materials.

Construction and operation would have only minor and localised impacts on flooding. The project would not increase flood hazard in the vicinity and would not have an adverse impact on the emergency response arrangements of the NSW State Emergency Services. Flooding impacts during construction would be managed in accordance with a construction soil and water management plan which would set out flooding objectives to minimise impacts on watercourses.

Construction and operation would not result in permanent inflow or take of groundwater. The project is predicted to generally have a limited impact to groundwater, which would be further reduced with the implementation of mitigation measures outlined within the environmental management strategy and the construction soil and water management plan.

Hazards

Potential hazards during construction of the amended project would be temporary and associated with the use, storage and transportation of low volumes of dangerous goods and hazardous materials. Mitigation measures, such as procedures for the safe handling and storage of dangerous goods, would be implemented to minimise these risks during construction of the amended project.

With proposed risk controls in place, the construction and operation of the amended project would have no material impact on bushfire public safety risk within or surrounding the amended project impact area. Specific measures to minimise bushfire risk include creating asset protection zones (areas of cleared or semi-cleared vegetation) around switching stations sites, construction support sites and temporary worker accommodation. Other mitigation measures include maintaining proper setbacks from trees, establishing fire trails for firefighting and emergency services to access bushfire prone areas, as well as developing a bushfire safety system to detail the restrictions and procedures for preventing accidental fire ignition during construction and operation. A bushfire emergency management and evacuation plan will also be prepared to ensure workforce bushfire safety. Together, these measures would help ensure that any risk of fire ignition or spread is kept as low as reasonably practicable during construction and operation of the amended project.

7.6.2 Summary of social impacts

Key social impacts would be primarily associated with construction of the amended project. Construction would create both social benefits and impacts. Further social benefits would be realised once the project is in operation. The key benefits and impacts would be:

- benefits associated with:
  - financial benefits through benefit sharing initiatives
  - employment and training opportunities for local and regional community
  - regional business opportunities
- negative social impacts associated with:
  - land use changes due to full or partial acquisition for the project (including some agricultural and forestry land uses and activities)
  - loss of property and relocation of landowners (seven landowners requested a whole of property acquisition over an easement or partial acquisition)
  - potential loss of residential amenity (e.g. visual, noise and dust impacts) and changes to traffic movements during construction including potential (temporary) interruption of utilities
  - construction workforce and traffic presence affecting perceptions of safety and community cohesion
  - reduced health and wellbeing due to the stress associated with change, property devaluation and environmental values
  - impacts on rural lifestyles, environmental values, and biosecurity risks

- potential impacts on 217 Aboriginal objects, sites and places located within the disturbance area, 12 Aboriginal objects, sites and places within or within 55 metres of the amended project impact area but outside of the disturbance areas, and three rockshelters located outside the amended project impact area (more than 55 metres) as a result of Aboriginal led research conducted as part of the proposed cultural values mitigation strategy. Potential impacts to around 117 hectares of Warkworth sands system (often correlated with the presence of cultural deposits) would also occur
- the level of impact to private views during construction would vary according to the visibility of proposed construction support sites and construction activities. Construction activities would be transitory along the amended project impact area and would not remain at individual transmission tower locations for longer than a few weeks. During operation, some private viewpoints associated with rural dwellings would experience a visual impact associated with permanent infrastructure including transmission lines and towers being introduced to the landscape, however impacts would generally be low
- noise impacts at sensitive receivers would generally be limited to residential receivers closest to the amended project impact area, with airborne construction noise anticipated from the use of construction support sites and laydown areas, the construction of access tracks and upgrade of intersections, and the use of helicopters. Compliance with relevant criteria is predicted for all receivers in relation to road traffic noise. Vibration impacts to sensitive receivers are anticipated at 10 receivers within minimum working distances for human comfort vibration impacts (reduced from 16 for the exhibited project)
- most roads and intersections were assessed to operate at acceptable levels of service during the network peak hours in 2028 (peak construction) with and without construction traffic. Mitigation measures will be put in place for intersections that are predicted to operate at unsatisfactory levels of service during 2028. Based on the traffic analysis for construction undertaken, some roads would require widening and some intersections would require upgrades to include turning lanes or additional safety features. Temporary full or partial road closures would also be required to allow for stringing of the new transmission line across identified roads.

Social impacts will be minimised and managed through the implementation of a social impact management plan and other strategies/plans including a community communication strategy, landowner engagement strategy, local business and employment strategy, an industry and Aboriginal participation plan and temporary worker accommodation management plan(s).

EnergyCo is expecting to commence consultation with relevant communities in 2026 to inform the design and delivery of the community and employment benefits program in the Hunter-Central Coast region which reflects the region's needs and relative impact from the project.

The project would also be consistent with key strategic government policies and plans that support the energy market transition (with resulting social and economic benefits including the potential for new employment in related manufacturing and energy intensive industries) which are described in detail in *Chapter 2 (Strategic context)* of the EIS.

Potential negative social impacts associated with operation of the project would be associated with restrictions to activities within and near the easement and changes to amenity (including landscape character impacts) from the new transmission line. These impacts would be relatively localised to the landowners within and next to the amended project impact area. Work would be undertaken with local landowners to address potential negative impacts through the implementation of mitigation and management measures and micro-siting of transmission towers.

All property acquisitions would occur in accordance with the requirements of NSW *Land Acquisition (Just Terms Compensation) Act 1991*.

7.6.3 Summary of economic impacts

Construction and operation of the project would provide positive economic activity to the regional and NSW economy. The benefits on the economy during construction are estimated at around $325 million in annual direct and indirect output and 789 direct and indirect jobs. The economic benefits to the economy during operation are estimated at around $27 million in annual direct and indirect output and 40 direct and indirect jobs.

Construction of the project would result in a reduction in the land available for agricultural activity within the construction impact area, with the direct impact of construction on gross agricultural production estimated to be about $352,878 per year of construction. In addition, the construction of the project would impact 688 hectares of production native forests and 43 hectares of plantation forests. The direct impact of construction on gross forestry production is estimated to be around $35,522 per year of construction, with regional impacts associated with this level of reduced economic activity anticipated to be negligible.

The agricultural productivity impacts of the project during operation are around 0.03 per cent of the gross value of agriculture in the region and a fraction of the economic activity gains from the project, while forestry impacts are estimated to be around $20,818 per year of operation, with regional impacts associated with this level of reduced economic activity anticipated to be negligible.

The amended project impact area intersects 499 hectares of mine leased land, including across Mount Arthur Coal Mine, Maxwell Underground Coal Mine, Hunter Valley Operations, Mount Thorley Warkworth, Bulga Coal Mine and Centennial Coal/Newstan. In relation to impacts on the broader mining industry as a result of the potential loss of coal royalties from the presence of project infrastructure within mining land, these impacts are anticipated to be negligible. This has been estimated based on the area of mine lease land within the regional economy (assumed to be the five LGAs within which the amended project impact area is located), which amounts to 175,377 hectares. As such, the amended project impact area intersects 0.3 per cent of the total mine lease land within the regional economy. Applying the assumption that the area of mine lease land equates to revenue for the coal mining industry, the intersection of the amended project impact area with 0.3 per cent of the total mine lease land within the regional economy would have a negligible impact on the $41 billion in exports and $31 billion in value added of the coal mining industry within the regional economy.

7.6.4 Summary of cumulative impacts

Cumulative impacts describe the impacts of the project together with the impacts of other relevant projects within an identified area.

Potential combined cumulative impacts would result due to the construction and operation of the project and other relevant future projects, including New England REZ Transmission Project, Liddell Future Land Use and Enabling Works, Bayswater Power Station Upgrade, HVO continuation projects (North and South), Maison Dieu Solar Farm, Hunter-Central Coast REZ Transmission Project, Muswellbrook Solar Farm, Bowmans Creek Wind Farm, Central-West Orana REZ Transmission Project, Edderton Solar Farm, Newcastle Logistics Precinct Intertrade Project, Muswellbrook Pumped Hydro Energy Storage Project, the Mandalong Road Upgrade and Muswellbrook Bypass.

The cumulative impact assessment for the project identified potential cumulative impacts with respect to biodiversity, Aboriginal cultural heritage, landscape and visual, traffic and transport, land use and property, social, noise and vibration, air quality and economics. These impacts and proposed mitigation measures are provided in *Chapter 23 (Cumulative impacts)* of the EIS and updated in *section 5.20* and *Appendix D (Updated mitigation measures)* of this Amendment Report.

7.7 Ecologically sustainable development

7.7.1 Principles of ecologically sustainable development

Ecologically sustainable development involves the effective integration of social, economic and environmental considerations in decision making processes. In NSW, the EP&A Act adopts the definition of ecologically sustainable development contained in Section 193 of the EP&A Regulation while the principles of ecologically sustainable development are also set out in Clause 3A of the EPBC Act.

The principles of ecologically sustainable development include:

- the precautionary principle – where there are threats of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- inter-generational equity – the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations
- conservation of biological diversity and ecological integrity – conservation of biological diversity and ecological integrity should be a fundamental consideration
- improved valuation, pricing, and incentive mechanisms – includes the recognition of the principles that the costs of environmental externalities should be internalised, and that the polluter should bear the costs associated with environmental pollution.

Consideration of the principles of ecologically sustainable development and how they have been considered in the design and environmental impact assessment of the project is provided in Table 7.1.

Table 7.1 Ecologically sustainable development principles and how they are considered in the HTP

Principle	Considerations
Precautionary principle	The environmental impact assessment for the project is consistent with accepted scientific assessment methodologies and good practice, has taken into account relevant statutory and agency requirements and has been informed by consultation with stakeholders including government agencies and the community. The assessments have applied a conservative approach with regard to construction and operational arrangements, and the modelling used (where relevant). This has included assessing worst-case impacts and scenarios including a project impact area that would be further refined during detailed design, which is likely to result in impacts that are less severe than those identified. Several mitigation and management measures have also been proposed to further avoid and minimise impacts on people and the environment. Emphasis has been placed on avoiding serious or irreversible damage to the environment. This has included avoidance and minimisation of impacts to critically endangered ecological communities such as the Warkworth Sands woodland and Central Hunter Valley eucalyptus forest and woodland, and habitat of listed threated species. A lack of full scientific certainty has not been used as a reason for postponing measures to prevent environmental degradation.
Inter-generational equity	The project would strengthen the State's core electricity grid by closing the gap in the 500 kV Ring, unlocking the supply of renewable energy from the Central-West Orana and New England REZs, creating the backbone of the State's electricity grid, benefiting current and future generations as the State transitions to a net zero economy. This transition is essential to meet Australia's emissions reductions commitments and to meet the global goal of holding the increase in global average temperatures to well below 2°C of warming. The project would increase economic activity, provide regional job opportunities and assist in unlocking the development of large-scale renewable energy generation. The project has been designed to meet the needs of both current and future generations with a design life of about 50 years (which could be extended to more than 70 years for some assets) and would contribute to an increase in resilience and capacity of the electricity network. During construction of the project, opportunities would be taken to reduce resource and material use and maximise the use of materials with low embodied environmental impact, where feasible. Initiatives to deliver benefits to local communities, including employment opportunities, have also been identified.
Conservation of biological diversity and ecological integrity	The development of the project has been carried out with the aim of identifying, avoiding, minimising and mitigating impacts on biological diversity and ecological integrity in accordance with relevant legislation. This includes field investigations and assessment, which have informed the concept design and project impact area to avoid and minimise impacts. Where potential impacts cannot be avoided, mitigation measures would be implemented to reduce the impact as far as possible. An offsets strategy has been developed to compensate for the potential threatened species impacted by the project.

Principle	Considerations
Improved valuation, pricing and incentive mechanisms	The project has been designed to minimise adverse environmental impacts through a detailed alternatives and options assessment and design process that includes the consideration of environmental factors as a key objective. The environmental impact assessment has further identified environmental mitigation and management measures, where appropriate, with an objective of minimising potential impacts on the surrounding environment. Biodiversity offset credit costs have also been estimated as a way to value and price residual biodiversity impacts. Any project-related decisions will consider environmental factors in a cost-effective way and be guided by the whole-of-life costs of providing goods and services.

7.7.2 Sustainability in infrastructure development

Infrastructure is crucial to sustainability as it is a vital part of the workings of society. Ensuring it is planned, constructed, operated and adapted in a sustainable way is important.

The Infrastructure Sustainability Council (ISC) defines infrastructure sustainability (IS) as infrastructure that is designed, constructed and operated to optimise environmental, social and economic outcomes in the long-term. The IS rating scheme includes ratings for the planning, design, as-built (construction) and operational stages of projects with a focus on improving sustainability outcomes. It evaluates sustainability initiatives and potential environmental, social and economic impacts of infrastructure projects and assets. Incorporating the IS rating scheme into the development of this project's design is outlined in *Table 7.2*.

Sustainability objectives and potential initiatives, which are applicable to this project, are included in *Table 7.2*. These objectives have been developed into themes which align with the ISC's IS rating scheme.

The potential of an ISC rating under the rating scheme will be explored during detailed design of the project.

Table 7.2 Sustainability objectives and potential initiatives for the project

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
Management and governance	• Demonstrate sustainability leadership by embedding sustainability into decision making • Establish governance arrangements which support continuous improvement of sustainability performance • To reduce the adverse environmental, social and economic impacts of purchased goods and services throughout their life and disposal • To integrate sustainability into procurement systems	• Establish governance structures, processes and systems that ensure integration of sustainability considerations throughout all stages of the project • Couple sustainability risk and opportunities with overall project risk processes to drive consistency and improve project outcomes • Monitor project sustainability performance and report results • Ensure knowledge sharing is conducted across EnergyCo and wider industry covering lessons learnt, and environmental, social and economic aspects • Develop and implement a sustainable procurement plan to apply to contractors, subcontractors and suppliers • Partner with local suppliers where economically feasible and include social and environmental impacts in procurement strategies	• High-impact decisions will be guided by multi-criteria analysis, cost-benefit analysis and risk and opportunity assessment where relevant • Increased positive economic, environmental and social impacts from the project • Local skills development through the upskilling of local providers in the supply chain

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
Using resources	• Reduce energy use and carbon emissions during construction • Support innovative and cost-effective approaches to energy efficiency, low-carbon/ renewable energy sources and energy procurement • Optimise material use across the project • Optimise water use across the project	• Establish energy efficiency targets for the project during construction • Incorporate energy efficient construction plant and equipment, methods and practices • Set targets to maximise the re-use of materials • Use local sources of materials where feasible • Source materials that reduce the need for virgin material supply • Set targets for reductions in water use during construction and operation • Implement water efficiency measures with a focus on achieving water savings and targeting water recycling and reuse • Reuse, recycle or reclaim water (e.g. rainwater, stormwater, wastewater, groundwater) generated/collected • Ensure water monitoring across the project lifecycle is implemented	• Local materials are sourced and re-used • Monitoring and modelling of materials lifecycle impacts is undertaken • The need for potable water during the project lifecycle is minimised • Water is reused and recycled during construction and operation • Monitoring and modelling of water use is undertaken

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
Emissions, pollutions and waste	• Reduce generation of waste and maximise diversion from landfill • Minimise discharges to air, land and water • Optimise water use across the project • Optimise land use across the project	• Set targets for waste avoidance and reductions in waste to landfill • Reuse/recycle usable spoil (uncontaminated surplus excavated material), construction and demolition waste (uncontaminated) • Implement packaging take-back arrangements with suppliers (delivery contractors to pass target onto sub-contractors, where practicable) • Identify and implement measures to minimise adverse impacts to receiving water environmental values during construction and operation • Monitoring of water discharges and receiving waters must be undertaken at appropriate intervals and at times of discharge during construction • Identify and implement measures to mitigate noise during construction and operation • Monitoring of noise is undertaken at appropriate intervals and in response to complaints during construction • Identify and implement measures to minimise adverse impacts to local air quality during construction	• Waste is minimised during construction • Waste monitoring and management has been managed, reviewed or audited • The need for potable water during the project lifecycle is minimised • Water is reused and recycled during construction and operation • Monitoring and modelling of water use is undertaken • All subsoil and topsoil impacted by the project is separated and protected from degradation, erosion or mixing with fill or waste • The run-off, flood risk, and potential increased flood risk elsewhere as a result of the project have all been assessed over their expected working life • Sources of pollution are reduced • Control at the source of pollution is optimised to minimise harm to the environment

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
		• Monitoring of air emissions and/or air quality is undertaken at appropriate intervals and in response to complaints during construction • Identify and implement measures to prevent light spill during construction. This must be shown through night audits of light spill	•
Ecology	• Improve biodiversity outcomes by avoiding, mitigating or offsetting the potential impacts of the project on plants, animals and their environments	• Investigate opportunities to expand the distribution of threatened species (e.g. through propagation) • Work with private landowners to identify potential reuse opportunities for cleared vegetation and spoil • Reduce vegetation clearing to the smallest extent that is practical for the safe construction and operation of the project • Retain connectivity corridors around new and existing transmission lines • Partner with local wildlife organisations, government agencies or academic/research institutions to understand impacts of transmissions lines on threatened flora and fauna. This information could be shared across major projects to enhance uptake of preventative actions	• Protected and enhanced biodiversity values through appropriate planning and management

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
People and place	• Demonstrate best practice landscape design practices • Engage and involve the community and local stakeholders in the development of the project • Make a positive contribution to community health and wellbeing • Create opportunities for local business involvement during construction and operation • Protect and promote local heritage through appropriate design, planning, and management controls	• Identify innovative measures during design and construction to mitigate impacts to landscape character and visual amenity • Use native plantings as long-term visual screening/mitigation in highly impacted vistas • Implement a stakeholder engagement strategy, to be reviewed annually, for all stages of the project • Seek input from the community and stakeholder representatives throughout the planning, design and delivery stages of the project • Conduct regular stakeholder meetings across the broad range of project stakeholders (both internal and external) • Adopt a collaborative approach with key stakeholders on the resolution of key issues • Investigate opportunities to form strategic partnerships with universities and regional training centres to upskill the local community and create employment opportunities locally • Have all contractors undertake cultural awareness training where possible on-country and with community	• Enhanced landscapes that benefit the community and private landowners • Landowners and community groups are engaged throughout the project • Engagement activities with stakeholders and the community to encourage and facilitate community participation in the project's planning • Contribution to economic activity in regional NSW, generating major benefits for local communities • Protected and enhanced heritage through appropriate planning and management • Impacts on Aboriginal and non-Aboriginal heritage significance have been minimised, avoided and mitigated where practicable

Sustainability theme (aligned with ISC rating scheme themes)	Sustainability objective	Potential sustainability initiative	Potential outcome
		• Share local cultural stories collected as part of cultural values assessment (with permission and where appropriate) with the community • Identify and map Aboriginal stakeholders including Aboriginal communities, businesses, employment services, community advocates and agencies • Continue to build relationships with local Aboriginal communities prior to project commencement	

7.8 Statutory considerations

The project is critical State significant infrastructure (CSSI) and requires approval from the NSW Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act. The project is also a controlled action under the EPBC Act and requires approval from the Australian Minister for the Environment and Water. In determining that the project is a controlled action, the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW) advised that the project will be assessed in accordance with the NSW Assessment Bilateral Agreement under Part 9 of the EPBC Act. An EIS was prepared to meet the requirements of the EP&A Act and the EPBC Act in addition to addressing relevant requirements of other Australian Government and NSW Government legislation. The EIS was prepared to address the Secretary's environmental assessment requirements (SEARs) (including the supplementary SEARs regarding Commonwealth requirements) and was guided by the *State significant infrastructure guidelines - preparing an environmental impact statement* (DPIE 2022b).

The EIS was placed on public exhibition by DPHI for 28 days between 27 August to 24 September 2025. On 25 September 2025, EnergyCo was directed to prepare a written response to all issues raised in submissions and agency advice, in accordance with Section 5.17(6)(a) of the EP&A Act. A total of 188 submissions were received and registered on the NSW Planning Portal. Of these, 165 were received from the community (138 from members of the public and 27 from organisations). This included instances where a submitter had made multiple submissions. Advice was also received from 23 local, State and Australian Government departments and agencies.

Since the exhibition of the EIS, EnergyCo has amended and refined project. This Amendment Report has been prepared for the purposes of Clause 179(3) of the EP&A Regulation, to describe and assess the potential impacts of the amended project and to identify how those impacts would be managed and mitigated. This Amendment Report will be provided to DPHI and the Australian DCCEEW as part of the package of information to allow them to make their determination regarding the project.

The amendments include changes to 500 kV transmission line infrastructure, changes to substation infrastructure at Eraring, changes to intersections, access roads and access tracks, and changes to construction methods and facilities. Refinements to the project include changes at Bayswater substation and changes to the disturbance area within Olney State Forest.

A separate Submissions Report has been prepared that includes consideration of the issues raised by the community and government agencies/departments in their submissions and agency advice. The amendments and refinements relate to and address some of the issues raised within submissions and during consultation. A description of, and justification for, the amendments and refinements are provided in *Chapter 3 (Description of amendments and refinements)*. The revised statutory compliance requirements for the project, considering the amendments and refinements, are provided in *Appendix C (Updated statutory requirements compliance)* of this Amendment Report.

The proposed amendments and refinements do not change the permissibility of the project or its declaration as CSSI. The assessment and approval requirements under the EP&A Act are described in *Chapter 5 (Statutory context)* of the EIS. In addition to the approvals identified in the EIS, an EPL under the POEO Act is likely to be required as the crushing, screening or separating of materials are likely to exceed the thresholds in Schedule 1 of the NSW *Protection of the Environment Operations Act 1997* (POEO Act) (refer to *section 3.2.4* of this Amendment Report).

7.9 Evaluation and conclusion

The project would close the northern gap between the existing 500 kV transmission lines at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring and unlock the supply of electricity from the Central-West Orana and New England REZs. As the remaining coal fired power stations in NSW close, the project is necessary to protect energy security in NSW for current and future generations.

Both the NSW Government and the Australian Government recognise the strategic importance of the project and require it to be built as quickly as possible.

The project has been developed following a robust and iterative process that has involved substantial alternatives and options analysis, environmental impact assessment and stakeholder engagement. Where feasible and reasonable, the project has aimed to avoid and minimise impacts to people and the environment. This has included refining and amending the project to reduce and balance impacts to private landowners, communities, recreation areas and the environment during scoping and pre- and post-exhibition of the EIS.

However, given the nature and scale of the project, unavoidable impacts remain. Key residual impacts include:

- biodiversity from vegetation clearance and impacts on threatened species habitat – impacts would be mitigated and offset in accordance with a Strategic Offset Delivery Agreement (SODA) under Clause 6.2 of the *Biodiversity Conservation Regulation 2017*
- Aboriginal cultural heritage from ground disturbance during construction – some Aboriginal heritage sites may not be able to be avoided and there remains the possibility that potential unrecorded Aboriginal heritage sites and/or potential archaeological deposits were not identified and could be impacted during construction of the project. However, impacts would be minimised through management measures including the implementation of an unexpected finds protocol
- landscape and visual impacts – the new transmission infrastructure would be visible from public and private viewpoints. For easement affected landowners, compensation would consider residual visual impacts. For non-easement affected properties and for residences where the project is predicted to have a moderate to high visual impact, opportunities for screening vegetation would be investigated. Appropriate visual screening or other options would be confirmed in consultation with the affected landowners and implemented where practicable

- traffic and transport impacts – there is the potential for impacts associated with the movement of construction vehicles, plant and equipment, materials delivery and workers moving between work sites and construction support sites, though the road network would continue to perform at acceptable levels of service and intersection performance would not be impacted at most locations. Upgrades to several intersections would be required to avoid/minimise traffic impacts
- land use and property – impacts would include restrictions on some agricultural and forestry land uses in the new transmission line easement. Numerous refinements have been (and would continue to be) made to minimise impacts, and compensation would be provided for all directly affected landowners for the acquisition and use of transmission line easements.

The project includes a range of mitigation and management measures (some of which have been revised and additional measures included) to reduce the likelihood, magnitude and consequences of any residual impacts. The design and construction methodology for the project would also be refined with the objective of further avoiding and minimising potential impacts on people and the environment.

The project is consistent with the principles of ecologically sustainable development.

Not proceeding with the project would reduce the security of electricity supply in NSW as coal-fired power stations close. It would also discourage investment in renewable energy generation and storage within the emerging REZs. The provision of appropriate infrastructure to these zones is required to allow the adoption of new renewable technologies in the future, which is required to support the delivery of commitments and policies at a NSW Government, Australian Government and international level.

Overall, the project is a critical component in strengthening the supply of clean and reliable electricity to consumers and delivering long-term benefits to the NEM. Having regard to all the matters considered in this Amendment Report, the EIS and the Submissions Report, it is considered that the project is justified, as the need for and the benefits of the project would outweigh the residual impacts associated with the project.

8

References

8 References

Australian and New Zealand Environment and Conservation Council (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

Australian Department of Climate Change, Energy, the Environment and Water (2025a) Australia's Nationally Determined Contribution Communication 2025.

Australian Department of Climate Change, Energy, the Environment and Water (2025b) Australian National Greenhouse Accounts Factors 2025.

Australian Department of Climate Change, Energy, the Environment and Water (2025c) Australia's emissions projections 2025.

Australian Department of Climate Change, Energy, the Environment and Water (2025d) Australia's National Greenhouse Accounts: State and territory emission inventories.

Australian Department of Industry, Science, Energy and Resources (2021) Australia's Long-Term Emissions Reduction Plan.

Australian Department of Industry, Science, Energy and Resources (2022) Australia's Nationally Determined Contribution Communication 2022.

Australian Energy Market Operator (2023) 2023 Infrastructure Investment Objectives Report.

Australian Energy Market Operator (2024) 2024 Integrated System Plan.

Australian Energy Market Operator (2025a) 2026 Draft Integrated System Plan.

Australian Energy Market Operator (2025b) 2025 Infrastructure Investment Objectives Report.

Australian Standards (2018) AS3959:2018 Construction of buildings in bushfire-prone areas.

Bureau of Meteorology (2022) National Groundwater Information System.

Buy NSW (2021) Small and Medium Enterprise and Regional Procurement Policy.

Civil Aviation Safety Authority (2022) Manual of Standards Part 173 – Standards Applicable to Instrument Flight Procedure Design.

Energy Corporation of NSW (2023) NSW Network Infrastructure Strategy.

Energy Corporation of NSW (2026) Hunter Transmission Project Submissions Report.

Environment Protection and Heritage Council, National Resource Management Ministerial Council, and Australian Health Minister's Conference (2006) Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1).

Germans Standards (1999) German Standard DIN 4150-3:1999-02 Structural vibration – Effects of vibration on structures (DIN 4150) Group 3.

Infrastructure NSW (2022) Staying Ahead: State Infrastructure Strategy 2022-2042.

Institute of Air Quality Management (2024) Guidance on the assessment of dust from demolition and construction.

International Erosion Control Association (2008) Best Practice Erosion and Sediment Control.

Landcom (2004) Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 1 (the "Blue Book").

NSW Department of Climate Change, Energy, the Environment and Water (2025) Controlled activities – Guidelines for laying pipes and cables in watercourses on waterfront land.

NSW Department of Environment and Climate Change (2008a) Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 2A: Installation of Services.

NSW Department of Environment and Climate Change (2008b) Managing Urban Stormwater: Soils and construction (4th Edition) Volume 2C: Unsealed Roads.

NSW Department of Environment, Climate Change and Water (2009) Interim Construction Noise Guideline.

NSW Department of Environment, Climate Change and Water (2010) Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.

NSW Department of Land and Water Conservation (1994) Guidelines for the Planning, Construction and Maintenance of Tracks.

NSW Department of Planning and Environment (2018) NSW Transmission Infrastructure Strategy.

NSW Department of Planning and Environment (2021) Undertaking Engagement Guidelines for State Significant Projects.

NSW Department of Planning and Environment (2022a) Hunter Regional Plan 2041.

NSW Department of Planning and Environment (2022b) Controlled activities – Guidelines for riparian corridors on waterfront land.

NSW Department of Planning and Environment (2022c) Controlled activities – Guidelines for watercourse corridors on waterfront land.

NSW Department of Planning and Environment (2022d) Controlled activities - Guidelines for instream works on waterfront land.

NSW Department of Planning and Environment (2023) Flood Risk Management Guideline FB03 – Flood Hazard.

NSW Department of Planning, Housing and Infrastructure (2025a) Transmission Guideline, Technical supplement for landscape character and visual assessment.

NSW Department of Planning, Housing and Infrastructure (2025b) Social Impact Assessment Guideline for State Significant Projects.

NSW Department of Planning, Housing and Infrastructure (2025c) NSW Guideline for Construction Workers Accommodation.

NSW Department of Planning, Industry and Environment (2019) NSW Electricity Strategy.

NSW Department of Planning, Industry and Environment (2020a) NSW Government's Net Zero Plan Stage 1: 2020 – 2030.

NSW Department of Planning, Industry and Environment (2020b) Biodiversity Assessment Method.

NSW Department of Planning, Industry and Environment (2021) Cumulative Impact Assessment Guidelines for State Significant Projects.

NSW Department of Planning, Industry and Environment (2022a) State Significance Infrastructure Guidelines – preparing an amendment report.

NSW Department of Planning, Industry and Environment (2022b) State Significant Infrastructure Guidelines – preparing an environmental impact statement.

NSW Department of Primary Industries (2003a) Policy and Guidelines for Fish Friendly Watercourse Crossings.

NSW Department of Primary Industries (2003b) Why Do Fish Need to Cross the Road? Fish Passage Requirements for Watercourse Crossings.

NSW Department of Primary Industries (2013) Policy and Guidelines for Fish Habitat Conservation and Management.

NSW Department of Primary Industries (2024) Gross Margin Budgets for Livestock.

NSW Office of Energy and Climate Change (2022a) NSW Net Zero Plan Stage 1: 2020-2030 Implementation Update.

NSW Office of Energy and Climate Change (2022b) NSW Renewable Energy Sector Board's Plan.

NSW Office of Environment and Heritage (2012) Land and Soil Capability Assessment Scheme.

NSW Rural Fire Service (2019) Planning for Bushfire Protection.

NSW Treasury (2023a) NSW PBD 2023-01 Skills, Training, and diversity in construction.

NSW Treasury (2023b) NSW PBD-2023-03 Procurement opportunities for small and medium businesses.

Standards Australia and Standards New Zealand (2012) AS/NZS 1547:2012 On-site domestic wastewater management.

WaterNSW (2023) Designing and Installing On-Site Wastewater Systems.