Report

17 December 2024

To	The Australian Energy Regulator c/o [redacted] – Regulatory Advisor (Transgrid)	**Contact No.**	[redacted]
From	[redacted]	**Project No.**	12612502
Project Name	Mount Piper to Wallerawang Transmission Network Upgrade Project		
Subject	Australian Electricity Regulator Biodiversity Offset Delivery Cost Estimate		

Executive summary

GHD has been engaged by Transgrid to provide biodiversity services for the Mount Piper to Wallerawang Transmission Network Upgrade Project (the project), including a Biodiversity Development Assessment Report (BDAR). GHD is liaising with the Transgrid biodiversity team to confirm approaches to securing offsets with the overall aim of minimising the offset costs associated with the project.

As an extension of the BDAR scope of works, GHD has prepared an estimate of the expected final biodiversity offset cost for the project in order to assist Transgrid to understand the potential cost of securing biodiversity offsets, associated risks, and opportunities to achieve savings. It is understood that the estimate presented would be used to support Transgrid's preparation of a regulatory submission to the Australian Energy Regulator (AER) seeking a non-contestable revenue determination under Part 5 of the NSW *Electricity Infrastructure Investment Act 2020* (EII Act).

The cost estimate includes:

– synthesis of data from the ongoing BDAR assessment and credit calculations for a 'subject land' layer comprising the project footprint as confirmed by Transgrid on 12 July 2024
– A 'High Case scenario' estimation of the final cost of securing biodiversity offsets using the Biodiversity Conservation Fund (BCF) payment amount that would apply to each credit type, combined with an allowance for contingency events that may drive the amount and/or price of credits up
– An 'Expected Case scenario' estimation of the final cost of securing biodiversity offsets through more cost-effective options than the BCF, with targeted options to reduce impacts and offset costs along with residual contingencies.

The High Case scenario estimate of offset costs from the project has been calculated at aroun [redacted] his is inclusive of net contingencies for potential increases to impact areas, credit prices and/or offset requirements.

The Expected Case scenario has been calculated at around [redacted] which incorporates measures to avoid and minimise impacts, anticipated survey results and establishment of biodiversity stewardship sites or other lower cost credit sources. The Expected Case scenario includes residual contingencies associated with potential escalation in credit prices and approver requirements for additional offsets.

1. Project background and context

Transgrid proposes to upgrade the transmission line network between Mount Piper and Wallerawang substations (the project), within the City of Lithgow local government area (LGA). The project is required to provide increased transmission capacity between renewable energy generators in the Central-West Orana Renewable Energy Zone (CWO REZ) and the Greater Sydney region.

The project would include a new 330 kilovolt (kV) transmission line and double circuit transmission structures. It will incorporate sections of the existing, single-circuit 132 kV transmission line (known as Line 94E), where the two transmission lines would share a widened easement and transmission structures.

The project is subject to environmental and planning approvals in accordance with the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project is Critical State Significant Infrastructure (CSSI), and the NSW Minister for Planning and Public Spaces is the approval authority. An environmental impact statement (EIS) is required to accompany the application for approval of the project under the EP&A Act.

As outlined in the Secretary's Environmental Assessment Requirements (SEARs) issued for the project, the EIS must be accompanied by a 'Biodiversity Development Assessment Report' (BDAR) prepared by an accredited assessor in accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act) and Biodiversity Assessment Method 2020 (BAM).

The BDAR is anticipated to be completed by Quarter 2 2025 to support exhibition of the EIS in Quarter 3 of 2025. The quantum of biodiversity offsets as calculated in the BDAR would be secured according to the NSW biodiversity offset scheme (BOS). Measures to avoid or mitigate impacts on biodiversity values are being incorporated through the design process to minimise the quantum and cost of offsets required.

An EPBC Act referral has been submitted for the project which concluded that the project was likely to result in a significant impact to threatened species listed under the EPBC Act. The project has been determined to be a controlled action. The Commonwealth has formally endorsed the NSW BOS and BAM and the offset rules set out in the Biodiversity Conservation Regulation 2017 through the DAWE (2020) *EPBC Act Condition-setting Policy*. The biodiversity offsets required under the EPBC Act would be secured through biodiversity credits according to the NSW system.

GHD has been engaged by Transgrid to prepare periodic biodiversity offset calculations and cost estimates for the project as the design and BDAR are progressed. GHD is liaising with the Transgrid Biodiversity team to confirm approaches to securing offsets with the overall aim of reducing the offset costs associated with the project. Initial High Case cost estimates have been based on payments to the Biodiversity Conservation Fund (BCF). As the proposal is CSSI, it is anticipated that the conditions of approval for the project may support refinement of impact and offset calculations and identification of cost-effective offset options such as establishment of Biodiversity Stewardship Agreements (BSAs) by providing the flexibility to secure offsets after construction of the project has begun. This approach is aligned to the circumstances applying to other Transgrid major projects including Project EnergyConnect and HumeLink and has been included in the Expected Case scenario accordingly.

GHD has prepared this Biodiversity Offset Delivery Cost Estimate report to support Transgrid's regulatory submission to AER under Part 5 of the EII Act. This report presents the inputs, assumptions and calculations used to determine the expected costs associated with securing the project's offset obligation.

2. Methodology and assumptions

2.1 Overview

GHD has prepared BAM calculations to support biodiversity offset cost estimates for the project. Accredited BAM assessors completed the preliminary BAM calculations and biodiversity offset cost estimate, which included:

– synthesis of data from the ongoing BDAR assessment, including vegetation zone mapping, BAM vegetation integrity plot sampling, the results of targeted surveys for species credit matters and species polygon mapping
– definition of a 'subject land' layer comprising the direct disturbance footprint for the project
– calculation of impacts and entry of biodiversity assessment data into the BAM calculator
– estimation of the per credit cost of securing biodiversity offsets using an estimate of the BCF payment amount that would apply to each credit type
– estimation of the per credit cost of securing biodiversity offsets through more cost-effective options than the BCF
– estimation of offset costs associated with various scenarios.

The three main inputs to biodiversity offset costs that are considered across the various scenarios are:

– 'Subject land area', comprising the assumed area of direct impact based on the project design as confirmed with Transgrid on 12 July 2024
– 'Estimated credits', comprising the biodiversity value of the plant community types (PCTs) and threatened species habitats as confirmed by the ongoing BAM assessment, expressed as the number and type of biodiversity credits.
– 'Credit price' comprising the cost of securing credits as biodiversity offsets either through BCF payments, purchase of credits on the market or retiring of credits from BSSs established to support the BODS for the project.

Offset costs have been estimated for two scenarios:

1. A 'High Case scenario' that includes a conservative impact footprint, assumed presence of species credit matters and all offsets being secured through BCF payments.
2. An 'Expected Case scenario'' that includes revised presence of species credit matters, biodiversity values and credit price inputs.

The status of BDAR inputs to the 'Subject land area' and 'Estimated credits' parts of the cost estimate are presented in section 2.2. The status of inputs to the 'Credit price' part of the cost estimate are presented in section 2.3. The specific inputs to the cost estimates and associated assumptions for each scenario are presented in Chapter 3, along with potential variables and associated contingencies.

2.2 BDAR inputs

BDAR survey and assessment tasks completed to date include:

– Site scale vegetation zone mapping over the entire study area, including the 'core subject land' that is the confirmed footprint for the Line 94E and associated easement as well as 'potential additional impact areas' associated with potential access tracks, brake and winch sites, construction compounds and infrastructure that had not been confirmed as of July 2024.
– BAM vegetation integrity plot sampling over the entire study area stratified according to the minimum survey requirements of the BAM. Extrapolated data were used for one vegetation zone because only one of the two plots required by the BAM has been sampled to date.
– Coverage of the core subject land with systematic surveys for all candidate threatened flora species. There has been part coverage of the potential additional impact areas for the candidate threatened flora species with supplementary seasonal surveys to be completed in late 2024.
– Confirmation that no species credits are required for the Purple Copper Butterfly (*Paralucia spinifera*), threatened frogs or reptiles through targeted surveys.

– Targeted surveys for species credit matters and species polygon mapping, including calculation of species credits for confirmed presence of:
    - Two threatened plant species assessed by count; Capertee Stringybark (*Eucalyptus cannonii)* and Black Gum (*E. aggregata*).
    - Gang-gang Cockatoo (*Callocephalon fimbriatum)* and many potentially suitable nest trees. No direct evidence of nesting observed. Mapping of species polygons for the species credit matter Gang-gang Cockatoo nesting habitat will require supplementary survey, GIS analysis and confirmation of approach with the approver.
    - Southern Myotis (*Myotis macropus)* and Large-eared Pied Bat (*Chalinolobus dwyeri*). All other species credit type bats have been excluded through survey.
    - Barking Owl (*Ninox connivens)* and Powerful Owl (*Ninox strenua*). All other threatened forest owls and threatened raptor nest trees have been excluded through survey.
    - Squirrel Glider (*Petaurus norfolcensis)*. Additional analysis of data and seasonal surveys to be completed in late 2024 would be required to exclude the presence of other species credit type mammals.
– Confirmation that no threatened ecological communities or potential serious and irreversible impacts (SAII) entities would be directly affected by the project, based on results of surveys completed to June 2024
– Calculation of impacts, assuming full removal of vegetation within the entire subject land. Based on consideration of the *Assessing partial loss of biodiversity values Biodiversity Assessment Method guide - consultation draft* (NSW DCCEEW 2024) there would not be scope to reduce the quantum of offset calculated in the BDAR by assuming partial impacts to native vegetation, as has been the case on previous Transgrid projects.
– Creation of a development assessment case in the BAM calculator and entry of preliminary biodiversity assessment data for the proposal to calculate the quantum of biodiversity credits that would be required to offset impacts of clearing of vegetation and associated threatened species habitat.

As outlined above, the impact and offset calculations presented in the BDAR will be refined through supplementary survey and assessment as well as ongoing development of the project design by Transgrid and their appointed contractor. BDAR impact and offset calculations may change further through the review and approval process for the project. An approver may require changes to vegetation zone or species polygon mapping, the presence or absence of species credit matters or potential SAII entities based on survey results, and the approach to impact calculations. Changes to the Threatened Biodiversity Data Collection (TBDC) may also affect the quantum of credits required. An approver may require additional credits for indirect impacts or prescribed impacts such as adverse effects on habitat connectivity.

The inputs and potential variables described above have been incorporated in the offset cost estimate scenarios.

2.3 Biodiversity Offset Strategy inputs

GHD is preparing periodic biodiversity offset calculations for the project and liaising with the Transgrid biodiversity team to confirm approaches to securing offsets with the overall aim of reducing the offset costs associated with the project. This will prioritise:

– Supply of suitable credits from a Biodiversity Stewardship Agreement (BSA) identified and established by Transgrid for the purpose of securing offsets for the project.
– Purchase of suitable ‘like for like’ credits from the open market
– Supply of suitable credits from BSAs proposed by the Nature Markets Offset Division (NMO, formerly the Credit Supply Taskforce, CST)

At this stage of offset delivery, no project specific candidate BSAs or sources of credits have been identified, however, searches for suitable candidate sites are underway.

A BCF payment is generally the most certain and readily available option for securing offsets and per credit prices for this option may be reliably estimated from previous payment quotes. BCF payments represent the highest-cost acquittal option but often must be used to secure part of an offset obligation, for instance when certain species credits cannot be generated from otherwise suitable BSAs. Therefore, BCF payment cost estimates form the basis for the scenarios assessed in this report.

Securing credits from a BSA established for a project is generally the most cost-effective option but is subject to the availability of candidate offset sites that contain suitable biodiversity attributes. This option also requires detailed survey, assessment and approval of a BSA application. As the project is CSSI, it is anticipated that the conditions of approval for the project may support identification of cost-effective offset options by providing the flexibility to secure biodiversity credits after construction of the project has begun. Project-specific BSAs are also likely to have benefits for biodiversity conservation associated with an appropriately located offset that would more directly benefit the species and communities affected by the project. This provision of direct, local and 'like for like' offsets is often viewed favourably by approvers and other stakeholders. Therefore, this option is considered as part of the Expected Case scenario and BSA cost inputs are described in section 3.2.

Inputs to the offset cost estimate include:

– estimation of the cost of securing biodiversity offsets using data obtained from the BAM calculator and an estimate of the BCF payment amount that would apply to each credit type based on:
    - Recent BCF payment quotes for similar credit types obtained for other projects (noting that quotes include the actual risk premium and delivery fee that would apply)
    - The Biodiversity Conservation Trust's (BCT) BCF Charge Report V5 - July 2024[1] for similar credit types [redacted]
– estimation of the cost of securing biodiversity offsets via new BSA establishment incorporating modelled land value, BSA assessment costs and Total Fund Deposit (TFD) inputs to the expected cost of generating credits

The inputs and potential variables described above have been incorporated in the offset cost estimate scenarios.

[1] 1 – BCT (2024a) BCF Charge Report V5 - July 2024 **Web Report BCF Charge Quotes Final V5 July 2024 .xlsx (nsw.gov.au)**

3. Offset cost estimates

3.1 High Case scenario

The High Case scenario for the project was derived from the BDAR and offset estimation inputs described above, and the following specific assumptions:

– Calculation of direct impacts within the whole 'subject land' layer, including all 'potential additional impact areas' associated with the maximum extent of all potential access tracks, construction compounds and infrastructure as of 12 July 2024
– Indirect and prescribed impacts have been considered as part of the contingency for factors that could increase the quantum of credits, as required following review and approval of the BDAR
– Calculation of species credits for:
    - Threatened count-type flora recorded to date in the subject land. There is potential for further records of these flora in other areas of the subject land, which could increase the quantum of credits. As a result, this is captured in the contingency
    - Threatened fauna recorded to date in the subject land, based on species polygons conservatively mapped across suitable habitat in accordance with the BAM and associated guidelines
    - Assumed presence of threatened fauna which may occur. Presence would be subject to additional analysis of data, supplementary surveys and/or approver requirements
– The per credit cost of securing biodiversity offsets using the estimated BCF payment amount that would apply to each credit type.

The BDAR is not expected to be completed until Quarter 2 2025 and the final credit obligation will only be known at the time of determination of the CSSI application by the NSW Minister for Planning, which is anticipated for Q1 2026.

To account for the inherent uncertainty in the final credit obligation, contingencies have been applied to the offset cost estimate based on the factors that may increase the quantum of credits and offset cost required. For the High Case estimate the following contingencies have been applied:

– [redacted] for additional credits for indirect impacts, prescribed impacts or impacts on key fish habitat (as required under the NSW *Fisheries Management Act 1994*) based on the assessment of these factors in the draft BDAR and EIS and recent experience of approver requirements for major infrastructure projects
– [redacted] for changes to vegetation zone or species polygon mapping, threatened species listings, survey and assessment guidelines or associated BAM calculator metrics that increase the credit obligation. These changes may arise through the review and approval of the BDAR or because of changes to the TBDC
– [redacted] credit price escalation, based upon the BCT's published rate to pay into the BCF via a BCF Charge Quote. A Charge Quote will be sought from the BCT prior to project approval in order to inform calculation of the bank guarantee required to secure two-year deferral of the offset liability. Accordingly, a total of two year's indexation have been applied to the High Case estimate.

The High Case scenario - offset cost estimate based on the above assumptions and contingencies is provided in Table 3.1 All values are exclusive of GST.

3.2 Expected Case scenario

The Expected Case scenario for the project was derived from the High Case scenario along with additional interpretation of the BDAR and offset estimation inputs described above and the following specific assumptions:

– Calculation of impacts as described for the High Case scenario above
– Calculation of ecosystem credits as described for the High Case scenario above
– Calculation of species credits for:
  - Threatened plants recorded to date in the subject land as described for the High Case scenario
  - Additional candidate threatened flora species, based on removal of occupied habitat in the potential additional impact areas *only*, noting that these flora species have been excluded from the core subject land through targeted, seasonally appropriate survey. An allowance of [redacted] of the conservative, maximum credit requirement included in the High Case has been applied to account for potential detection of additional species within up to 20% of potential habitat in the potential additional impact areas
  - Confirmed presence of fauna species through survey and species polygons mapped over areas of known, better quality habitat, based on less conservative assumptions around habitat suitability than applied for the High Case scenario
  - Assumed presence of additional species credit-type mammals. Based on recent project experience, there is a moderate risk of these species being revealed by additional survey or an approver requiring assumption of presence and so the High Case scenario estimate has been retained.

It is anticipated that the conditions of approval for the project would support establishment of BSAs as part of the offset strategy by providing the flexibility to secure biodiversity credits for around two years after construction of the project has begun. Accordingly, the Expected Case scenario includes consideration of the likelihood of generating the required credits from project BSAs and the expected cost.

[redacted] An initial review of property listings suggests that appropriately sized and sited properties containing like for like native vegetation according to the requirements of the BAM could be sourced in the region [redacted] These inputs are summarised in Table 3.2.

[redacted]

A primary focus of BSA site selection, survey and assessment would be generating like-for-like ecosystem credits. Species credits can not be generated from a BSA unless targeted surveys confirm the presence of populations and extent of species polygons. Species credit survey and assessment, specific management actions and monitoring costs have been included in the estimated cost of establishing project BSAs. The proportion of the project offset requirement that could be met from species credits that are more likely to be generated at a BSA has been estimated based on the experience of GHD ecologists and comprises:

- [redacted] of the requirement for threatened plants as they only infrequently occur in potential habitat, suitable habitat is difficult to predict and/or their distribution is narrower than the range in which matching ecosystem credit types could be located
- [redacted] of the requirement for threatened fauna that are more frequently revealed by targeted survey such as Southern Myotis (*Myotis macropus*) and Squirrel Glider (*Petaurus norfolcensis*)
- [redacted] for threatened fauna that are less frequently revealed by targeted survey such as the Eastern Pygmy-possum (*Cercartetus nanus*).

Table 3.2 Estimated average ecosystem credit cost for credits generated from project BSAs

Input	Cost input notes	Cost
[redacted]		

Contingencies have been applied to the overall offset cost estimate based on the factors that may increase the quantum of credits and/or offset cost required. For the Expected Case scenario the following contingencies have been applied:

– [redacted] for additional credits for indirect or prescribed impacts as described above for the High Case
– [redacted] for changes to biodiversity values mapping or BAM calculator metrics that increase the credit obligation, that may arise through the review and approval of the BDAR or because of changes to the TBDC as described above for the High Case
– [redacted] credit price escalation, based upon the BCT's published rate to pay into the BCF via a BCF Charge Quote. A Charge Quote will be sought from the BCT prior to project approval in order to inform calculation of the bank guarantee required to secure 2-year deferral of the offset liability. Accordingly, a total of two year's indexation have been applied to the those credits costed at estimated BCF Charge quote rates for the Expected Case estimate.

The Expected Case scenario - offset cost estimate based on the above assumptions and contingencies is provided Table 3.3. All values are exclusive of GST.

[2] 1 – BCT (2024b) Biodiversity Conservation Fund Charge System **Biodiversity Conservation Fund Charge System | BCT (nsw.gov.au)**

Table 3.3 Expected Case scenario –cost estimate

Input	Credit requirement notes	Per-credit cost notes	Cost (GST excl.)
[redacted]			

Project name		Mount Piper to Wallerawang Transmission Network Upgrade Project					
Document title		Report | AER Biodiversity offset cost estimate					
Project number		12612502					
File name		12612502_Mt Piper AER Biodiversity offset cost estimate					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	A	[redacted]	[redacted]	On file	[redacted]	On file	22/07/24
S3	B			On file		On file	02/09/23
S4	C			On file		On file	1/10/24
S4	0			On file		[redacted]	17/12/24

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