

Stratford Renewable Energy Hub Submissions Report



EXECUTIVE SUMMARY

Yancoal Australia Limited (Yancoal) has been investigating diversification opportunities, including development of renewable energy projects on its existing landholdings. One of the more advanced opportunities is developing a renewable energy hub on land associated with the Stratford Mining Complex (SMC).

The proposed Stratford Renewable Energy Hub would comprise a Pumped Hydro Energy Storage (PHES) with an indicative generation capacity of 3.6 gigawatt-hours (i.e. 300 megawatts [MW] over 12 hours), alongside a complementary photovoltaic solar farm facility (Solar Farm), collectively referred to as 'the Project'. The Solar Farm would have an indicative capacity of approximately 320 MW alternating current (equivalent to 375 MW direct current), to supply a portion of required energy to 'charge' the PHES.

On 19 June 2024, the Project was declared to be Critical State Significant Infrastructure on the basis that the Project *"will help maintain the state's critical energy security and continue the essential energy supply to homes and businesses during peak-demand periods as coal-fire sources close"* (Minister for Planning and Public Spaces, 2024).

Yancoal (2024) prepared the Environmental Impact Statement for the Project (the EIS) in accordance with Part 5 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979*.

The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure from 2 October to 29 October 2024. During this period, government agencies, the local council, organisations and members of the public were invited to provide submissions on the EIS.

A total of 111 submissions on the Project were received during the public exhibition period, comprising 16 submissions (15 percent [%]) from government agencies and the local council, seven submissions (6%) from organisations and 88 submissions (79%) from members of the public. Of these submissions:

- 17 submissions (15%) were in support of the Project, all comprising members of the public;
- 19 submissions (17%) were comments on the Project, comprising 16 from government agencies and the local council, two from members of the public and one from an organisation; and
- 75 submissions (68%) objected to the Project, 69 of which were from members of the public and six were from organisations.

Key matters raised in submissions included:

- support for the Project, specifically regarding positive socio-economic impacts from employment, reuse of water stored in mine voids for the PHES to limit impacts on regional water resources, and renewable energy power to support decarbonisation and minimise climate change impacts;
- biodiversity, particularly in the location of the proposed Upper Reservoir;
- landscape and visual impacts, particularly in relation to the Solar Farm component of the Project;
- Aboriginal and non-Aboriginal heritage within and adjacent to the Project Disturbance Footprint;
- surface water and groundwater;
- existing rehabilitation commitments associated with the SMC;
- socio-economic impacts; and
- community consultation.

In response to submissions received on the EIS, Yancoal has prepared this Submissions Report to provide an analysis of the submissions received, summarise the actions taken since lodgement (including additional engagement activities, further assessments and proposed refinements), and provide responses to issues raised and an updated evaluation of the Project.

Yancoal is proposing a refinement to the Project to remove the “low level outlet” from the Upper Reservoir dam wall. The low level outlet was designed to facilitate rapid drawdown of 30% to 45% of the water stored in the Upper Reservoir in emergency circumstances. This water was to be directed to the Lower Reservoir via Unnamed tributary 1 and a clean water diversion system. Required maintenance of the low level outlet would have involved regular testing, in which approximately one megalitre of water would have been released every six to 12 months.

Following a review of the engineering requirements by engineering specialists, the low level outlet is no longer required and instead, emergency drawdown of water from the Upper Reservoir is proposed to be transferred to the Lower Reservoir via the intake/outlet infrastructure and tunnelled waterway.

In consideration of the proposed refinement, the environmental impacts of the Project would be reduced compared to those presented in the EIS. Accordingly, the conclusion in the EIS that the Project would be a model of beneficial post-mining land use, while minimising environmental impacts, and is in the public interest, remains unchanged.

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1 INTRODUCTION

1.1 BACKGROUND

Yancoal Australia Limited (Yancoal) has been investigating diversification opportunities, including development of renewable energy projects on its existing landholdings. One of these more advanced opportunities is establishing a renewable energy hub on land associated with the Stratford Mining Complex (SMC).

The proposed Stratford Renewable Energy Hub (SREH) would comprise a Pumped Hydro Energy Storage (PHES) with an indicative generation capacity of 3.6 gigawatt-hours (i.e. 300 megawatts [MW] over 12 hours), alongside a complementary photovoltaic (PV) solar farm facility (Solar Farm). The Solar Farm would have an indicative capacity of approximately 320 MW alternating current (equivalent to 375 MW direct current), to supply a portion of required energy to 'charge' the PHES.

Collectively, the PHES, the Solar Farm and associated infrastructure are referred to as 'the Project'.

The Project would be situated on land associated with the existing SMC, located in the Gloucester Valley, approximately 95 kilometres (km) north of Newcastle, New South Wales (NSW) (Figures 1-1 and 1-2). The SMC is an open cut coal mining operation that is owned and operated by Stratford Coal Pty Ltd (SCPL), a wholly owned subsidiary of Yancoal. Mining operations at the SMC ceased in mid-2024.

The site provides topographic variations suitable for a PHES, with elevated topography being located in close proximity to the existing Stratford East Dam. The location of the Project at the SMC has a number of strategic advantages as the Project can reuse and repurpose existing SMC disturbance areas, infrastructure, and water stored in mine voids. In addition, the Project is strategically located in close proximity to existing transmission infrastructure and established transport routes. This significantly reduces environmental impacts compared to alternative large-scale renewable energy projects located in remote locations.

The Project is wholly located within the MidCoast Council Local Government Area (MidCoast LGA). All freehold land required for the Project is owned by Yancoal or its subsidiaries.

The General Arrangement of the Project is provided on Figure 1-3.

Additional information on the SREH is provided on the SREH website (<https://www.stratfordrenewableenergyhub.com.au>), which includes a Project video.

1.2 PROJECT ENVIRONMENTAL IMPACT STATEMENT

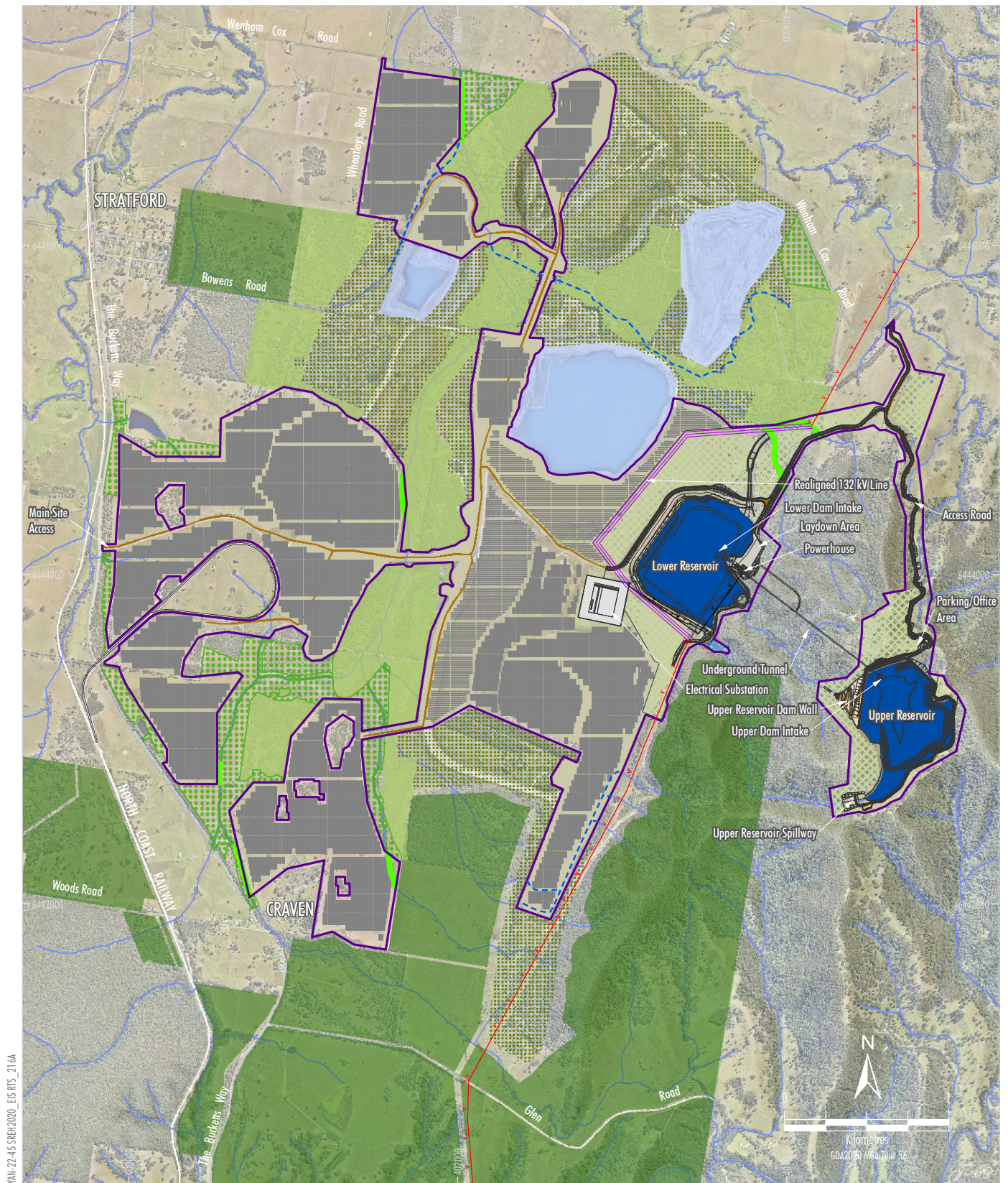
Yancoal (2024) prepared the Environmental Impact Statement for the Project (the EIS) to support the assessment process under the NSW *Environmental Planning and Assessment Act 1979*.

The EIS was lodged with the NSW Department of Planning, Housing and Infrastructure (DPHI) on 13 September 2024, and placed on public exhibition by DPHI from 2 to 29 October 2024. During this period, government agencies, the local council, organisations and members of the public were invited to provide submissions on the EIS to DPHI.

Yancoal has prepared this Submissions Report to directly address matters raised in the government, organisation and public submissions on the EIS.



Figure 1-1



YAN-22-45 SITE/2020_EIS RIS_21.6A

LEGEND

Project Components

- Project Disturbance Footprint
- Indicative Solar Photovoltaic Array Layout
- Internal Access Road
- Riparian Corridor Protection Zone
- Area Available to be Rehabilitated or Repurposed During Operations
- Area Available for Erosion and Sediment Control
- Potential Areas to Achieve Project Rehabilitation Obligation Associated with the SMC
- Realigned 132kV Transmission Line

SMC Development Consent SSD-4966 Components

- Biodiversity Offset Area
- Indicative Reconfigured Biodiversity Enhancement Area
- SCPL Rehabilitation
- Native Vegetation
- Final Void
- SCPL Retained Water Infrastructure

Source: NSW Spatial Services (2023); Yancoal (2023)



YANCOAL - STRATFORD RENEWABLE ENERGY HUB

Indicative Operational
General Arrangement

Figure 1-3

1.3 PROPOSED PROJECT REFINEMENT

At the time of lodgement of the EIS, conceptual designs of the upper and lower reservoirs had been completed to support Project feasibility studies and the Project description for the EIS. Yancoal is proposing a refinement to the Project to incorporate a Project optimisation identified since lodgement of the EIS as part of ongoing feasibility studies being prepared for the Project, namely removal of the “low level outlet” from the Upper Reservoir dam wall.

The proposed refinement would result in minor improvements in environmental impacts compared to those described in the EIS, as there would be no requirement to release water from the Upper Reservoir low level outlet during scheduled safety maintenance.

1.4 STRUCTURE OF THIS DOCUMENT

This Submissions Report has been prepared in consideration of the *State significant development guidelines – preparing a submissions report* (DPHI, 2024a). The remainder of this document is structured as follows:

Section 2	Provides an analysis of the submissions received during the public exhibition period.
Section 3	Summarises the actions taken since lodgement of the EIS, including additional engagement activities, proposed refinements to the Project and further assessment.
Section 4	Provides responses to the issues raised in the submissions.
Section 5	Provides an updated evaluation of the Project.
Section 6	Lists the documents referenced in this Submissions Report.

Attachments 1 to 12 contain supporting information, including a register of the submissions received and specialist reports:

Attachment 1	Register of Submitters.
Attachment 2	Stratford Renewable Energy Hub <i>Mixophyes balbus</i> (Stuttering Frog) Expert Report.
Attachment 3	Stratford Renewable Energy Hub <i>Mixophyes iteratus</i> (Giant Barred Frog) Expert Report.
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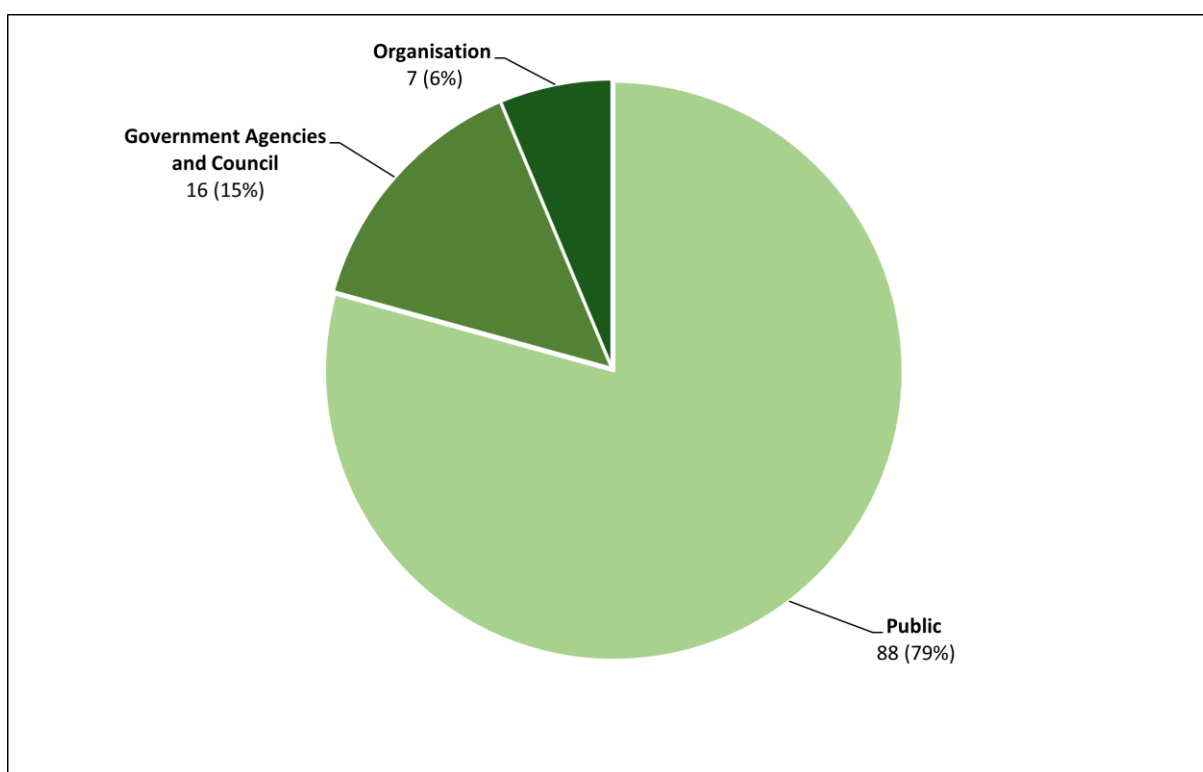
2 ANALYSIS OF SUBMISSIONS

2.1 NUMBER OF SUBMISSIONS

A total of 111 submissions¹ on the Project were received from government agencies, organisations and members of the public. The following provides a breakdown of the submissions by submitter category (Chart 2-1):

- 88 submissions (79 percent [%]) from members of the public;
- 16 submissions (15%) from government agencies and the local council; and
- seven submissions (6%) from organisations.

Chart 2-1
Summary of All Submissions



A register of the submitters is provided in Attachment 1.

Of these submissions:

- 17 submissions (15%) were in support of the Project, all comprising members of the public;
- 19 submissions (17%) were comments, comprising 16 from government agencies and the local council, two from members of the public and one from an organisation; and
- 75 submissions (68%) objected to the Project, 69 of which were from members of the public and six were from organisations.

¹ A query received from the DPHI on 12 March 2025 (refer Section 4.1.12) is not reflected in this analysis.

2.2 GOVERNMENT AGENCY AND LOCAL COUNCIL SUBMISSIONS

A total of 16 submissions were received from government agencies and local council, including:

- Fire and Rescue NSW;
- NSW Department of Planning, Housing and Infrastructure – Crown Lands (DPHI – Crown Lands);
- Dams Safety NSW;
- WaterNSW;
- Subsidence Advisory NSW;
- Transport for NSW (TfNSW);
- NSW Department of Climate Change, Energy, the Environment and Water – Water Group (DCCEEW Water);
- NSW Department of Primary Industries and Regional Development – Agriculture and Biosecurity (DPIRD – Agriculture and Biosecurity);
- Heritage NSW;
- NSW Department of Primary Industries and Regional Development – NSW Resources (DPIRD – NSW Resources) and NSW Resources Regulator;
- NSW National Parks and Wildlife Service (NPWS);
- NSW Department of Primary Industries and Regional Development – Fisheries and Forestry (DPIRD – Fisheries and Forestry);
- NSW Environment Protection Authority (EPA);
- NSW Rural Fire Service (RFS);
- Conservation, Programs, Heritage and Regulation Group (CPHR); and
- MidCoast Council.

Of these 16 submissions, five had no assessment-related comments on the Project, including:

- Fire and Rescue NSW;
- DPHI – Crown Lands;
- Dams Safety NSW;
- WaterNSW; and
- Subsidence Advisory NSW.

2.3 PUBLIC AND ORGANISATION SUBMISSIONS

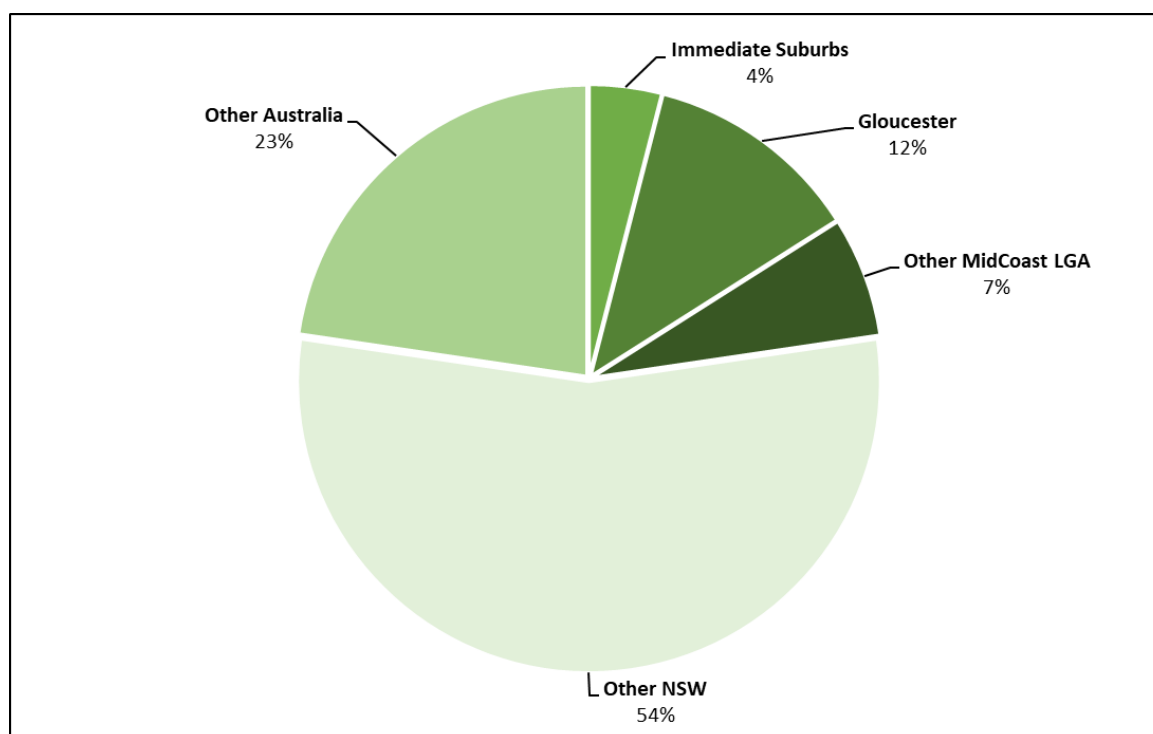
Figure 2-1 provides the locations of all public and organisation submissions received.

Chart 2-2 provides a summary of objecting public and organisation submissions by location. Submissions ranged from immediate suburbs (i.e. less than 5 km from the Project), the Gloucester township (approximately 10 km north of the Project), other areas within the MidCoast LGA, other areas in NSW, and across Australia. Most objections to the Project (77%) were from broader areas in NSW and Australia.



Figure 2-1

Chart 2-2
Objecting Public and Organisation Submissions by Location

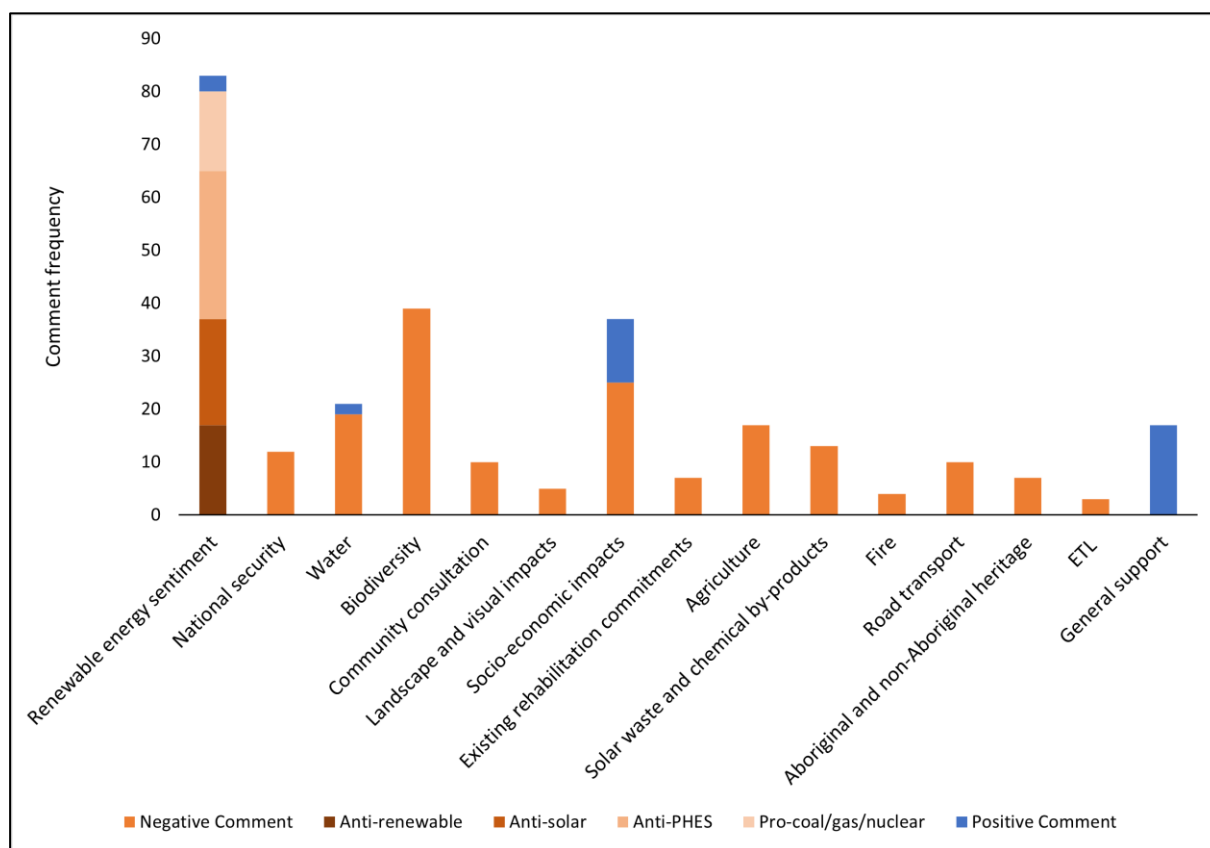


2.4 KEY MATTERS RAISED IN SUBMISSIONS

The most commonly raised matters across the public and organisation submissions are illustrated in Chart 2-3. The following key matters were raised in the submissions:

- general support for the Project, specifically regarding socio-economic impacts, water usage and impacts, and the utilisation of renewable energy power;
- anti-renewable energy sentiment;
- national security;
- water;
- biodiversity;
- community consultation;
- landscape and visual impacts;
- socio-economic impacts;
- existing rehabilitation commitments;
- agriculture;
- solar panel waste and chemical by-products;
- fire;
- road transport;
- Aboriginal and non-Aboriginal heritage; and
- electrical transmission line (ETL).

Chart 2-3
Common Themes in Public and Organisation Submissions



A register of submissions and where each submission is addressed in this Submissions Report is provided in Attachment 1.

3 ACTIONS TAKEN SINCE LODGEMENT OF THE EIS

3.1 ENGAGEMENT ACTIVITIES

Since lodgement of the EIS, Yancoal has continued to engage with key stakeholders, including government agencies, organisations and community members regarding the Project. The consultation with each of these stakeholders is summarised in the following sections.

3.1.1 Relevant Government Agencies

During the EIS exhibition period, Yancoal offered Project briefings to government agencies (who provided input to the Secretary's Environmental Assessment Requirements [SEARs]) to provide an opportunity to discuss relevant findings regarding the EIS. These briefings are summarised in Table 3-1.

Table 3-1
Summary of Project Briefings with Key Government Agencies

Agency	Date of Briefing	Key Items Discussed
Dams Safety NSW	18 Oct 2024	Conceptual designs for construction and operation of the tunnelled waterways and the upper and lower reservoirs.
TfNSW	18 Oct 2024	- Project location, transport routes, site access. - Predicted vehicle movements and volumes. - Traffic management requirements.
DPIRD – NSW Resources	22 Oct 2024	- Requirements for timely approval of Project. - SMC infrastructure to be repurposed for the Project. - Overview of the integration of SREH construction and SMC rehabilitation.
DPIRD – Agriculture and Biosecurity	23 Oct 2024	- Summary of potential impacts to soil, land, and agricultural resources. - Information on soil and land resource survey and the extent of impacts to agricultural land. - Consideration of agrisolar.
DPHI Hazards	23 Oct 2024	- Overview of the Preliminary Hazard Assessment. - Information on the preliminary screening process, and key risks and controls.
DCCEE Water	23 Oct 2024	- Groundwater modelling and monitoring. - Outcomes of the Groundwater Assessment.
Heritage NSW	24 Oct 2024	- Overview of survey works completed for the EIS and since its lodgement. - ACHA history and ongoing investigation. - Management measures for SREH-PAD-01 and CTS-1.
CPHR	24 Oct 2024	- Avoidance measures integrated into the Project design. - Project disturbance and residual impacts.
TransGrid	24 Oct 2024	- Overview of ETL upgrades beyond the Project Disturbance Footprint. - Potential of Essential Energy substation upgrade. - Ongoing nature of consultation with Transgrid.

Table 3-1 (continued)
Summary of Project Briefings with Key Government Agencies

Agency	Date of Briefing	Key Items Discussed
Essential Energy	24 Oct 2024	- Overview of ETL upgrades beyond the Project Disturbance Footprint. - Potential of Essential Energy substation upgrade. - Ongoing nature of consultation with Essential Energy.
CPHR	14 Nov 2024	Site visit.
CPHR/the Panel	16 Dec 2024	Site visit.
DPHI	20 Feb 2025	Site visit.

ACHA = Aboriginal Cultural Heritage Assessment.

DPHI Hazards = NSW Department of Planning, Housing and Infrastructure – Hazards Group.

Yancoal also provided a brief presentation of the Project to the Port Stephens Council, as a section of the proposed oversize overmass (OSOM) vehicle route along The Bucketts Way is located within the Port Stephens Local Government Area (LGA).

3.1.2 Other Community Consultation

Yancoal has also undertaken broader engagement regarding the Project as follows:

- Notification of public exhibition of the EIS in September and October 2024.
- Hosting drop-in information sessions at the Stratford Hall and Gloucester Council Chambers on 17 and 18 September 2024, respectively.
- Update of the SREH website to provide an overview of the Project following lodgement of the EIS (<https://www.stratfordrenewableenergyhub.com.au>).
- Publishing of a SREH video to provide an overview of the Project, made available on the SREH website (<https://www.stratfordrenewableenergyhub.com.au>).
- Ongoing updates on the Project via newsletters which are published on the SREH website (<https://www.stratfordrenewableenergyhub.com.au>).
- Ongoing consultation with Registered Aboriginal Parties (RAPs) and Elders regarding public exhibition of the EIS, additional fieldwork, and assessment, and the *Aboriginal Cultural Heritage Assessment Report: Stratford Renewable Energy Hub* (herein referred to as the 'Updated ACHA') (Niche Environment and Heritage Pty Ltd [Niche], 2025) (Attachment 10).
- Ongoing consultation with Yancoal and SCPL employees and contractors.

3.2 PROJECT REFINEMENTS AND FURTHER ENVIRONMENTAL ASSESSMENT

3.2.1 Project Refinements

At the time of lodgement of the EIS, conceptual designs of the upper and lower reservoirs had been completed to support Project feasibility studies and the Project description for the EIS. Yancoal is proposing a refinement to the Project to incorporate a Project optimisation identified since lodgement of the EIS as part of ongoing feasibility studies being prepared for the Project, namely removal of the "low level outlet" from the Upper Reservoir dam wall.

The low level outlet was designed as a feature of the Upper Reservoir to facilitate rapid drawdown of 30% to 45% of the water stored in the Upper Reservoir in emergency circumstances. Water released from the low level outlet during the emergency circumstances would have been directed to the Lower Reservoir via Unnamed tributary 1 and the clean water diversion system around the Lower Reservoir. Scheduled maintenance of the low level outlet would have involved regular testing of the outlet every six to 12 months. Approximately 1 megalitre (ML) of water would have been released during these testing events, which would have been collected in the Lower Reservoir via the clean water diversion system.

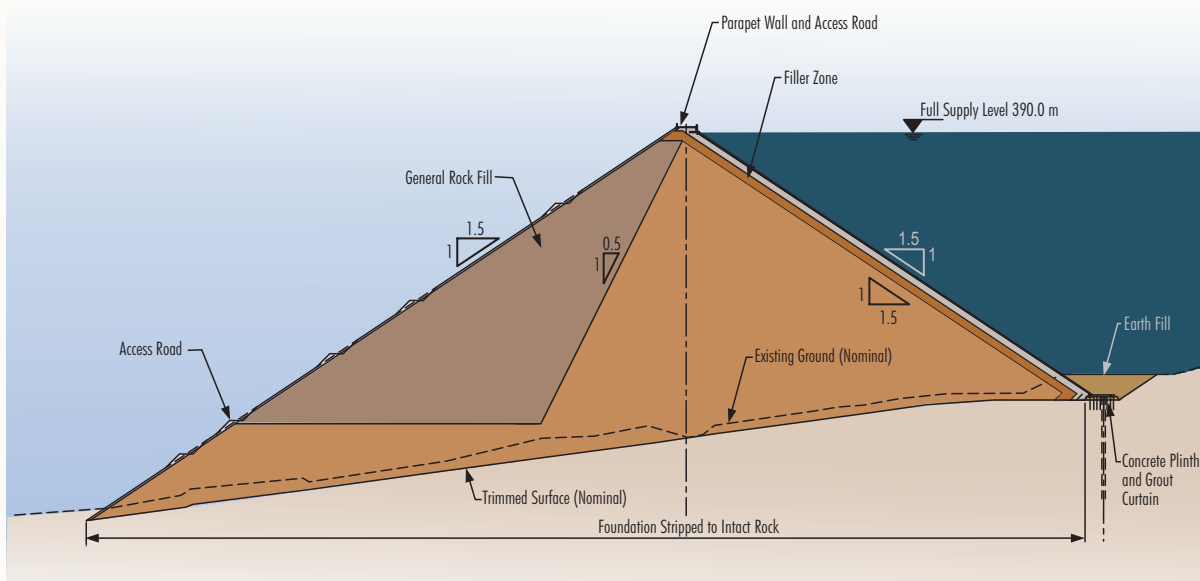
Since lodgement of the EIS, Yancoal has reviewed the engineering requirement for the low level outlet with input from engineering specialists, and has confirmed that the low level outlet is no longer a required feature of the Upper Reservoir dam wall. The refined conceptual illustration of the Upper Reservoir and dam wall is provided on Figure 3-1.

If required, and in accordance with dam safety requirements, the rapid drawdown of water stored in the Upper Reservoir in emergency circumstances would be able to be transferred from the Upper Reservoir to the Lower Reservoir via the intake/outlet infrastructure and tunnelled waterway, negating the need for the low level outlet.

The proposed refinement to the Project would result in minor improvements in environmental impacts compared to those described in the EIS.



CONCEPTUAL VISUALISATION - UPPER RESERVOIR



TYPICAL CROSS SECTION -
UPPER RESERVOIR CONCRETE FACED ROCKFILL DAM WALL

YAN-22-45 SKEH AR_001A

Source: GHD (2024)



YANCOAL - STRATFORD RENEWABLE ENERGY HUB

Conceptual Illustration of
Upper Reservoir and Dam Wall

Figure 3-1

3.2.2 Further Environmental Assessment and Survey

Additional assessment of the environmental impacts associated with the Project has been undertaken by specialists, including:

- *Stratford Renewable Energy Hub* *Mixophyes balbus (Stuttering Frog) Expert Report* prepared by 'Biodiversity Expert' Dr Frank Lemckert, confirming no species polygon is required for Stuttering Frog (*Mixophyes balbus*) (Eco Logical Australia Pty Ltd [Eco Logical Australia], 2024a) (Attachment 2).
- *Stratford Renewable Energy Hub* *Mixophyes iteratus (Giant Barred Frog) Expert Report* prepared by 'Biodiversity Expert' Dr Frank Lemckert, confirming no species polygon is required for Giant Barred Frog (*Mixophyes iteratus*) (Eco Logical Australia, 2024b) (Attachment 3).
- *Stratford Renewable Energy Hub* *Litoria brevipalmata (Green-thighed Frog) Expert Report* prepared by 'Biodiversity Expert' Dr Frank Lemckert, confirming no species polygon is required for Green-thighed Frog (*Litoria brevipalmata*) (Eco Logical Australia, 2024c) (Attachment 4).
- *Stratford Renewable Energy Hub* *Litoria aurea (Green and Golden Bell Frog) Expert Report* prepared by 'Biodiversity Expert' Dr Frank Lemckert, confirming no species polygon is required for Green and Golden Bell Frog (*Litoria aurea*) (Eco Logical Australia, 2024d) (Attachment 5).
- *Area of Stream Inspected for Stratford Renewable Energy Hub Project* prepared by 'Biodiversity Expert' Dr Frank Lemckert, providing clarification on the inspection area for the abovementioned expert reports (Eco Logical Australia, 2024e) (Attachment 6).
- *Stratford Renewable Energy Hub: Review of the Assessment for Serious and Irreversible Impacts on the Sooty Owl* prepared by Dr Stephen Debus, concluding that impacts to Sooty Owl (*Tyto tenebricosa*), as a result of the Project, do not constitute "serious and irreversible impacts" (SAII) (Debus, 2024) (Attachment 7).
- *Scrub Turpentine surveys – The Glen Nature Reserve and Yancoal-owned land* prepared by GHD Pty Ltd (GHD) contextualising the population of Scrub Turpentine (*Rhodamnia rubescens*) in the broader region (GHD, 2024a) (Attachment 8).
- *Supplementary White-bellied Sea-eagle surveys in Yancoal-owned land* prepared by GHD, confirming no nest tree within the Project Disturbance Footprint or adjacent Yancoal-owned land (GHD, 2024b) (Attachment 9).
- Updated ACHA prepared by Niche, with information on the site visit to CTS-1 undertaken with Elder women of the local Aboriginal community, and agreed management measures (Niche, 2025) (Attachment 10).

The above assessments were not available at the time of lodgement of the EIS.

In particular, Dr Frank Lemckert's expert reports on the Stuttering Frog, Giant Barred Frog, Green-thighed Frog and Green and Golden Bell Frog could not be prepared and provided until CPHR provided confirmation that he is recognised as a 'Biodiversity Expert' in the Project region.

GHD sought confirmation of Dr Frank Lemckert as a Biodiversity Expert for the Project on 21 August 2024. No response was received from CPHR prior to lodgement of the EIS on 13 September 2024. A response from CPHR was received on 4 October 2024 (after commencement of the EIS exhibition) confirming that Dr Frank Lemckert is recognised as a Biodiversity Expert for the four frog species for the Project.

In addition, there has been further environmental consideration of threatened species as part of addressing advice/recommendations from CPHR on the EIS and Biodiversity Development Assessment Report prepared by GHD (2024c) (hereafter referred to as "the BDAR").

Change in Offset Credits

The additional biodiversity assessment listed above has resulted in changes to biodiversity conclusions compared to the BDAR, particularly offset credit liability. In addition, CPHR's submission queried survey effort and credit calculations for a number of threatened species.

For some species queried by CPHR, the accredited assessor (GHD) has determined that no change to survey effort is required and the species is not present (Table 3-2). For other species, no change to survey effort and/or calculation of species credits is required as the species is present and GHD has considered credit liability accordingly (Table 3-3). In other instances, the number of species credits generated has either reduced (Table 3-4) or increased (Table 3-5) to address advice/recommendations from CPHR or based on additional assessment. Further detail for all species described in Tables 3-2 to 3-5 is provided in Section 4.1.11.

Table 3-2
Summary Response to CPHR – Species Not Present and No Change Required

Species	Explanation
Slaty Red Gum (<i>Eucalyptus glaucina</i>)	Surveys conducted and considered sufficient to have detected the species if present. Surveys were conducted at a distance recommended for trees (20 metres [m]) as opposed to shrubs (10 m), resulting in reduced transect coverage. Survey effort covered the primary extent of habitat. The species is readily identifiable. No individuals were detected during targeted surveys or opportunistically during multiple rounds of surveys for other candidate flora species. The Project Disturbance Footprint is not in a locality with any known populations of the species.
Native Guava (<i>Rhodomyrtus psidioides</i>)	Surveys conducted and considered sufficient to have detected the species if present. Surveys were conducted at a distance recommended for trees (20 metres [m]) as opposed to shrubs (10 m), resulting in reduced transect coverage. Survey effort covered the primary extent of habitat. The species is readily identifiable. No individuals were detected during targeted surveys or opportunistically during multiple rounds of surveys for other candidate flora species. One previous record occurs in the locality.
Magenta Lilly Pilly (<i>Syzygium paniculatum</i>)	Surveys conducted and considered sufficient to have detected the species if present. Surveys were conducted in accordance with the <i>Biodiversity Assessment Method</i> (BAM) (NSW Department of Planning, Industry and Environment [DPIE], 2020a) with the exception of inaccessible areas (impenetrable lantana thickets, steep drops unsafe to access, etc.). The genus <i>Syzygium</i> sp. is readily identifiable and records occur in the locality. Individuals from the genus were detected and sent to the National Herbarium of NSW to confirm their identity. The samples from individuals collected on the Project Disturbance Footprint were determined to be <i>Syzygium australe</i>.
Camfield's Stringybark (<i>Eucalyptus camfieldii</i>)	Surveys conducted and considered sufficient to have detected the species if present. Surveys were conducted in accordance with the BAM, with the exception of inaccessible areas (impenetrable lantana thickets, steep drops unsafe to access etc.). Species are readily identifiable. Multiple survey rounds were conducted within associated Plant Community Types (PCTs) for other candidate flora species and no opportunistic observations occurred. There are no records of the species within 69 km, 45 km, and 38 km of the Project Disturbance Footprint, respectively.
Biconvex Paperbark (<i>Melaleuca biconvexa</i>)	
Red Helmet Orchid (<i>Corybas dowlingii</i>)	
<i>Maundia triglochoides</i>	Surveys for the species were conducted and are considered sufficient to detect the species. No records in the locality.

Table 3-2 (continued)
Summary Response to CPHR – Species Not Present and No Change Required

Species	Explanation
Austral Toadflax (<i>Thesium australe</i>)	Surveys completed and considered sufficient. Surveys were conducted using the two-phase grid-based systematic survey method. Surveys completed in the grid circles were thorough in nature and did not detect either species. No records occur in the locality.
Rainforest Cassia (<i>Senna acclinis</i>)	Surveys completed and considered sufficient. Surveys were conducted using the two-phase grid-based systematic survey method. Surveys completed in the grid circles were thorough in nature and did not detect the species despite species records in the locality.
Small-flower Grevillea (<i>Grevillea parviflora</i>)	Surveys completed and considered sufficient. The species is readily identifiable, and no individuals were detected during targeted surveys or opportunistically during multiple rounds of surveys for other candidate flora species. The Project Disturbance Footprint is considered unlikely to support the species given no records of the species exist in the locality, with the nearest being in Clarence Town, NSW (approximately 51 km south). The elevation of the Project Disturbance Footprint is greater than that of the species' typical range, suggesting that the habitat is unsuitable.
Pale-headed Snake (<i>Hoplocephalus bitorquatus</i>)	Surveys conducted in accordance with the <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> (NSW Department of Planning and Environment [DPE], 2022a). Surveys considered complete and sufficient. The species was not detected and the Project Disturbance Footprint is not in a locality with any known populations of the species.
Little Eagle (<i>Hieraaetus morphnoides</i>)	Surveys completed and considered sufficient. Species and suitably sized nests not identified during diurnal bird surveys. No approved survey guidelines for the species, nor survey requirements outlined in the <i>BioNet Threatened Biodiversity Data Collection</i> (TBDC) (NSW Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (Commonwealth Department of the Environment, Water, Heritage and the Arts [DEWHA], 2010). There are two records in the locality for the Little Eagle and no records for the Square-tailed Kite.
Square-tailed Kite (<i>Lophoictinia isura</i>)	
Eastern Osprey (<i>Pandion cristatus</i>)	Surveys completed and considered sufficient. Species and suitably sized nests not identified during diurnal bird surveys. No approved survey guidelines for the species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEHWA, 2010). All records in the region are coastal, with none occurring near the site or in the locality.
Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	Surveys completed and considered sufficient. Habitat surveys were conducted to assess the presence of suitable hollows, however the species was not recorded. There are no historical records of the Gang-gang Cockatoo in the locality.
Red-backed Button-quail (<i>Turnix maculosus</i>)	Surveys completed and considered sufficient. As the species is predominantly nocturnal, spotlighting surveys and diurnal surveys were conducted. There are no approved survey guidelines or requirements outlined in the TBDC (DCCEEW, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEWHA, 2010). The species is highly cryptic and the nearest record is between Wards River and Stroud, which is a substantial distance from the Project Disturbance Footprint.
Barking Owl (<i>Ninox connivens</i>)	Surveys completed and considered sufficient to detect the species, if present. There are no records in the locality and the preferred habitat is west of the Great Dividing Range.

Table 3-2 (continued)
Summary Response to CPHR – Species Not Present and No Change Required

Species	Explanation
Rufous Bettong (<i>Aepyprymnus rufescens</i>)	Ruled out of the list of candidate species as per its geographic constraint in the BAM. The species' southernmost extent is north of Gloucester.
Brush-tailed Rock-wallaby (<i>Petrogale penicillate</i>)	Surveys for the species were conducted and are considered likely to have detected the species if present. Camera trap surveys were conducted and are deemed an appropriate method of survey by the TBDC (DCCEEW, 2025a). No records of the species occur in the locality.
Eastern Cave Bat (<i>Vespadelus troughtoni</i>).	Surveys conducted and considered sufficient. The species was not identified within or in the vicinity of the Project Disturbance Footprint using acoustic recorders placed during breeding season. Rocky outcrops were not considered suitable breeding habitat as there are no caves, escarpments or overhangs within the Project Disturbance Footprint. The species has not previously been identified and there are no TBDC (DCCEEW, 2025a) records within a 35 km radius.

Table 3-3
Summary Response to CPHR – Species Present and No Change Required

Species	Explanation
Craven Grey Box (<i>Eucalyptus largeana</i>)	Species identified in the Project Disturbance Footprint. Surveys conducted considered complete and sufficient. Surveys were completed in accordance with the <i>Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method</i> (DPIE, 2020b), where reasonably practical. Species was observed during targeted surveys and opportunistically during multiple survey rounds for other flora species. The species is distinct and readily identifiable, and can be surveyed any time of year.
Stephen's Banded Snake (<i>Hoplocephalus stephensii</i>)	Species assumed present. Surveys conducted in accordance with the <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> and considered complete. Surveys guidelines require spotlighting by foot and car; no trapping is required. No individuals were identified. The species was assumed present because it is known to occur in the locality, is highly cryptic in nature, and there is suitable habitat present within the Project Disturbance Footprint.
Glossy Black-Cockatoo (<i>Calyptorhynchus lathami lathami</i>)	Species identified in the Project Disturbance Footprint. Surveys conducted considered complete and sufficient. Surveys involved identification of suitable hollow-bearing trees across the Project Disturbance Footprint and diurnal bird surveys. Records of the species occur in the locality. Targeted surveys to identify specific breeding habitat were not feasible so a conservative offset estimate was applied by designating five indicative nest trees within the Project Disturbance Footprint and generating a species polygon with a 200 m radius from these trees. This conservative offset estimate is considered sufficient for the species.
Koala (<i>Phascolarctos cinereus</i>)	Species identified in the Project Disturbance Footprint. Surveys conducted considered complete and sufficient. Records of the species occur in the locality. A species polygon was generated with reference to the <i>Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide</i> (DPE, 2022b). The polygon included all associated PCTs in the Project Disturbance Footprint. It was refined where PCTs involved habitat unfavourable for the Koala, including removal of low condition derived native grassland and exotic vegetation, as the species is arboreal in nature, and removal of excluded areas subject to existing approvals for SSD-4966.

Table 3-3 (continued)
Summary Response to CPHR – Species Present and No Change Required

Species	Explanation
Squirrel Glider (<i>Petaurus cinereus</i>)	Species identified in the Project Disturbance Footprint. Surveys involved camera trapping and spotlighting. Records of the species occur in the locality. A species polygon was generated including associated PCTs of moderate and high condition. The species polygon excluded low condition vegetation due to the arboreal nature of the species and excluded PCTs that are not associated with the species according to the <i>BioNet Threatened Species to Plant Community Types Association data</i> (DPE, 2022c) and the TBDC (DCCEE, 2025a).
Parma Wallaby (<i>Macropus parma</i>)	Species identified in the Project Disturbance Footprint and a species polygon was prepared accordingly. Surveys involved camera trapping. Previous records of the species occur in the locality.
Brush-tailed Phascogale (<i>Phascogale tapoatafa</i>)	Species identified in the Project Disturbance Footprint. Surveys involved camera trapping and spotlighting. While the surveys did not meet the required four weeks during the December to May survey period, no further surveys were considered necessary as the species was recorded on 10 occasions, noting previous records of the species occur in the locality. A species polygon was generated including associated PCTs with moderate or high condition vegetation as the species utilises wooded vegetation communities that retain structural and functional connectivity for foraging and refuge.
Common Planigale (<i>Planigale maculata</i>)	Species assumed present. Surveys not completed as the methods outlined in the TBDC were considered unfeasible due to the size of the Project Disturbance Footprint. No known records of the species occur in the locality. A species polygon was produced inclusive of all associated PCTs of moderate and high condition. The species prefers densely vegetated communities so low condition vegetation and isolated patches of vegetation were excluded from the polygon. Excluded areas that are subject to existing approvals for SSD-4966 were not included in this assessment.
Little Bent-winged Bat (<i>Miniopterus australis</i>)	Species recorded using acoustic recorders placed in proposed areas of disturbance and other suitable areas during the breeding season. It was considered sufficient to utilise the acoustic recorder data as proof of the presence of these species and then rely on the results of a habitat assessment to determine if the species were potentially breeding on, or near to, the Project Disturbance Footprint. Suitable breeding habitat was not identified within or adjacent to the Project Disturbance Footprint. A sheer rocky outcrop (containing large fissures and voids) located approximately 250 m outside of the Project Disturbance Footprint was surveyed and not considered suitable breeding habitat for these species as it does not contain caves. Surveys conducted and considered sufficient and known records of the species occur in the locality.
Large Bent-winged Bat (<i>Miniopterus orianae oceanensis</i>)	
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Species was recorded using acoustic recorders placed in proposed areas of disturbance and other suitable areas during the breeding season. It was considered sufficient to utilise the acoustic recorder data as proof of the presence of these species and then rely on the results of a habitat assessment to determine if the species were potentially breeding on, or near to, the Project Disturbance Footprint. Suitable breeding habitat was not identified within the Project Disturbance Footprint. A sheer rocky outcrop (containing large fissures and voids) located approximately 250 m outside of the Project Disturbance Footprint was surveyed and considered potentially suitable breeding habitat. This outcrop was assumed potential breeding habitat and accordingly credits were generated to accommodate <u>foraging</u> habitat. Surveys conducted and considered sufficient and known records of the species occur in the locality.

Table 3-4
Summary Response to CPHR – Species Credits Reduced

Species	Explanation
Scrub Turpentine (<i>Rhodamnia rubescens</i>)	Species identified in the Project Disturbance Footprint and previous records of the species occur in the locality. Surveys included targeted flora surveys and were completed in accordance with the guideline <i>Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method</i> (DPIE, 2020b), as far as reasonably practical. Surveys are considered complete and sufficient due to the many rounds of surveys and opportunistic sightings, granted the species is readily identifiable, notwithstanding some areas that were inaccessible due to impenetrable lantana thickets, steep drops unsafe to access, etc. Land-based offsets are unable to be generated due to the risk of myrtle rust in the region. The Fund is not considered to be an appropriate pricing mechanism for this species. Direct contribution to Save Our Species is proposed.
Stuttering Frog (<i>Mixophyes balbus</i>)	Species previously assumed present. Dr Frank Lemckert ruled out potential for presence of each species and concluded no species polygon should be generated. Based on the expert reports prepared by Dr Frank Lemckert, no species credits are required.
Giant Barred Frog (<i>Mixophyes iteratus</i>)	
Green and Golden Bell Frog (<i>Litoria aurea</i>)	
Green-thighed Frog (<i>Litoria brevipalmata</i>)	
White-bellied Sea-Eagle (<i>Haliaeetus leucogaster</i>)	Additional surveys have provided more certainty that there is no breeding site (nest tree) present in the Project Disturbance Footprint or on adjacent Yancoal-owned land that was subject to survey. Species polygons for the species are generated as a 500 m radius from an identified breeding site. Additional survey supports that a species polygon for this species is not required and is considered complete and sufficient.

Table 3-5
Summary Response to CPHR – Species Credits Increased

Species	Explanation
Sooty Owl (<i>Tyto tenebricosa</i>)*	Species present. Credits have increased to account for the change in requirements for calculating species polygons in the <i>Biodiversity Assessment Method Calculator release notes</i> (TBDC notes) (DCCEEW, 2025b), which were updated prior to the submission of the BDAR.
Powerful Owl (<i>Ninox strenua</i>)*	
Masked Owl (<i>Tyto novaehollandiae</i>)*	Species assumed present based on previous records in the SMC. Species polygon generated using two indicative points at the location of suitable hollow-bearing trees. Credits have increased to account for the change in requirements for calculating species polygons in the TBDC notes (DCCEEW, 2025b), which were updated prior to the submission of the BDAR.
Long-nosed Potoroo (<i>Potorous tridactylus</i>)	Credits for the Long-nosed Potoroo have increased as the species was identified in PCTs that are not associated with the species under the BAM. These PCTs have been included in an updated species polygon, therefore increasing credit liability. Species was identified in PCTs that are not required to be surveyed in the BAM. Polygon has been updated accordingly.

* It is understood the change in methodology for calculating species polygon for Forest Owl species was updated by the NSW Government in the TBDC notes to enable Biodiversity Stewardship sites to generate more offset credits for these species. However, there is an expectation that this updated methodology is also applied to development sites / BDARs. The scientific basis for this change has not been published, and it is understood that CPHR-recognised owl experts were not consulted in advance of this change.

The reduction in credits (relative to the BDAR) is justified given the following additional assessment undertaken for the Project:

- Expert Reports prepared by Dr Frank Lemckert (CPHR-accredited Biodiversity Expert) ruling out the presence of:
 - Stuttering Frog;
 - Giant Barred Frog;
 - Green and Golden Bell Frog; and
 - Green-thighed Frog.
- *Stratford Renewable Energy Hub: Interim advice on serious and irreversible impacts to Scrub Turpentine* (*Rhodamnia rubescens*) prepared by the Independent Expert Advisory Panel for Energy Transition (the Panel) (2025) (Attachment 13) which:
 - concludes that the Project would not contribute to a SAIL for Scrub Turpentine;
 - recognises that “the risk of extinction of Scrub Turpentine arises from the Myrtle Rust pathogen, which is now irreversibly distributed across the whole range of the species in NSW and beyond”; and
 - advises that the proposed actions for financial contribution and provision of genetic material (if requested) to Saving Our Species is appropriately directed.
- Additional survey effort undertaken by GHD (2024b) (Attachment 9) for the White-bellied Sea-Eagle which did not locate a nest tree, ruling out the requirement for a species polygon to be generated as per the process outlined in the BAM.

The updated Project species credit requirements for the species where credits have reduced is provided in Table 3-6.

Table 3-6
Updated Project Species Credit Requirements – Reductions

Species	BC Act Status [^]	EPBC Act Status [^]	BDAR Total Credits	Revised Credits
Scrub Turpentine (<i>Rhodamnia rubescens</i>)	CE	CE	651	0 ^{**}
Stuttering Frog (<i>Mixophyes balbus</i>)	E	V	3,226	0
Giant Barred Frog (<i>Mixophyes iteratus</i>)	V	V	224	0
Green and Golden Bell Frog (<i>Litoria aurea</i>)	E	V	59	0
Green-thighed Frog (<i>Litoria brevipalmata</i>)	V	-	688	0
White-bellied Sea-Eagle (<i>Haliaeetus leucogaster</i>)	V	-	336	0

[^] Conservation status listed under the BC Act and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (current as at September 2024).

^{**} As land-based offsets cannot be generated for Scrub Turpentine, as the species is affected by myrtle rust, direct contribution to Save Our Species is proposed.

CE = Critically Endangered; E = Endangered; V = Vulnerable.

The updated Project species credit requirements for the species where credits have increased is provided in Table 3-7.

Table 3-7
Updated Project Species Credit Requirements – Increases

Species	BC Act Status^	EPBC Act Status^	BDAR Total Credits	Revised Credits
Sooty Owl (<i>Tyto tenebricosa</i>)	V	-	1,642	2,566
Masked Owl (<i>Tyto novaehollandiae</i>)* (assumed present)	V	V	968	1,826
Powerful Owl (<i>Ninox strenua</i>)	V	-	1,449	2,312
Long-nosed Potoroo (<i>Potorous tridactylus</i>)*	V	V	2,592	2,993

* Community or species would be offset in accordance with the EPBC Act.

^ Conservation status listed under the BC Act and EPBC Act (current as at September 2024).

V = Vulnerable.

ACHA Consultation

A recommendation of the Project ACHA (Niche, 2024a) (Appendix F of the EIS) was to conduct a follow-up site visit to CTS-1 with Elder women of the local Aboriginal community to discuss the cultural significance and management of the site, once accessible (noting that previous visits were postponed due to wet weather). A Letter of Advice summarising the findings and discussion at the CTS-1 site visit was prepared by Niche and distributed to the Elder women who attended the CTS-1 site visit for their review and confirmation/input.

The Letter of Advice outlines that it was confirmed at the site visit and meeting that the following recommendations are adequate measures for the management of CTS-1:

1. Yancoal would maintain the 20 m width exclusion zone surrounding CTS-1 (10 m buffer zone on all sides) during construction of the Project and designate CTS-1 as a no construction zone.
2. Consistent with Heritage NSW's recommendation, CTS-1 has been registered as a water hole site on the Aboriginal Heritage Information Management System (AHIMS).
3. It was agreed that no further investigation or photographic recording is required, and it is acknowledged by the Elder women of the local Aboriginal community that attended the site visit that there are no further avenues for investigation.

Following review and confirmation/input from Elder women of the local Aboriginal community, the CTS-1 Letter of Advice has been included in Appendix 6 of the Updated ACHA (Niche, 2025). The Updated ACHA (Attachment 10) has been provided to all RAPs for review and comment. No comments were received from RAPs on the Updated ACHA.

Further detail is provided in Section 4.1.5 and the Updated ACHA (Attachment 10).

4 RESPONSE TO SUBMISSIONS

4.1 GOVERNMENT AGENCY SUBMISSIONS

Table 4-1 shows the government agencies that provided assessment-related comments, and those that provided comments only. It also shows relevant sections where agency submissions have been addressed within this Submissions Report.

Key comments from the submissions received from government agencies are provided below.

The CPHR submission was not received until 16 December 2024.

Table 4-1
Relevant Sections Addressing Government Agency Submissions

Agency	Assessment-related Comments	Section Addressed
Fire and Rescue NSW	×	4.1.1
DPHI – Crown Lands	×	4.1.1
Dams Safety NSW	×	4.1.1
WaterNSW	×	4.1.1
Subsidence Advisory NSW	×	4.1.1
TfNSW	✓	4.1.2
DCCEE Water	✓	4.1.3
DPIRD – Agriculture and Biosecurity	✓	4.1.4
Heritage NSW	✓	4.1.5
DPIRD – NSW Resources and NSW Resources Regulator	✓	4.1.6
NPWS	✓	4.1.7
DPIRD – Fisheries and Forestry	✓	4.1.8
EPA	✓	4.1.9
RFS	✓	4.1.10
CPHR	✓	4.1.11
DPHI and the Panel	✓	4.1.12

4.1.1 Agencies with No Assessment-related Comments

Fire and Rescue NSW

The submission from Fire and Rescue NSW stated:

FRNSW have reviewed the EIS with particular focus to the Preliminary Hazards Analysis (PHA). FRNSW submit no comments or recommendations for consideration, nor any requirements beyond that specified by applicable legislation at this stage.

DPHI – Crown Lands

The submission from DPHI – Crown Lands stated:

The Department of Planning, Housing and Infrastructure – Crown Lands have reviewed the proposal.

As no Crown land, roads or waterways are in the vicinity of the proposal/are affected by the proposal, Crown Lands has no comments at this time.

Dams Safety NSW

The submission from Dams Safety NSW stated:

Dams Safety NSW has reviewed the Environmental Impact Statement (EIS), focusing on the water storages planned for this project. Based on the information within the EIS, it is likely that the planned storages will be classified as declared dams under the Dams Safety Act 2015 following a consequence category assessment. Therefore, I encourage the applicant to familiarise themselves with declared dams.

WaterNSW

The submission from WaterNSW stated:

WaterNSW has reviewed the EIS and found that the proposal is not located near any WaterNSW land, assets or infrastructure. Therefore, we have no comments or requirements regarding the proposal.

However, if required, the applicant will need to apply for a Water Access Licence (WAL) from WaterNSW for the extraction of water from existing or new groundwater bores. Any such request will be assessed at time of application.

Subsidence Advisory NSW

The submission from the Subsidence Advisory NSW stated:

The Stratford Renewable Energy Hub is not within a declared Mine Subsidence District. Approval from Subsidence Advisory NSW is not required for proposed development at this location under the Act [Coal Mine Subsidence Compensation Act 2017].

...

There is no record of any underground workings at the site and there is no risk of subsidence from underground coal mine workings. Design of proposed infrastructure to accommodate potential subsidence is not required.

4.1.2 Transport for NSW

A submission was received from TfNSW which concerned OSOM vehicle movements associated with the Project. Responses to TfNSW's comments are provided below.

TfNSW additional required information

TfNSW requests the additional information provided in this Attachment 1 to be addressed in a revised TIA and as part of the RtS, that will be referred to TfNSW for further assessment. The additional information is requested in relation to the high-risk OSOM route assessment.

High-risk route assessment requirements

1. TfNSW requested the preparation of a high-risk OSOM route assessment in the Secretary Environmental Assessment Requirements (SEARs) for the Stratford Pumped Hydro and Solar project; as the project will include the delivery of transformers, switchrooms and segment rings which are typically classed within the high-risk OSOM category for the laden load (vehicle configuration and loads).

The provided Road Transport Assessment (Appendix H) does not identify how these components will be transported and if they are defined as high-risk OSOM in accordance with TfNSW high-risk criteria for OSOM movements. A revised TIA is therefore required to either:

- a. Identify each load, vehicle configuration and class required for the delivery of indivisible components and how these loads conform to the NHVR notices for Class 1 or conforms with NHVR NSW Class 1 Operators Guide, or
- b. Prepare and include within the revised TIA a high-risk OSOM route assessment (concept level route assessment) that addresses the requirements within Attachment 2.

...

Concept Level Route Assessment Required for High Risk OSOM

1. The route assessment is required for high risk OSOM (as defined on TfNSW website) delivering components to the project. The concept level route analysis must include:
 - a. Port or point of origin for the entire route to the site access and intersections required to facilitate high risk OSOM movements required for the project.
 - b. Overall combination type, configuration, load and vehicle configuration.
 - c. The laden dimensions and weight of the vehicle configuration and loads.
 - d. The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project.
 - e. The location of pull-over bays / rest areas along high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that high risk OSOMs can be physically accommodated for the project (in terms of size, width and accessibility).
 - f. Bridge Assessments for any at risk bridges on classified roads due to dimensions and weight of OSOM vehicles.
 - g. The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).
 - h. Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.
 - i. Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project.
 - j. Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e school bus routes, mining shift changes, TSRs, harvest periods and events).
 - k. Identify and assess implications, road upgrades or mitigation measures to travel through any road and rail projects under construction or post-completion during the indicative schedule for project related high risk OSOM movements.

Advisory Notes:

- Bridge and culvert assessments are required for TfNSW assets and can be obtained by contacting spu@transport.nsw.gov.au. The result of bridge assessments may require a change to the route which must be accounted for in the updated route assessment.
- Strategic Concept Designs will need to be provided for any works required along the state road network route. [Strategic-Design-requirements-for-DA-Factsheet.pdf](#)

Response

The Project would not require upgrades to the road network for Project OSOMs.

The EIS considered the potential for OSOM vehicle movements associated with the Project to trigger the need for physical upgrades to the road network (e.g. road widening, bridge upgrades, etc.).

It was concluded the Project would not require upgrades to the road network to accommodate Project OSOM vehicles, given:

- The SMC currently holds permits for using The Bucketts Way for OSOM vehicle movements, demonstrating The Bucketts Way is capable of accommodating OSOM vehicles which are larger than those required for the Project.
- A concept level route assessment prepared for Oven Mountain (Rex J Andrews Pty Ltd [Rex J Andrews], 2022) assessed the same route that Project OSOM vehicles would follow between the Port of Newcastle and the Pacific Motorway/The Bucketts Way intersection. It concluded the suitability of the roads for OSOM vehicles which are larger than those required for the Project (Rex J Andrews, 2022).

OSOM vehicles are defined as Class 1 vehicles under the Heavy Vehicle National Law. If the mass/dimension of the OSOM vehicles exceeds specific limits, an access permit would be required for the OSOM vehicle movements on the NSW road network. A Transport Management Plan (TMP) is required prior to a permit being assessed for OSOM movements that are greater than 6.5 m wide.

The largest Project OSOM vehicles would likely exceed 6.5 m width and therefore an access permit from the National Heavy Vehicle Regulator (NHVR) and TMP would be required prior to the OSOM movement occurring.

TfNSW requests specific information in regard to individual OSOM vehicle dimensions. This information will be confirmed once detailed design has been completed for the Project. In addition, the road network is subject to changes between now and commencement of Project construction (e.g. as a result of current TfNSW projects and/or any road upgrade projects proposed by EnergyCo to assist to facilitate renewable energy projects). Such changes make confirmation of these details more suitable to be provided at the TMP/NHVR permit stage, which would be closer to commencement of Project construction (and a mandatory post-approval step under the NHVR permit process in any case).

If baseline conditions change such that Project OSOM vehicles were to require physical changes to the road network, a modification or alternative assessments and approvals would be required.

Further details in response to the TfNSW comments are provided below.

High-risk route assessment requirements

1. TfNSW requested the preparation of a high-risk OSOM route assessment in the Secretary Environmental Assessment Requirements (SEARs) for the Stratford Pumped Hydro and Solar project; as the project will include the delivery of transformers, switchrooms and segment rings which are typically classed within the high-risk OSOM category for the laden load (vehicle configuration and loads).

The provided Road Transport Assessment (Appendix H) does not identify how these components will be transported and if they are defined as high-risk OSOM in accordance with TfNSW high-risk criteria for OSOM movements. A revised TIA is therefore required to either:

- a. *Identify each load, vehicle configuration and class required for the delivery of indivisible components and how these loads conform to the NHVR notices for Class 1 or conforms with NHVR NSW Class 1 Operators Guide, or*
- b. *Prepare and include within the revised TIA a high-risk OSOM route assessment (concept level route assessment) that addresses the requirements within Attachment 2.*

Response

The largest Project OSOM vehicles are likely to be classified as “high risk” as per TfNSW criteria because they are likely to exceed the size/configuration criteria. Accordingly, a TMP will be required in advance of these OSOM vehicle movements (in addition to an access permit from the NHVR).

As per TfNSW requirements, the TMP is required to detail the following:

- vehicle and load details;
- route survey details of the proposed route(s);
- traffic management arrangements;
- stakeholder and community consultations; and
- Rail Infrastructure Manager(s) approval.

Yancoal considers the TMP and NHVR access permit application processes would be more suitable to provide the information requested by TfNSW as per 1a above, as this information will be available following detailed design of the Project in consultation with suppliers, contractors and heavy vehicle operators.

The NHVR-approved OSOM vehicle routes between the Port of Newcastle and the Project site are (Figure 4-1):

- Industrial Drive;
- Maitland Road (New England Highway);
- across Hexham Bridge to Pacific Highway; and
- The Bucketts Way.

In the absence of change to the road network due to TfNSW/EnergyCo projects, these NHVR-approved OSOM vehicle routes would be used for Project OSOM vehicles. This route is considered suitable for Project OSOM vehicles considering:

- large OSOM vehicles (under permits) have travelled to and from the SMC (and Duralie Coal Mine);
- existing permits are held for larger vehicles on The Bucketts Way; and
- the OSOM assessment findings for Oven Mountain (Rex J Andrews, 2022).

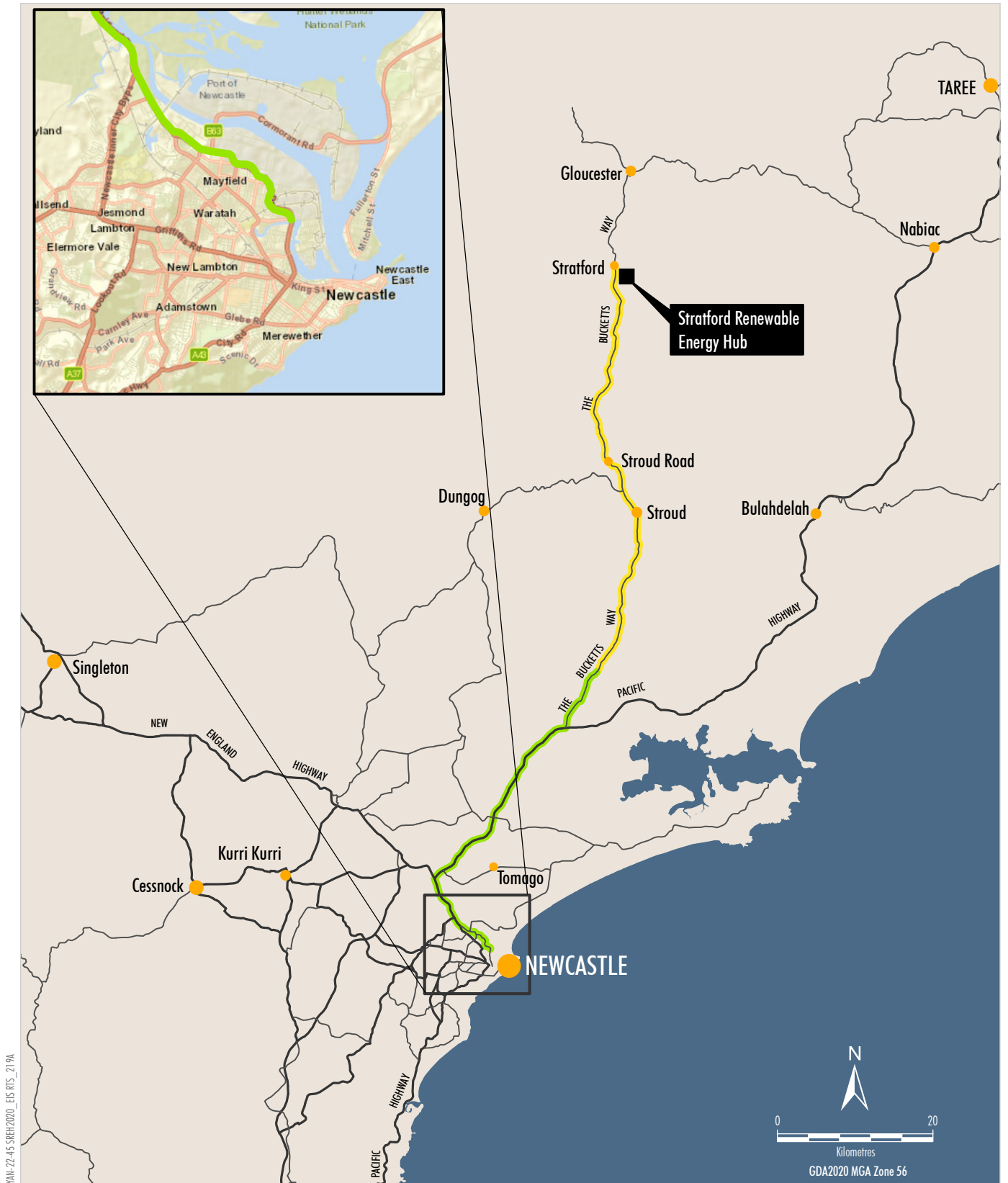


Figure 4-1

Concept Level Route Assessment Required for High Risk OSOM

1. The route assessment is required for high risk OSOM (as defined on TfNSW website) delivering components to the project. The concept level route analysis must include:
 - a. Port or point of origin for the entire route to the site access and intersections required to facilitate high risk OSOM movements required for the project.
 - b. Overall combination type, configuration, load and vehicle configuration.
 - c. The laden dimensions and weight of the vehicle configuration and loads.
 - d. The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project.
 - e. The location of pull-over bays / rest areas along high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that high risk OSOMs can be physically accommodated for the project (in terms of size, width and accessibility).
 - f. Bridge Assessments for any at risk bridges on classified roads due to dimensions and weight of OSOM vehicles.
 - g. The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).
 - h. Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.
 - i. Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project.
 - j. Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e. school bus routes, mining shift changes, TSRs, harvest periods and events).
 - k. Identify and assess implications, road upgrades or mitigation measures to travel through any road and rail projects under construction or post-completion during the indicative schedule for project related high risk OSOM movements.

Response

Responses to TfNSW queries are provided below:

- a) The proposed route between the Port of Newcastle and the Project site is described in the EIS and discussed above (Figure 4-1). This follows NHVR-approved OSOM vehicle routes.
- b) This information for each individual OSOM vehicle required for the Project will not be available until after detailed design. However, the loads historically transported on The Bucketts Way for the SMC/Duralie Coal Mine (i.e. CAT 789 mining truck) are a similar size to the largest load required for the Project (i.e. the transformer). Existing NHVR access permits (permit numbers 431273V12 and 516920V2) authorise the following OSOM vehicles to travel along The Bucketts Way:
 - Unladen dimensions:
 - Width: 3.4 m.
 - Length: 26 to 27 m.
 - Height: 4.3 m.
 - Tare mass: 58.0 to 58.5 tonnes (t).
 - Laden dimensions:
 - Width: 7.9 m.
 - Length: 34 to 35 m.

- Height: 5.4 to 5.49 m.
- Total mass: 167.5 t.

The heaviest load that would need to be transported to the Project locality would be the transformer, which has an indicative weight of 125 t. While the weight of the prime mover required for transport of the transformer would be confirmed post-approval, it is not expected that there would be a significant difference between the maximum gross load authorised in the existing access permits (167.5 t) and that required for the SREH.

It is assumed the road authority would continue to maintain the road network in a suitable condition.

The OSOM vehicle route would not cross any load limited bridges per the MidCoast Council Load Limited Bridges map (MidCoast Council, 2025) and the National Heavy Vehicle Regulator's (NHVR) National Network Map (NHVR, 2024), as shown on Figure 4-2.

Management requirements for OSOM vehicles (including transportation of the transformer) would consider OSOM dimensions, including mass and weight distribution associated with the number of axels along prime movers (to account for any identified load requirements on bridges), to ensure that machinery and/or equipment required for the Project is transported in a manner that is safe for the public and public infrastructure.

This information would be validated closer to the time of actual OSOM vehicle movements in support of a TMP and NHVR access permit for the Project. Similarly, it is proposed the assessment of the structures to confirm adequacy is reviewed at the time of actual OSOM movements under the NHVR permit process.

- c) Refer to b) above. It is noted that this information would be required to support a TMP and NHVR access permit prior to any actual OSOM vehicle movement, when the proposed OSOM vehicles are greater than 6.5 m wide or are likely to be classified as “high risk”.
- d) Refer to b) above. It is noted that this information would be required to support a TMP and NHVR access permit prior to any actual OSOM vehicle movement, when the proposed OSOM vehicles are greater than 6.5 m wide or are likely to be classified as “high risk”.
- e) On the basis that the SMC currently holds permits for OSOM vehicles on The Bucketts Way, and the assessment findings for Oven Mountain (relevant to proposed larger OSOM vehicles travelling between the Port of Newcastle and the Pacific Motorway/The Bucketts Way intersection), it is expected Project OSOM vehicles can be physically accommodated. It is also noted that EnergyCo is proposing additional road upgrade projects around the Port of Newcastle to further improve access for OSOM vehicles for renewable energy projects.
- f) In addition to the above, it is considered this information is most suitably confirmed closer to the time of actual OSOM vehicle movements in support of a TMP and NHVR access permit.
- g) Not applicable.

For TfNSW queries h) to k), it is considered this information is most suitably confirmed closer to the time of actual OSOM vehicle movements in support of a TMP and NHVR access permit.



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Figure 4-2

4.1.3 DCCEEW Water

A submission was received from DCCEEW Water that provided recommendations regarding water supply, take and licensing, surface water and groundwater impacts. Responses to DCCEEW Water's comments are provided below.

Water Supply, Taking and Licensing

1.1 Recommendation – pre-determination

The proponent should quantify the maximum annual volume of water take per impacted water source for both construction and operation. This should include a diagram and table summarising the site's total water balance, incorporating all surface-water and groundwater input, storage and output components.

Response

Additional diagrams and tables summarising water inflows and outflows have been developed and are presented below. Figure 4-3 indicates the locations of the tunnel long-section and cross-section shown in Plates 4-1 and 4-2, respectively.

Plate 4-1 demonstrates the conceptual hydrogeological understanding of the Project area along the approximate alignment of the proposed tunnel prior to commencement, during construction, and during operation. Plate 4-1 provides estimates of the maximum take of groundwater from each geological unit, and describes the surplus of available licensing during both construction and operation.

Plate 4-2 presents a cross-section of the hydrogeological conceptual model approximately at the halfway point of the tunnel. Plate 4-2 (Top) exaggerates the vertical axis of the cross-section in order to more clearly show the relative changes in elevation in the area, as well as the distance of the works to major waterways. Plate 4-2 (Bottom) shows a smaller portion of the cross-section, including the proposed tunnel, approximately to scale.

Plate 4-2 demonstrates the relatively minimal impact of the tunnel as a result of the small volume of excavation, large distance to the surface and low hydraulic conductivity of surrounding material.

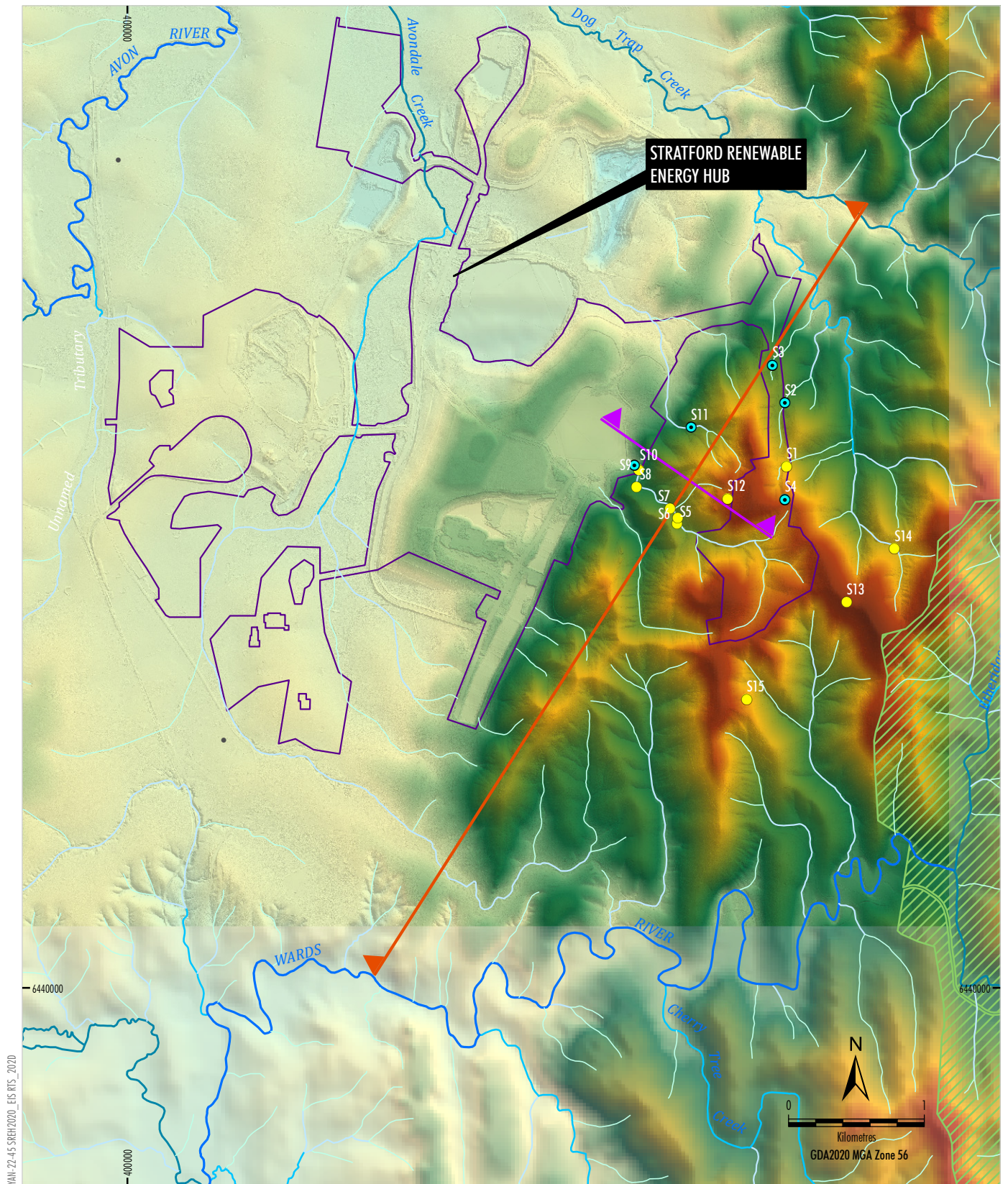
Surface Water

As described in Section 6.3.3 of the EIS, there are no predicted surface water licensing requirements for the Project, for construction nor operation.

A key benefit of the Project is the availability of already licensed water stored in the SMC mine voids, which can be used to fulfil the water requirement for the initial fill of the pumped hydro reservoirs. This is contrary to typical PHES projects, which require a large amount of water to be sourced from nearby rivers and streams. If further water is required during the life of the Project as a result of drier than predicted conditions (i.e. top-up), this would also be sourced from the SMC final voids (which store water already licensed for the SMC) and would be subject to commercial agreement.

There would be no natural watercourses draining into either reservoir, as the Upper Reservoir is proposed to be constructed at the top of the catchment and a clean water diversion would be constructed around the Lower Reservoir.

Following construction and during operation, the Project is proposed to function as a closed system, with only transfers between the two reservoirs (exempt from licensing) as per the regular function of a PHES, and no surface water inflows or outflows (apart from top-up from final voids if necessary).



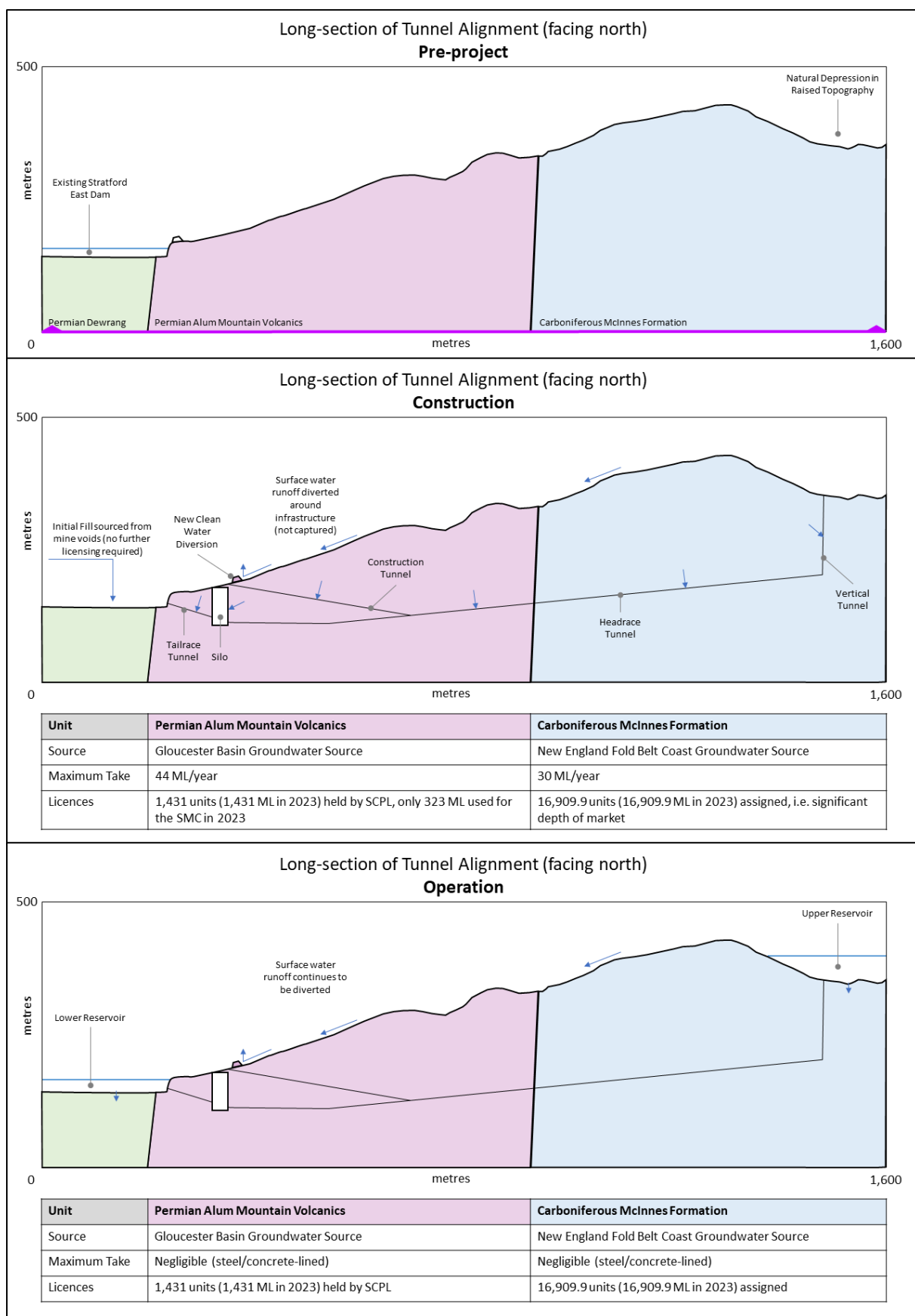
- LEGEND**
- NPWS Estates
 - Project Disturbance Footprint
 - Strahler Stream Order**
 - 1st Order
 - 2nd Order
 - 3rd Order
 - 4th Order
 - 5th Order
 - Hydrogeological Long Section
 - Hydrogeological Cross-Section
 - GW_Fed_Indicated**
 - No
 - Yes

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Local Topography, Streams and Drainage Lines

Figure 4-3



ML/year = megalitres per year.

Plate 4-1: Long-section of Tunnel Alignment (Facing North)

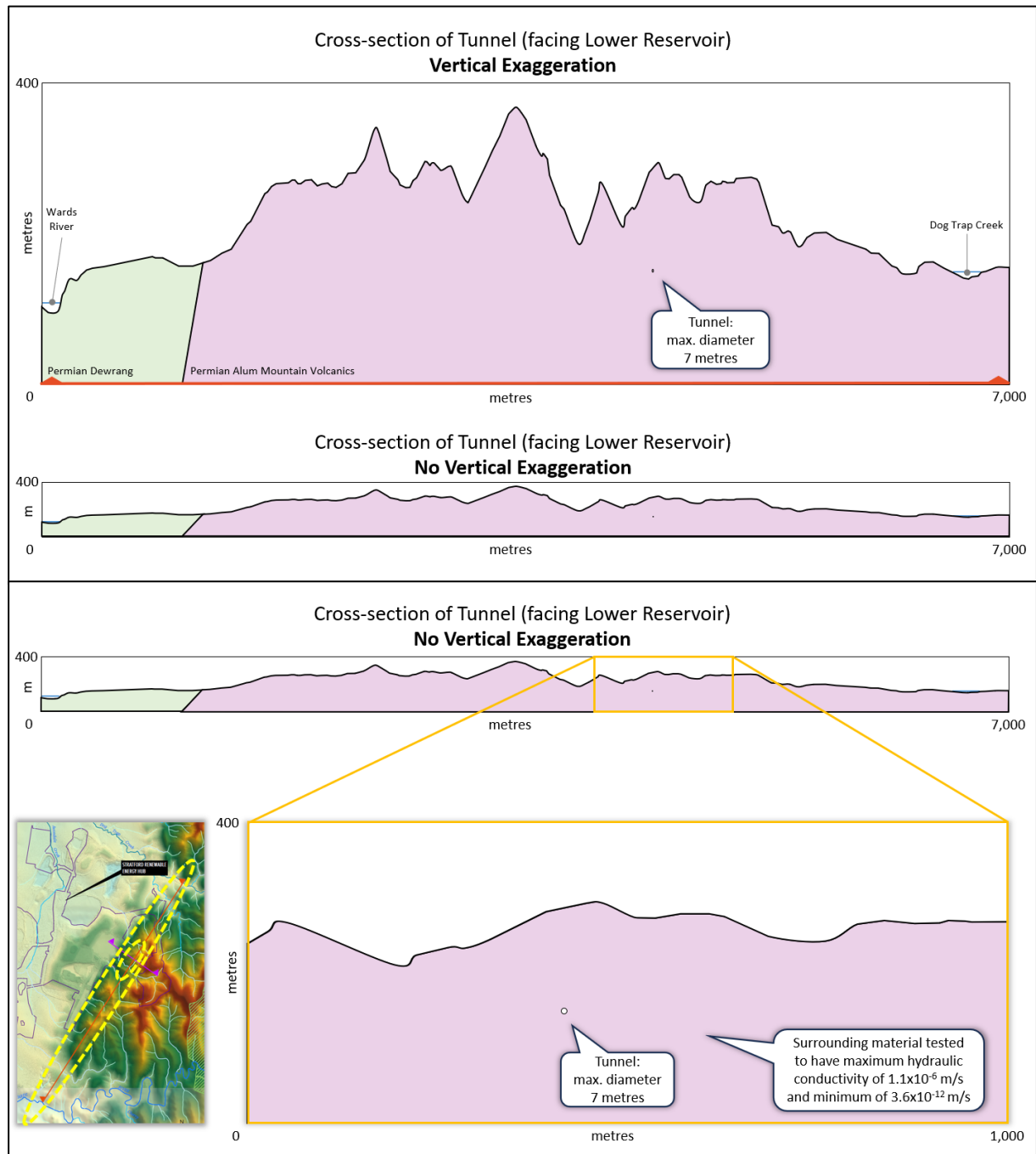


Plate 4-2: Cross-section of Tunnel (Facing Lower Reservoir)

Groundwater

As described in Section 6.3.4 of the EIS and in the Groundwater Impact Assessment (SLR Consulting Australia Pty Ltd [SLR], 2024a) (Appendix C of the EIS), significant take of groundwater is only expected during construction of the tunnel system. During this time, a maximum of 44 ML/year of take is predicted from the Gloucester Basin Groundwater Source, and a maximum of 30 ML/year of take is predicted from the New England Fold Belt Coast Groundwater Source.

As part of construction, the tunnelled waterway and powerhouse would be concrete and/or steel-lined for water transfer between the upper and lower reservoirs, resulting in minimal inflow/outflow during operation.

Licensing

Table 4-2 below, reproduced from Section 6.3.4 of the EIS, details all predicted groundwater and surface water licensing requirements for the Project during both construction and operation. In summary, a maximum total 74 ML/year is predicted to be required from groundwater sources, and no further licensing of surface water would be required as water to be transferred from existing mine voids has already been licensed by SCPL.

1.2 Recommendation – pre-determination

The proponent should demonstrate:

- *the feasibility of using the Stratford Mining Complex (SMC) Water Access Licences*
- *confirm there is sufficient availability in the SMC potable water supply to meet demands of this project*
- *sufficient entitlement can be acquired in the relevant water source unless an exemption applies.*

If sufficient entitlement is unable to be obtained, the proponent should provide a methodology for carrying out works within the held entitlement.

Response

Groundwater Licences

SCPL currently holds WALs in the Gloucester Basin Groundwater Source which totalled over 1,400 ML in water over the year of 2023. This is significantly greater than the predicted maximum 44 ML/year of take during construction of the Project. For reference, in 2023 a total of 323 ML was used for the SMC, indicating that there is sufficient surplus licenses available to transfer to the SREH.

There are currently WALs assigned in the New England Fold Belt Coast Groundwater Source totalling over 16,000 ML, and an additional unassigned total of over 40,000 ML, indicating that there is sufficient availability of licences for the predicted maximum take of 30 ML/year during construction. The relevant licences would be sourced prior to commencement of construction/water take.

Table 4-2
Predicted Project Water Licensing Requirements

Phase	Water Type	Water Requirement	Water Sourced From	Water Source	Licensing Requirement
Construction	Surface Water	Potable (including concrete batching).	Imported (as per current SMC).	N/A – purchased water from licensed importer.	
		General construction (e.g. dust suppression).	Water stored in mine voids, and water management structures such as sediment dams.	N/A – no further licensing required as open pit take is licensed by SCPL, as reported in the SMC Annual Review.	
		Initial reservoir fill.	Water stored in mine voids.	N/A – no further licensing required as open pit take is licensed by SCPL, as reported in the SMC Annual Review.	
	Groundwater	Groundwater interception/ extraction during tunnel/ powerhouse excavation.	Groundwater in in-situ rock near the lower part of the tunnel.	Maximum of 44 ML/year from the <i>Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 Gloucester Basin Groundwater Source</i> .	SCPL holds WALs 41534 to 41538 in the Gloucester Basin Groundwater Source , with a combined entitlement of 1,431 ML. A total of 312.9 ML was required in 2023, indicating that more than sufficient excess would be available for the Project when required. Sufficient entitlements could be temporarily traded to the Project, subject to commercial arrangement.
			Groundwater in in-situ rock in the upper part of the tunnel.	Maximum of 30 ML/year from the <i>Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 New England Fold Belt Coast Groundwater Source</i> .	In the water year 2024/25, there are 646 WALs comprising approximately 16,909.9 share components (MLs) in the New England Fold Belt Coast Groundwater Source . It is noted that the Long Term Annual Average Extraction Limit is 60,000 ML/year. The Project would source the relevant share components on the active market.
Operation	Surface Water	Transfer between upper and lower reservoirs as part of operation of the PHES.	Upper Reservoir/Lower Reservoir (following initial fill).	N/A – Exempt in accordance with Schedule 4, clause 11A of the NSW <i>Water Management (General) Regulation 2018</i> .	
		Upper Reservoir.	N/A – the Upper Reservoir would operate as a closed system (i.e. ‘turkey’s nest’ dam). Due to the construction location at the highest point in the local topography, there is no upstream catchment that would drain into the Upper Reservoir.		
		Lower Reservoir.	N/A – the Lower Reservoir would operate as a closed system (i.e. ‘turkey’s nest’ dam). The clean water diversion system would divert ‘clean’ upstream runoff around the Lower Reservoir.		
		Operational water take (i.e. reservoir top-up, if required).	Water stored in mine voids.	N/A – no further licensing required as open pit take is licensed by SCPL, as reported in the SMC Annual Review.	
	Groundwater	Inflow to tunnels.	Minimal, however licences held during construction would be more than sufficient for any small residual inflow.		

WAL = Water Access Licence.

Potable Water Supply

The greatest requirement for potable water supply would be during construction of the Project, in order to facilitate amenities for construction workforce as well as concrete batching. As a result, the Project is predicted to require approximately 7 ML/year of potable water for the workforce during construction, as well as approximately 22 ML over a period of 36 months for concrete. Following construction, there would be an ongoing requirement of approximately 0.5 ML/year for the operational workforce.

Similar to the existing SMC, potable water would be sourced from MidCoast Water (or an appropriate alternative source), transported by a local contractor and stored on-site in a holding tank.

Non-potable Water Supply

It is noted that the requirement for non-potable water supply is heavily dependent on weather conditions, as a significant operational water requirement comes from washing and cleaning solar panels. As detailed in Section 6.2.1 of the EIS, long-term meteorological data shows that the area receives an average of 37.7 millimetres of rainfall in even the driest month, indicating that panels would likely not require regular manual cleaning. As a result, it is estimated that approximately 60 ML/year of non-potable water would be required during construction, and approximately 6 ML/year during operation, for dust mitigation, panel cleaning, plant watering and other amenities.

This water would likely be sourced by reuse of water captured by the SMC water management system, to minimise use from external sources.

1.3 Recommendation – pre-determination

The proponent should note that water use approvals, water management work approvals or activity approvals (excluding aquifer interference approvals) will be required if the works are not assessed as part of the SSI.

Response

Noted. All water use would be licensed as described above.

1.4 Recommendation – post approval

The proponent must ensure sufficient water entitlement is held in a water access licence/s to account for the maximum predicted take for each water source prior to occurring.

1.5 Recommendation – post approval

The proponent must ensure that relevant nomination of work dealing applications for Water Access Licences proposed to account for water take by the project have been completed prior to the water take occurring.

Response

Noted. As described above, there are sufficient water licences available and these would be made available to the Project or acquired prior to commencement of works likely to result in water take.

Surface Water Impacts and Activities on Waterfront Land

2.1 Recommendation – pre-determination

The proponent should confirm the extent of stream stability and additional scour impacts and, if confirmed, the proposed mitigation measures or treatments.

Response

The extent of expected interactions between the Project and drainage lines is detailed in Section 6.3.3 of the EIS. Erosion and sediment controls would be implemented during construction and operation where appropriate, and would be detailed in a Surface Water Management Plan to be developed as a sub-plan of the Construction Environmental Management Plan (CEMP) prior to commencement of construction.

In addition, the Project would include Riparian Corridor Protection Zones for identified riparian corridors, which would be revegetated following construction of the Project to ensure stability is maintained.

The Riparian Corridor Protection Zones are depicted in Figure 1-3 of this Submissions Report.

2.2 Recommendation – post approval

The proponent should remediate and rehabilitate Dog Trap Creek and Avondale Creek to address increased flood velocities and shear stresses and to assist in mitigating increased channel flow velocities and increased scour potential along those watercourses.

Response

Noted, however there are no expected impacts to flood velocities in Dog Trap Creek as a result of the Project.

Avondale Creek is located in a heavily disturbed landscape, adjacent to the existing SMC, which has been operating and managing potential flood impacts since the mid-1990s. Modelling predicts a maximum change in flood velocity of 0.8 metres per second (m/s) under a 1-in-100 year event (with a maximum absolute velocity above 5.0 m/s), increasing in some areas and decreasing in others.

As described above, appropriate erosion and sediment controls would be incorporated into the Surface Water Management Plan as a sub-plan of the CEMP prior to commencement of construction. Revegetation along Avondale Creek is proposed for both the existing SMC, as detailed in SCPL's Rehabilitation Management Plan, and the SREH within Riparian Corridor Protection Zones, to be detailed in a Biodiversity Management Plan for the Project.

Groundwater Impacts

3.1 Recommendation – pre-determination

The proponent should improve the reporting of the site's hydrogeological conceptualisation and hydrodynamic characteristics. Using existing geological information and monitoring data, this should include groundwater level responses in the fractured/porous rock and alluvial aquifers to climate drivers and current mine operations; and identify the nature, degree and spatial variability of aquifer confinement.

Response

Based on the geology of the Project area, there is limited benefit to incorporating the extensive existing geological characterisation and groundwater monitoring data. The Project is located in an area comprising a number of faults and folds – this is apparent in the significant change in topography to the east of the existing SMC, where the coal resource has been identified in the SMC area but not the Upper Reservoir area and surrounds.

The change in Water Sharing Plan water source boundaries also reflects the differing geological conditions at the SMC and the Upper Reservoir (see Plate 4-1).

The eastern edge of the existing SMC is approximated as a no-flow boundary due to the presence of low-permeability carboniferous rock units running north-south (Plate 4-3; Heritage Computing, 2012). This approach has been independently reviewed and considered appropriate (Dundon Consulting, 2013).

As a result, hydrogeological conceptualisation of the main PHES system (including the Upper Reservoir area) is adequately represented by regional geological information, supplemented with and informed by data derived from recent drilling (Figure 4-4). There are currently no further approvals in place for ground disturbance works that would be required to access and undertake further geological or hydrogeological characterisation drilling in the Upper Reservoir and along the tunnel given the area is heavily vegetated and located in steep terrain with difficult access.

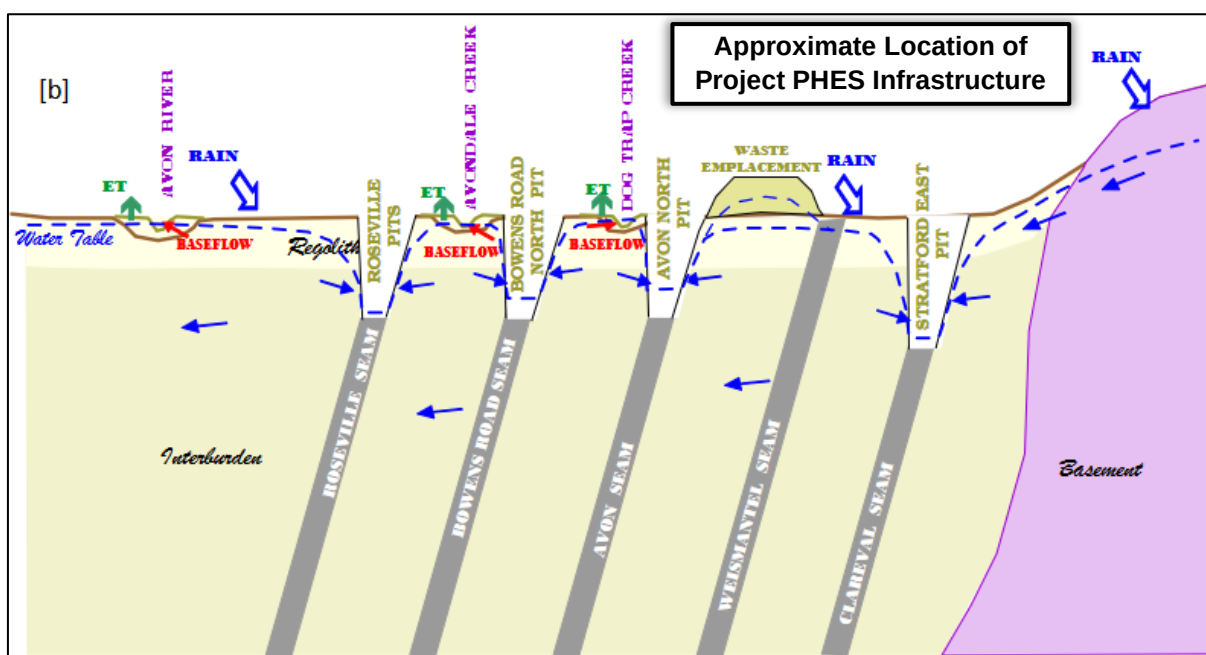


Plate 4-3: Conceptual Groundwater Model During Mining of SMC

3.2 Recommendation – pre-determination

The proponent should identify potential water-quality impacts associated with the following:

- a. *water-quality changes associated with the existing coal mine operation and pending closure and the potential for the proposed project to improve water quality*
- b. *changes over time to reservoir water-quality parameters, in addition to the previously considered increase in salinity, including other key field-measured parameters (pH, ORP, DO, alkalinity), any mine-mobilised geogenic elements, and nutrients.*
- c. *reservoir seepage into groundwater and subsequent groundwater discharge via springs based on the available site-derived water-quality data and with consideration of the various existing lithologies.*

Response

Closure of the SMC and related water management falls under separate approvals, including Development Consent SSD-4966 which requires the SMC final landform to be safe, stable and non-polluting. Under these approvals, closure planning is currently being undertaken. Key to water management is that final voids are non-spilling, and groundwater sinks and surface water runoff would be managed until it is of suitable quality to be released off-site.

The starting water quality for the initial fill of the Project PHES would depend on a number of factors that would be dictated by the status of SMC closure execution (e.g. status of backfill of existing voids), as well as climatic conditions (e.g. recent rainfall).

While it is of significant strategic environmental advantage that the PHES can source water from the voids (i.e. as opposed to draw from natural watercourses), water sourced from the voids is very unlikely to be suitable for direct release to the environment due to water quality constraints. To manage water quality risks, the PHES and closed SMC have been designed to operate on a separate closed system with limited interaction with the SMC (with the exception of opportunistic top-up of water from mine voids to the PHES). It is not considered likely the Project would improve (or adversely impact) water quality at the SMC.

In addition, the reservoirs would be treated to minimise seepage. Any latent seepage from the Lower Reservoir would likely migrate towards the SMC Main Pit and back into the SMC water management system as it is a groundwater sink. Any latent seepage from the Upper Reservoir is expected to be small in comparison to the likely overall groundwater system. Seepage that reaches the surface via springs is expected to be diluted by the surface water component of the drainage line (i.e. there is expected to be significantly more rainfall runoff than groundwater seepage at the surface).

Overall, the SMC has successfully managed poorer water quality over its life. The Project PHES, which would include permeability controls, has been designed as a closed system to continue the management of water quality in the surrounding environment.

3.3 Recommendation – pre-determination

The proponent should correct the presented (Appendix C Table 9-1) AIP minimal impact considerations to reference water pressure and water quality in less porous and fractured rock groundwater sources rather than less productive alluvial water sources.

Explanation

Appendix C Table 9-1 incorrectly presents the AIP's minimal impact considerations for less productive alluvial water sources rather than the less productive porous and fractures rock groundwater sources. The water table considerations are correct. Please note that all considerations for porous and fractured rock have been adequately addressed and no further assessment is required against the AIP, this is simply a request to reference the correct source.

Response

The more stringent minimal impact considerations for *less productive alluvial water sources* were inadvertently included rather than those for *less porous and fractured rock groundwater sources*. The differences between the two sets of considerations are detailed in Table 4-3.

Table 4-3
Water Pressure and Water Quality Considerations

Original	Revised	Notes
Water Pressure A cumulative pressure head decline of no more than 40% of the "post-water sharing plan" pressure head above the base of the water source to a maximum of a 2 m decline, at any water supply work.	Water Pressure A cumulative pressure head decline of not more than a 2 m decline, at any water supply work.	The Project conservatively meets the more stringent AIP minimal impact consideration.
Water Quality No increase of more than 1% per activity in long-term average salinity in a highly connected surface water source at the nearest point to the activity.	Nil	The Project conservatively meets the more stringent AIP minimal impact consideration.

AIP = NSW Aquifer Interference Policy (NSW Department of Primary Industries [DPI], 2012).

In consideration of the above, the conclusions of the groundwater assessment remain the same, and the Project would meet the AIP Level 1 minimal impact considerations (DPI, 2012).

3.4 Recommendation – post approval

The proponent should prepare and submit for approval a Groundwater Management Plan (GMP) as proposed in the Groundwater Impact Assessment (Section 11.3). The GMP must consider the requirements described in DCCEEW Water's groundwater guidelines for major projects available here:

<https://water.dpie.nsw.gov.au/our-work/licensing-and-trade/major-projects/major-projects-groundwater-guidelines>

And include:

- An adequately distributed and constructed monitoring bores programme to monitor the impacts of construction-stage dewatering drawdown, operational-stage leakage from water storages and conveyance structures, including water-quality changes
- Bore locations clearly depicted on a map and tabulated with site coordinates, screened intervals, accessed lithology, monitoring objectives, and confirmation that all bores in the proposed monitoring network will be maintained and not destroyed prior to and during the project
- An analytical suite that is consistent across all surface-water and groundwater monitoring sites; monitoring must also include the field-measurement of temperature, pH, reduction-oxidation potential (ORP), dissolved oxygen, and alkalinity; plus, must apply laboratory measured total dissolved solids as a measure of salinity.

Response

Noted. As described in Section 6.4.4 of the EIS, a Groundwater Management Plan would be prepared as a sub-plan of the CEMP prior to commencement of construction. The Groundwater Management Plan would be prepared in consideration of relevant groundwater guidelines for major projects, namely the *Guidelines for Groundwater Documentation for SSD/SSI Projects: Technical guideline* (DPE, 2022d), and incorporate the elements listed.

4.1.4 DPIRD – Agriculture and Biosecurity

DPIRD – Agriculture and Biosecurity reviewed the EIS and stated that the EIS is considered to have covered the main potential impacts to agricultural resources and productivity and land use conflict risk. DPIRD – Agriculture and Biosecurity stated that the proposed mitigation measures were adequate, and noted the overarching commitment to returning the site upon decommissioning to its pre-development land and soil capability and agricultural land use.

DPIRD – Agriculture and Biosecurity noted the following regarding agrivoltaics (agriculture and solar), as well as the biosecurity risk assessment and management:

Agrivoltaics (agriculture and solar) is considered as part of the EIS, however, no commitment to undertaking agrivoltaics is provided. This reduces the ability to co-use the land for agriculture. The EIS explored sheep grazing as a potential co-use of the land and notes that the implementation of agrisolar as part of the Project is especially applicable given the current land use, the suitable conditions for sheep grazing and the established sheep and lambing industries and infrastructure with the MidCoast LGA. By grazing the site and capitalising on the productive land, this also reduces bushfire risk and helps control weeds.

The biosecurity risk assessment and proposed mitigation and management in the Project's construction and operational Environmental Management Plans are appropriate, however, should be adjusted to include emergency animal diseases should agrisolar be reconsidered as part of the proposal.

Responses to DPIRD – Agriculture and Biosecurity's comments are provided below.

The Department provides the following additional recommendations for the proposal:

- If grazing on the site is undertaken, a Grazing Management Plan should be prepared to detail how the management of livestock on the site will be undertaken. The design of the solar infrastructure will greatly influence the productivity potential of grazing operations and the ability to maintain land, water and soil resource health.*

Response

The EIS and the Soils, Land and Agricultural Impact Assessment (Minesoils Pty Ltd [Minesoils], 2024) (Appendix A of the EIS) have stated that agrisolar (e.g. grazing within the Solar Farm) may be considered post-construction of the Project to reduce the total loss of agricultural land.

Yancoal would accept a condition requiring a Grazing Management Plan if grazing is proposed within the solar areas. However, it should be noted grazing within areas developed for solar is currently not proposed.

- A commitment to maintain a minimum groundcover target of 70% across the site (during operation) which will support and promote other long-term land and soil resource health and water management commitments. This target should be maintained in the case that grazing is implemented at the site.*

Response

Yancoal agrees with this recommendation for a target of 70% groundcover.

- *The proponent should commit to the removal of all above and below-ground (to a depth of 500mm) infrastructure upon decommissioning unless there is significant justification for retaining it. This is consistent with the key principles for decommissioning and rehabilitation from the Large-Scale Solar Energy Guideline 2022 (pg. 31).*
- *The EIS should also include the decommissioning mitigation measure that stock fences, dams and access tracks are to be reinstated to accommodate a post-project land use of grazing.*

Response

Yancoal accepts these recommendations. Further details regarding decommissioning would be developed closer to Project closure in consultation with stakeholders.

Following completion of the Project, all Project infrastructure would be removed (to a depth of 500 mm) unless there is a need to retain the infrastructure, and the Project landform would be rehabilitated.

4.1.5 Heritage NSW

A submission was received from Heritage NSW, which requested further information on the ACHA prepared for the EIS. Responses to Heritage NSW's comments are provided below.

Consultation

1. *Heritage NSW understands that additional consultation and guidance is being sought by the relevant Registered Aboriginal Parties (RAPs) and knowledge holders for the values and significance of CTS-1. Heritage NSW requires the provision of any information gathered from the RAPs and relevant knowledge holders following the scheduled site visit and until such time we cannot comment of the effectiveness and suitability of the proposed buffer and protection measures around the area.*

Response

As noted by Heritage NSW, a recommendation of the Project ACHA (Niche, 2024a) (Appendix F of the EIS) was to conduct a follow-up site visit to CTS-1 with Elder women of the local Aboriginal community to discuss the cultural significance and management of the site, once accessible. Noting that previous visits were postponed due to wet weather.

This follow-up site visit of CTS-1 was conducted on Tuesday 5 November 2024.

The key finding of the site visit was that there remains uncertainty around the cultural significance of CTS-1 and its significance may be indeterminable. There are some features present that could support the proposed cultural use (i.e. rocky shelf to sit on and access to fresh water), however there are other features that do not support this use (i.e. difficult elevated access). There is little knowledge of the site and it appears that the only recollection of the site is from one Elder woman who likely visited the site as part of the 2011 ACHA surveys for the SMC. It was agreed that there were no further avenues to gain more knowledge of the site. Notwithstanding, there remains consensus that the direct disturbance of the site should still be avoided (as proposed in the ACHA [Niche, 2024a] and EIS).

A Letter of Advice summarising the findings and discussion at the CTS-1 site visit was prepared by Niche and distributed to the Elder women who attended the CTS-1 site visit for their review and confirmation/input.

The Letter of Advice outlines that it was confirmed at the site visit and meeting that the following recommendations are adequate measures for the management of CTS-1:

1. Yancoal would maintain the 20 m width exclusion zone surrounding CTS-1 (10 m buffer zone on all sides) during construction of the Project and designate CTS-1 as a no construction zone.
2. Consistent with Heritage NSW's recommendation, CTS-1 has been registered as a water hole site on AHIMS.
3. It was agreed that no further investigation or photographic recording is required, and it is acknowledged by the Elder women of the local Aboriginal community that attended the site visit that there are no further avenues for investigation.

Following review and confirmation/input from Elder women of the local Aboriginal community, the CTS-1 Letter of Advice has been included in Appendix 6 of the Updated ACHA (Niche, 2025). The Updated ACHA (Attachment 10) has been provided to all RAPs for review and comment. No comments were received from the RAPs on the Updated ACHA.

2. *As discussed with the applicant, Heritage NSW recommends that CTS-1 is added to the Aboriginal Heritage Information Management System (AHIMS) as a water hole, until its site features are discussed with the RAPs and relevant knowledge holders. The site card submission should include the current information provided by the RAPs and updated when new information is gathered.*

Response

As agreed by the Elder women of the local Aboriginal community who attended the CTS-1 site visit, CTS-1 has been registered on the AHIMS as a water hole (AHIMS #38-1-0117). There is insufficient information available to distinguish the site features as the proposed cultural use, rather the known feature of the site is the presence of a spring and potential use as a water source. Therefore, the Elder women of the local Aboriginal community confirmed that registration of CTS-1 as a water hole is appropriate.

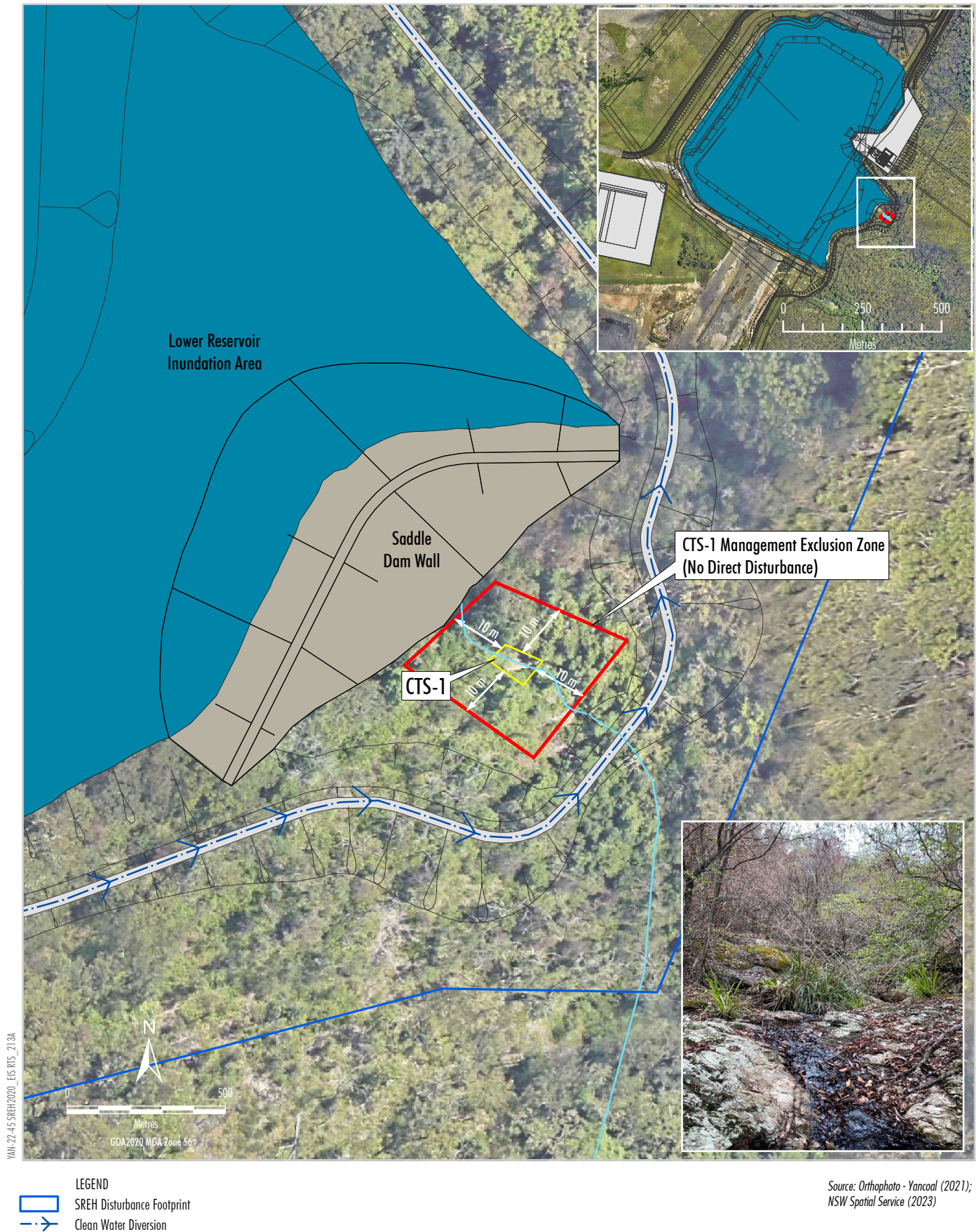
The CTS-1 (AHIMS #38-1-0117) site card includes the relevant information gathered through the additional consultation undertaken with the Elder women for CTS-1. A copy of the CTS-1 site card is included in Appendix 3 of the Updated ACHA (Niche, 2025).

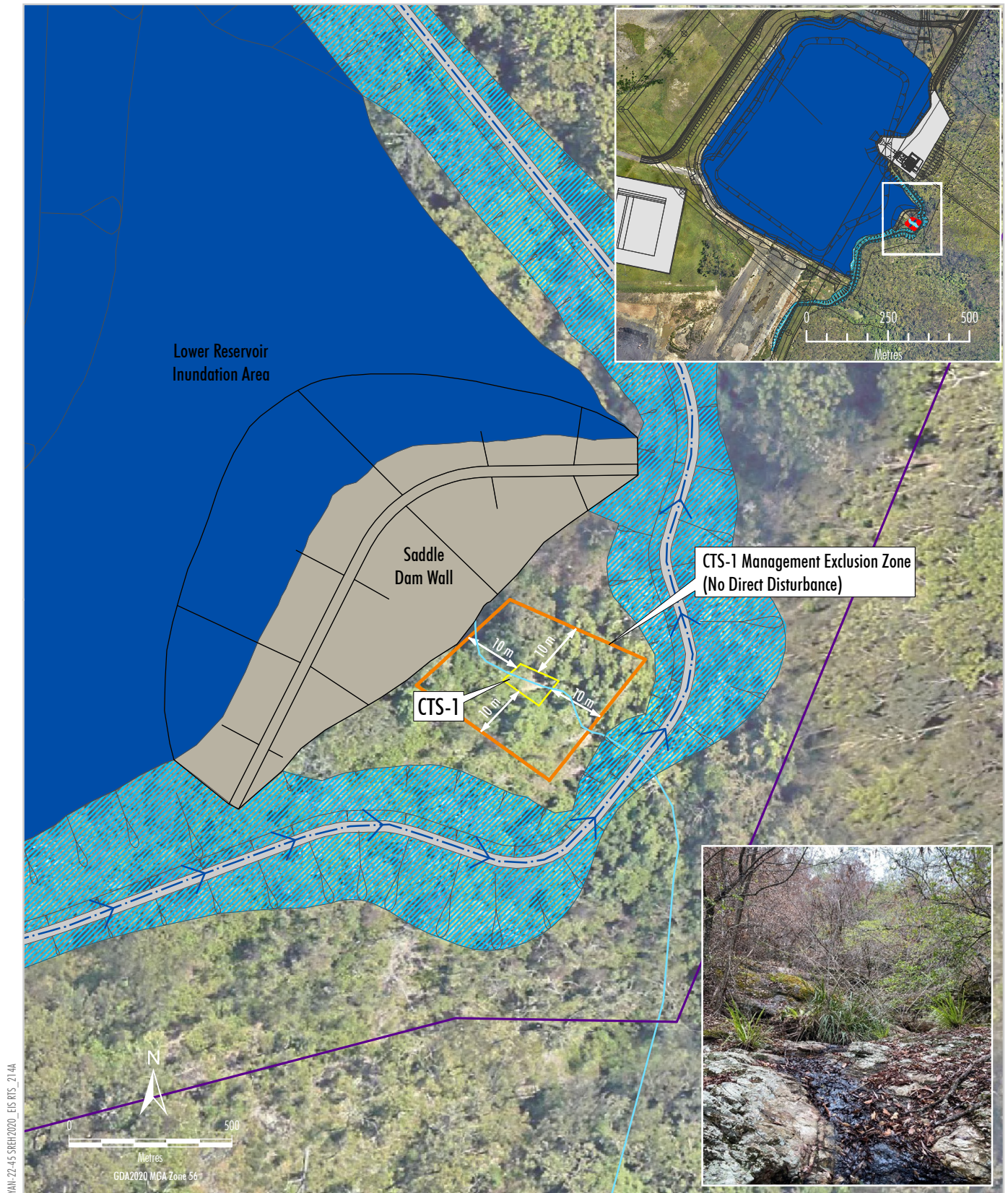
3. *Further, please clarify the buffer zone around CTS-1 as that described in the ACHAR and that contained within a briefing for Heritage NSW appear different.*

Response

Annex 3 (CTS-1 Letter of Advice dated May 2024) of the Cultural Values Assessment (appended to the ACHA) (Niche, 2024a) included a draft figure that was provided to the RAPs (and Elder women cultural knowledge holders) which outlines the proposed avoidance measures for CTS-1, as committed to in the final ACHA (Figure 4-5).

There is no material change in the exclusion buffer zone between the figure within Annex 3 of the Cultural Values Assessment (Niche, 2024a) and Figure 6-19 of the EIS (Figure 4-6) (also presented separately to Heritage NSW during a post-lodgement briefing). The only difference is that the linework surrounding the CTS-1 exclusion zone was shaded to clearly depict the clean water diversion infrastructure and details of the saddle dam wall.





Therefore, there has been no change in the exclusion zone design or other avoidance measures proposed since consultation with the Aboriginal community and lodgement of the EIS. The ACHA text has been updated to include “a 10 m buffer zone on all sides” for clarification.

4. *Please discuss whether the installation of the pipeline may cause indirect impacts to the area of CTS-1.*

Response

There would be no direct disturbance of CTS-1 and the exclusion buffer zone.

The Project involves the construction of a clean water diversion and associated erosion and sediment control infrastructure in relatively close proximity to CTS-1. Construction of the clean water diversion and associated erosion and sediment control infrastructure would not directly impact CTS-1, however, may affect the amenity of the site, primarily through indirect noise and dust impacts, and changes in water flows.

Indirect vibration impacts to CTS-1 due to the construction of the powerhouse silo were considered in the Project Noise and Vibration Impact Assessment (NVIA) (SLR, 2024b) (Appendix J of the EIS). These potential indirect impacts were considered negligible by SLR (2024b) as CTS-1 is located well outside the safe working distance of 72 m for blasts of up to 20 kilograms maximum instantaneous charge.

The RAPs and cultural knowledge holders have been made aware of the potential indirect impacts to CTS-1 and have advised that the exclusion zone to mitigate direct impacts is acceptable.

Archaeological Assessment

5. *Please provide additional contextual information and mapping on the landform that contains SREH-PAD-01. While the ACHAR outlines that the area of potential archaeological deposit (PAD) is elevated from the surrounding landscape, additional information and mapping is required. To determine whether the construction buffer placed around the PAD is appropriately sized, test excavations at the boundary of the elevated landform may be required prior to any project approval.*

Response

In addition to the difference in landform and vegetation, the delineation of the potential archaeological deposit (PAD) and the surrounding landscape is primarily due to the distinct and abrupt difference in soil profile observed during the survey.

As described in the Project ACHA (Niche, 2024a), the landform of the SREH-PAD-01 is anomalous to the surrounding landscape, characterised by an elevated portion of a grazed paddock with 360-degree views (Plate 4-4; Minesoils, 2024). The PAD can further be identified by the presence of a distinct tree grove comprised of intermittent juvenile and mature trees. An additional distinct change in vegetation groundcover apparent within the identified extent when compared to the broader surrounding area and hill slopes was also observed (Plates 4-4 to 4-6). The area surrounding the PAD is considered to hold comparatively low archaeological potential when compared to the elevated area, as delineated by Niche (2024a).

The soil profile within the estimated extent of SREH-PAD-01, remains intact with evidence of well-defined A horizons, therefore exhibiting potential for sub-surface cultural material (Plate 4-7; Minesoils, 2024). Soils outside the PAD extent delineated by Niche (2024a) are denuded and eroded, with no intact A horizon soils, suggesting a very low sub-surface potential of cultural material (Plate 4-8; Minesoils, 2024). This abrupt change in soil horizon quality is most likely due to sheet wash erosion promoted by the hillslopes which has removed or disturbed the A horizons.



Plate 4-4: Landscape Surrounding PAD, Showcasing Undulating Downslope from the Crest of PAD



Plate 4-5: Change in Ground Cover Vegetation and Soils Around Trees Within the PAD Area Compared to the Surrounding Area



Plate 4-6: Change in Ground Cover Vegetation and Soils Around Trees Within the PAD Area Compared to the Surrounding Area



Plate 4-7: Soil Profile from Site 14 Sample Taken from Within the PAD, Showcasing an Intact A Horizon



Plate 4-8: Soil Horizon from Site 13 Sample Taken from Outside of the PAD Extent (Nearby), Showcasing an Eroded Soil Horizon

Due to these distinct differences identified between the suspected PAD area and the surrounding landscape, all survey participants (including RAPs) agreed that the distinct boundaries based on the landforms and soils observed provided a good indication of what the site extent of the PAD might be.

A supporting Letter of Advice responding to Heritage NSW's comments has been prepared by Niche (2024b) and is presented as Attachment 11 to this Submissions Report.

Under Requirement 15b of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Code of Practice) (NSW Department of Environment, Climate Change and Water [DECCW], 2010a), only PADs at risk of harm require test excavations. SREH-PAD-01 (AHIMS #38-1-0116) is within a no construction zone, outside of the Project Disturbance Footprint, and includes a minimum 5 m buffer for the PAD extent. The Project infrastructure surrounding SREH-PAD-01 would be limited to the installation of solar panels. Thus, it was concluded that as the Project would avoid direct and indirect impacts to SREH-PAD-01, test excavations are not required and that any excavations would result in more ground disturbance than the installation of the solar panels.

In addition, as recommended in the Bushfire Assessment (Peterson Bushfire, 2024) (Appendix P of the EIS), all solar installation would have a minimum 18 m Asset Protection Zone (APZ) around the external perimeter, to ensure hazard separation between the solar panels and any unmanaged grassland (e.g. paddock) or bushland (e.g. woodland or forest). Therefore, within the Project Disturbance Footprint, there would be an additional buffer between the location of the solar panels and the extent of SREH-PAD-01 (as shown on Figure 4-7).

As the Project Disturbance Footprint surrounds the site, precautionary mitigation would be implemented to avoid accidental harm, such as construction of temporary high visibility fencing to highlight that no works are to occur within the area and for the area to be clearly identified as a no construction zone in all construction, management, and induction works.

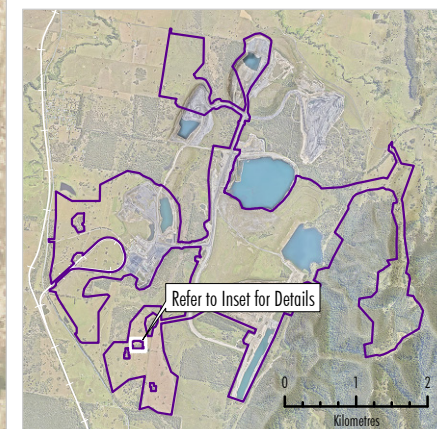
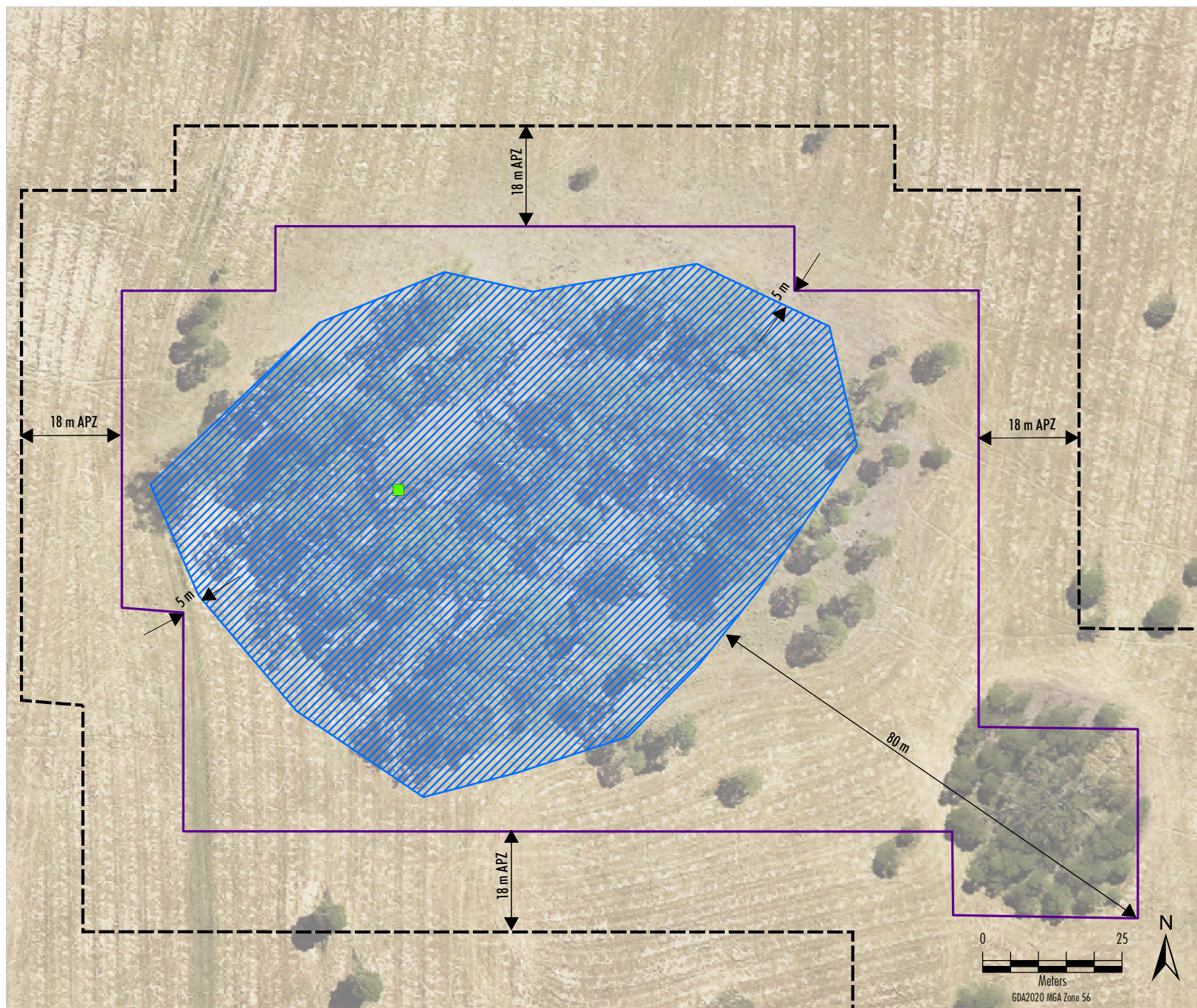
This context has been included in Section 5.5.3 of the Updated ACHA (Niche, 2025).

6. *Further information is required on the levels of impact in the central sections of the project areas as the historical satellite images do not clearly convey that these areas have been heavily disturbed. If these areas have not been subject to disturbance, it is recommended they are subject to pedestrian survey.*

Response

Whilst appearing undisturbed on aerial imagery, these areas were subject to previous disturbance during initial operations of the SMC in 1995, as shown in Plate 4-9 which depicts aerial imagery of SMC disturbance in 2002. Since then, portions of the SMC have been subject to rehabilitation activities by SCPL.

It is understood that the 'central sections of the project area' that Heritage NSW is referring to are the areas of SMC rehabilitation already undertaken by SCPL within the Project Disturbance Footprint, as presented in brown shades on Figure 4-8. These previously assessed and approved disturbance areas include the Bowens Road North Open Cut, Roseville West Pit, Stratford Main Pit, Western Co-Disposal Area, Stratford East Dam, Stratford Waste Emplacement, the Rail loop as well as the Northern Waste Emplacement Expansion, Avon North Open Cut, Roseville West Pit Extension, Waste Emplacement Extension and Stratford East Open Cut.



Source: NSW Spatial Services (2023); Yancoal (2023); Niche (2024)



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Project Avoidance of SREH-PAD-01

Figure 4-7

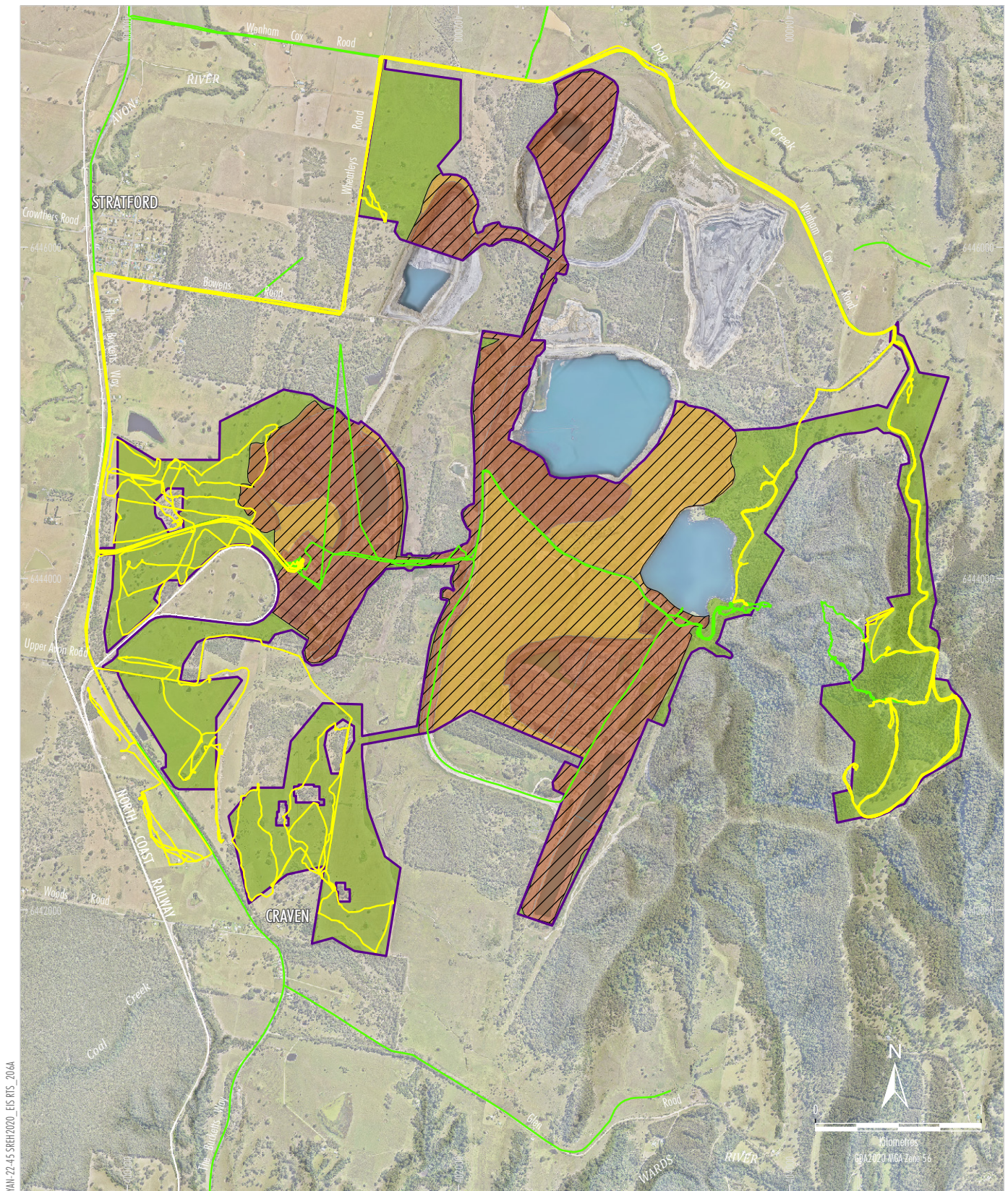


Figure 4-8



Plate 4-9: Historical Satellite Imagery of the SMC in 2002

Many of these areas have undergone previous survey and assessment as part of the Stratford Extension Project (SSD-4966) EIS ACHA conducted by Kayandel Archaeological Services (2012), or as part of the original approximate extent of the existing/approved surface development for Stratford Mine (DA 23-98-99). As such, they were excluded from the proposed survey extent for the Project ACHA (Niche, 2024a) as they are within existing SMC disturbance/rehabilitation areas and therefore have no potential for Aboriginal cultural heritage objects/places.

7. *There are several areas across the project area (e.g., northern section and southern section adjacent to offset) that were not subject to survey. It is recommended that survey is undertaken in these areas prior to any project approval.*

Response

These areas have been subject to previous agricultural activities such as ploughing and grazing.

Since the surveys for the Project ACHA (Niche, 2024a) were undertaken in November 2023, the Project Disturbance Footprint was refined, as shown in the EIS. Therefore, some areas that were surveyed for the ACHA are no longer proposed to be disturbed, including the area to the west of The Bucketts Way and minor refinement to the west of the southern SMC Biodiversity Offset Area.

The ACHA survey coverage is shown on the refined Project Disturbance Footprint proposed in the EIS (Figure 4-8).

Further, the area to the north of the Project Disturbance Footprint has been subject to historical agricultural activities such as ploughing. Therefore, Niche considered that due to the historical disturbance, the area would hold limited archaeological potential.

In accordance with the Code of Practice, the survey work undertaken to date is considered to provide an adequate characterisation and representative sample of the archaeological potential of the Subject Area and has confirmed the predictive model.

8. *Additional survey may be required for the Upper Reservoir. The survey track logs presented in Figure 8 of the ACHAR appear to be heavily constrained along the access tracks and less so in the bushland where there will be large scale excavation works.*

Response

As described in the ACHA (Niche, 2024a), the Upper Reservoir is characterised by very steep to precipitous slopes along a highly aggraded landform with low visibility and exposure owing to dense vegetation cover (Survey Unit 3). Accordingly, some portions of the Upper Reservoir are inaccessible due to the steep slopes and safety concerns (see Plates 4-10 and 4-11).

It should be noted that the survey tracks shown on Figure 4-8 (as presented in the ACHA [Niche, 2024a]) only represents one of the six survey participants survey coverage. When considering all six participants, the breadth of the survey corridor broadens. Additionally, this area was surveyed previously for the Stratford Mine Exploration Clearance Letter (Niche, 2023), with the targeted inspection (Plate 4-12) identifying no archaeological material (Attachment 11), further justifying the low archaeological potential of the Upper Reservoir.

Despite the constrained access, all survey participants agreed that due to the steep slopes, the unreachable areas had low archaeological potential and thus the survey coverage of this area was sufficient for the purposes of the assessment.

In accordance with the Code of Practice, the survey work undertaken to date is considered to provide an adequate characterisation and representative sample of the archaeological potential of the Subject Area and has confirmed the predictive model.



**Plate 4-10: Steep Slope and Dense Vegetation
Apparent from the Base of the Upper Reservoir**



Plate 4-11: Steep Slope and Dense Vegetation Apparent Looking Upwards Towards the Upper Reservoir



Plate 4-12: Survey Coverage in Upper Reservoir Area Undertaken for Previous Borehole Exploration Due Diligence Assessment

9. *Additional information is required on Stratford Artefact Scatter 1 (AHIMS #38-1-0100). There is little discussion in the ACHAR for the site being a resource and gathering area with a range of stone raw materials present. Further, the AHIMS site card outlines that there is potential for subsurface artefacts in the area but there is no discussion of the site and/or area containing PAD.*

Response

It is assumed that Heritage NSW's comment is referring to Stratford Artefact Scatter 1 (AHIMS #38-1-0110).

Although Stratford Artefact Scatter 1 (AHIMS #38-1-0110) was originally recorded as an Artefact Scatter with potential for subsurface artefacts by Niche in 2022, further investigation determined that classification is unlikely. The justification for a PAD at the time was the location of identified stone materials at the base of an eroded slope. However, when inspected in 2023, survey participants noted poor preservation of soils owing to sheetwash erosion and highly disturbed access pathways. This led to disturbed or completely removed topsoil, making the presence of a PAD associated with this site highly unlikely.

The three artefacts found in the original site inspection were absent in the 2023 site inspection, and it is presumed that these may have been washed downslope due to sheetwash erosion, providing further support for limited potential of subsurface artefacts. The recorded site location and a small surrounding area were searched in an attempt to relocate the artefacts. Despite the original artefacts not being re-discovered, Stratford Artefact Scatter 1 (AHIMS #38-1-0110) was still considered an artefact scatter/resource site due to the prior presence of Aboriginal archaeological materials.

This context has been added to Section 5.5.1 of the Updated ACHA (Niche, 2025; Attachment 10) and the site card for Stratford Artefact Scatter 1 (AHIMS #38-1-0110) has been updated to reflect the unlikelihood of a PAD associated with this site.

4.1.6 DPIRD – NSW Resources and NSW Resources Regulator

Attachment 1 of the DPIRD – NSW Resources submission included recommendations from the NSW Resources Regulator. Responses to the NSW Resource Regulator's comments are provided below.

Pumping Infrastructure Associated with Final Void

Whilst the EIS notes that the final mine void is not within the proposed project boundary for the Project, further information is required in regard to the pumping infrastructure associated with the transfer of stored water from the final mine void to lower reservoir. Specifically, a description of the construction, operation and decommissioning of the infrastructure as well as ongoing access arrangements to the void in order to support the Project. This should include a description of the measures to minimise risk to workers whilst accessing the final void (e.g. risk associated with remnant highwalls and steep embankments).

Response

Yancoal has completed a preliminary assessment of the pumping infrastructure required for the transfer of stored water from the SMC mine voids to the Lower Reservoir, with input from engineering specialists.

Construction, operation and decommissioning of the pumping infrastructure would be subject to further detailed design by suitably qualified engineers with consideration of appropriate safety precautions.

The current preferred pumping infrastructure option for pumping from a mine void includes using two electrical pontoon pumps and a transmission pipeline. This option is hydraulically advantageous given there is no high point in the topography of its proposed alignment, and as such, less protective measures would be required to avoid negative pressure during transient conditions (i.e. when pumps stop and start). In addition, electrical pontoon pumps exclusively rely on electric power for motor operation, rather than diesel which is required for other pumping motor options. This option also does not involve the use of any high wall pumps.

The pumping infrastructure would be further developed throughout detailed design of the Project.

Risk of Stability of Overburden Emplacement Areas for Operation of the Solar Farm

1. *the rehabilitation objectives associated with achieving a safe and stable landform associated with the current final uses of agricultural grazing and native ecosystems will account for levels of potential differential settlement (albeit low levels) that are within tolerances acceptable for these types of land uses. As such, further information is required to confirm that the stability of existing landforms shown in the Completed Landform Establishment phase (see Figure A6-4 in Attachment 6 – Rehabilitation Review) is acceptable to the construction and operation of the proposed solar farm.*

Response

The rehabilitation objectives for the SMC are set out in Development Consent SSD-4966 and the SMC Rehabilitation Management Plan.

Relevant rehabilitation objectives for landform stability from Development Consent SSD-4966 include:

- Safe, stable and non-polluting.
- Constructed landforms drain to the natural environment.
- Minimise visual impact of final landforms as far as is reasonable and feasible and be sympathetic to the original Gloucester Valley landform.
- Minimise the size and depth of final voids so far as is reasonable and feasible.
- Minimise the drainage catchment of final voids so far as is reasonable and feasible.
- Minimise high wall instability risk so far as is reasonable and feasible.

Relevant rehabilitation objectives for landform stability from the SMC Rehabilitation Management Plan include:

- Construct final mine landforms that drain in a stable manner to the natural environment (i.e. Avondale Creek, Dog Trap Creek and their associated tributaries).
- Creation of landforms which are geotechnically stable and minimise long-term erosion on rehabilitated waste emplacements and all other rehabilitated domains.
- The final landform is stable for the long-term and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.
- Creation of landforms which are visually consistent with the surrounding environment.
- Landform that is commensurate with surrounding natural landform and where appropriate, incorporates geomorphic design principles.

- Minimise to the greatest extent practicable the size and depth of final voids.
- Minimise high wall, low wall, end wall and in-pit spoil slope instability risk so far as is reasonable and feasible.
- Final void landform is sympathetic of visual amenity and aesthetics in the area and comparable to surrounds where practicable.

SCPL is required to achieve these rehabilitation objectives for landform stability.

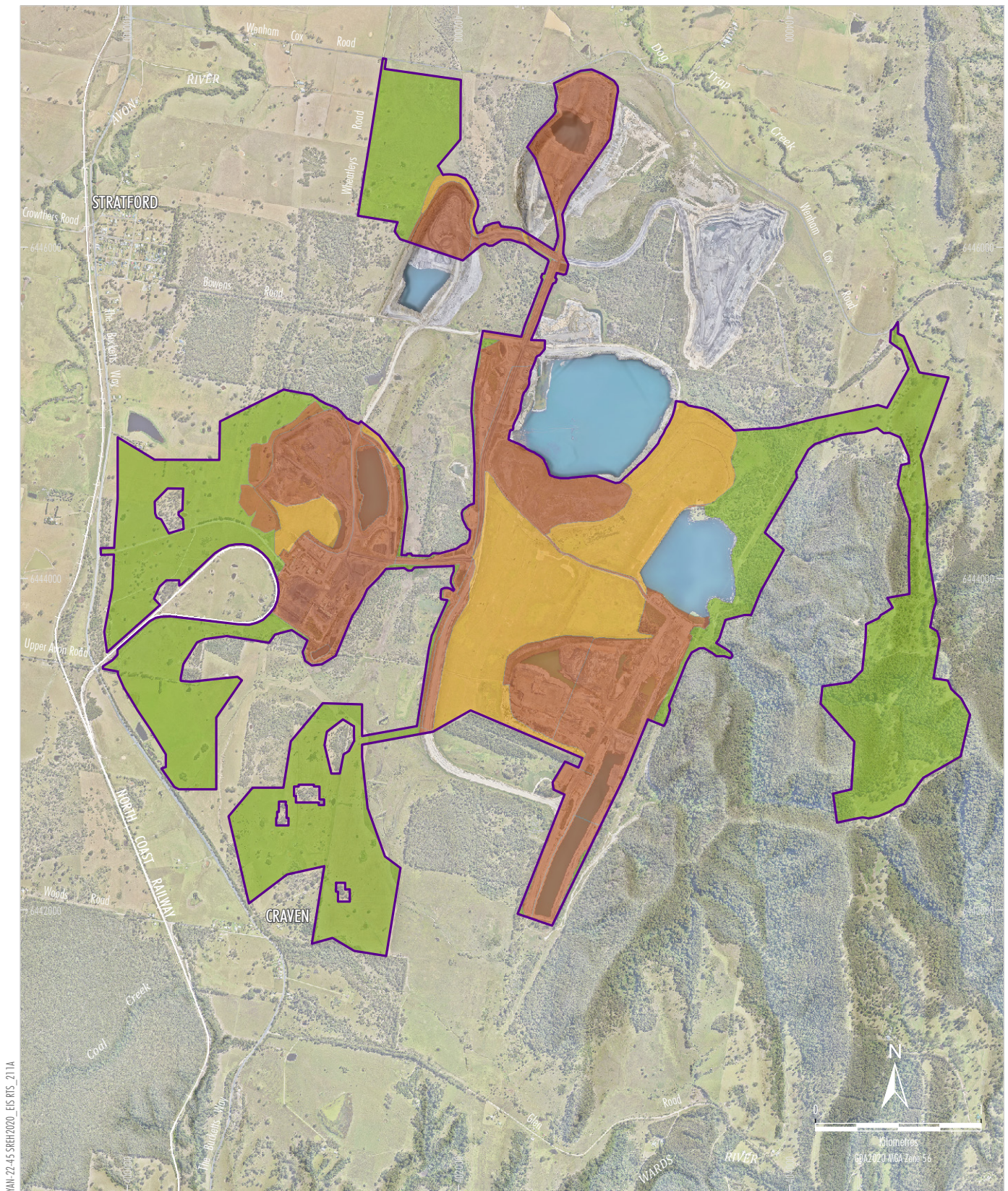
Once the final landform is established, monitoring and evaluation of settlement would be undertaken to ensure the landform is geotechnically stable before commencing construction of the Solar Farm. The final design of the solar panels would also be tailored to accommodate differential settlement, slopes etc.

Development of the Solar Farm would be staged to allow risks to proposed infrastructure to be appropriately mitigated prior to construction. Figure 4-9 provides the areas outside of the SMC (immediately available for development of the Project), SMC areas where SCPL has completed landform establishment (immediately available for development of the Project), and SMC areas where rehabilitation and landform establishment has not been complete (development of the Project is contingent on SCPL rehabilitation, associated controls and monitoring).

2. *as there are areas associated with the Project that will require Stratford Coal to undertake further emplacement to achieve landform establishment (see Figure A6-4 in Attachment 6 – Rehabilitation Review) before the Project can proceed, confirmation is required as to whether there is any additional emplacement techniques required to achieve a landform that is suitable for the construction and operation of the solar farm.*

Response

No additional emplacement techniques are proposed for rehabilitation of the SMC to accommodate development of the Solar Farm. Notwithstanding, if changes to SMC rehabilitation techniques or final landforms are required to better support solar as a beneficial post-mining land use, this would be addressed through appropriate approval pathways.



LEGEND

- Project Disturbance Footprint
- Areas Outside SMC – Immediately Available for SREH Development
- SMC Areas where SCPL has Completed Landform Establishment* – Immediately Available for SREH Development
- SMC Areas where Rehabilitation and Landform Establishment is NOT Complete – SREH Development is Contingent on SCPL Rehabilitation

* As per SMC 2023 Annual Rehabilitation Report

Source: NSW Spatial Services (2023); Yancoal (2023)



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Indicative Development Availability Status
of Project Site Landforms

Figure 4-9

4.1.7 NSW National Parks and Wildlife Service

A submission was received from NPWS which concerned potential direct and indirect impacts to The Glen Nature Reserve. Responses to NPWS's comments are provided below.

Noise and Vibration

The reports do not identify The Glen Nature Reserve as a sensitive receiver, nor does the assessment consider the maximum noise as recorded on The Glen Nature Reserve as NPWS land.

The Outer Envelope Noise Contour dB(A) Map (Appendix C) within the NVIA indicates construction noise contours for the project. The mapping suggests that land to the east of the disturbance boundary will be subject to construction noise ranging from 35dB(A) to 45dB(A). However, the map does not show the extent of the contours to the east, and whether these overlap the boundaries of The Glen Nature Reserve. Given the proximity of The Glen Nature Reserve to the disturbance footprint (500 m), NPWS consider that there may be construction noise impacts to this land.

The NVIA provides a Blasting Impact Assessment (Section 8) which recommends safe blasting distances from air blast and vibration for sensitive receivers. The NVIA acknowledges that blasting may be required within the upper reservoir, which is located 500m west of The Glen Nature Reserve. As noted above, the NVIA does not identify The Glen Nature Reserve as a sensitive receiver, and therefore does not consider potential air blasting and vibration impacts to the nature reserve. The EIS mentions that blasting management measures will be detailed within the Construction Environmental Management Plan (CEMP).

The EIS identifies the powerhouse as containing pumps / turbines that will be used to generate energy when water is released from the upper reservoir, and to pump water from the lower reservoir to the upper reservoir. The EIS and NVIA mention that these pumps / turbines are not expected to cause any significant noise emissions at the surface and acknowledge that the predicted noise model incorporates the proposed ventilation fan for this infrastructure.

As part of the RTS, revise the NVIA and mitigation measures to:

- 1.1 Revise the Outer Envelope Noise Contour dB(A) Map (Appendix C) to identify the extent of construction (including blasting) and operational noise contours on The Glen Nature Reserve, including identification of the maximum noise predicted on NPWS land.*
- 1.2 Apply a baseline noise limit criterion of 35 dB(A) to The Glen Nature Reserve to reflect its treatment as a sensitive receiver.*
- 1.3 Acknowledge noise levels above 40 dB(A) have the potential to impact on wildlife occupying The Glen Nature Reserve. If exceedance occurs, impacts on biodiversity values of The Glen Nature Reserve will need to be assessed in more detail.*

Response

The EIS NVIA (SLR, 2024b) has developed noise criteria for The Glen Nature Reserve.

The indicative construction noise was assessed in accordance with the *Interim Construction Noise Guideline* (ICNG) (NSW Department of Environment and Climate Change [DECC], 2009). The ICNG sets out noise management levels for passive recreation areas (e.g. The Glen Nature Reserve) with an external noise level of 60 A-weighted decibels (dBA) applied.

The indicative operational noise was assessed in accordance with the *Noise Policy for Industry* (NPfI) (EPA, 2017). The NPfI sets out procedures for establishing project intrusiveness noise level and project amenity noise level, with a view of determining that the lower (that is, the more stringent) would be the Project Noise Trigger Level (PNTL). The project amenity noise level for passive recreation areas (e.g. The Glen Nature Reserve) is 48 dBA, while the Project intrusiveness noise level is not applicable to passive recreation areas. The resulting PNTL of passive recreation areas (e.g. The Glen Nature Reserve) is therefore 48 dBA.

The noise modelling in the NVIA predicted that operational noise levels would meet all relevant criteria at all sensitive receivers surrounding the Project, including The Glen Nature Reserve. Construction noise levels were predicted to only exceed the criteria at a privately-owned receiver located to the north-east of the Project (outside The Glen Nature Reserve) under noise enhancing weather conditions.

The NVIA showed that the predicted maximum construction noise level at The Glen Nature Reserve is 35 dBA, which is below both construction and operational noise criteria.

As part of the RTS, revise the NVIA and mitigation measures to:

1.4 NPWS requests consultation in the preparation of the CEMP with regards to blast management measures via a Blast Management Plan to ensure impacts to NPWS estate and staff safety is managed accordingly during construction.

Response

The indicative blasting impacts from the Project have been assessed in the NVIA (SLR, 2024b).

Generally, blasting activities for Project construction would be small, particularly compared to blasting activities during SMC operations. No blasting would be required during Project operation. Most of the blasting for Project construction would be conducted underground. Surface blasts may be required at the headrace and powerhouse silo at the commencement of their construction, and were therefore considered in the NVIA (SLR, 2024b).

As stated in the EIS, a CEMP would be developed prior to the commencement of Project construction, which would include blasting management measures during Project construction. Consultation would be conducted during preparation of the CEMP.

As part of the RTS, revise the NVIA and mitigation measures to:

1.5 Provide an acoustic (noise) monitoring program to ensure stated noise levels are adhered to and effects on The Glen Nature Reserve are reported. If noise limits affecting NPWS estate exceed 40 dB(A) additional assessment and biodiversity monitoring is requested as part of the Biodiversity Management Plan.

Response

As stated in the EIS, a CEMP (and respective sub-plans) would be developed which would include noise and biodiversity management measures.

The EIS relevantly provides that the construction noise criteria for The Glen Nature Reserve would be 60 dBA (external), and the operational noise criterion would be 48 dBA.

As stated in the NVIA (SLR, 2024b), noise monitoring would be undertaken during Project construction at the start of any noise intensive works that may occur near sensitive receivers, and would be undertaken during operation in the event of any formal complaints.

Ecological Habitat Fragmentation

2.1 Habitat connectivity is considered and maintained to the greatest extent practicable supporting retained vegetation to sustain linkages for threatened species and native vegetation on The Glen Nature Reserve.

Response

Existing connectivity is represented by the large, intact and contiguous bushland areas surrounding the Project including The Glen Nature Reserve, Barrington Tops National Park and Berrico Nature Reserve (GHD, 2024c). In addition, SMC Biodiversity Offset Areas, including offset properties and Biodiversity Enhancement Areas, occur in proximity to the Project Disturbance Footprint and would continue to provide and improve habitat connectivity around and within the Project Disturbance Footprint as they mature (GHD, 2024c).

The Project site has been largely modified through mining operations and given the extent of native vegetation around and between areas of development within the Project Disturbance Footprint, further impacts to habitat connectivity are unlikely to have significant impacts on any relevant native species' life cycles (GHD, 2024c).

2.2 Prepare the Biodiversity Management Plan in consultation with NPWS to ensure it includes the recommended minimisation and mitigation measures identified within the Section 12.5 of the BDAR (Appendix D) and ensures that biosecurity and hygiene protocols² are applied.

Response

As stated in the EIS, a CEMP and Operations Environmental Management Plan (OEMP) (and respective sub-plans) would be developed for the Project, which would include biodiversity management measures, including those identified in the BDAR.

Light Pollution

The BDAR identifies that light pollution during both construction and operational phases may impact on ecological populations external to the site in areas such as The Glen Nature Reserve to the east of the development footprint.

...

As part of the RTS:

- 3.1 Undertake additional assessment of potential night-time lighting impacts consistent with the Australian Standard AS4282:2023 Control of the Obtrusive Effects of Outdoor Lighting.*
- 3.2 Consistent with AS4282:2023, use the National Light Pollution Guidelines for Wildlife³ to ensure adequate design and consideration of the natural (biodiversity) values of The Glen Nature Reserve in the design of project lighting so that all light fittings are appropriately shielded, and lighting is directed downwards with no light directed above the horizontal plane.*

Response

The Project is topographically separated from The Glen Nature Reserve. Therefore, it is anticipated that the night-time lighting impacts on biodiversity in The Glen Nature Reserve during the Project would be limited.

As summarised in Section 7 of the Landscape and Visual Impact Assessment (LVIA) (GHD, 2024d) (Appendix I of the EIS), night lighting would significantly reduce following cessation of 24/7 mining activities at the SMC.

The LVIA (GHD, 2024d) outlines that lighting during the Project construction period would generally occur during daytime construction hours, except for 24/7 tunnelling activities that would involve night lighting for safety purposes.

During operation, limited night lighting would be required for safety purposes limited to internal roads, in offices, and control rooms.

Appropriate management measures would be implemented during Project construction to mitigate visual impacts, namely implementing screening measures to reduce glare and downward facing lighting to mitigate potential night lighting impacts.

Reservoir Water Quality and Bushfire Management

NPWS has reviewed the EIS and Appendix B – Surface Water Assessment prepared by Hydro Balance, dated 3 September 2024 (SWA). It is understood the water to complete the initial fill of the upper and lower reservoirs will be sourced from water stored in the existing voids in the Stratford Mining Complex (approximately 7,100 ML).

There is no assessment regarding the quality of this water, and whether it could be deemed suitable for future firefighting operations.

...

As part of the RTS, revise the SWA to:

4.1 Undertake additional assessment of water quality associated with the initial fill of the upper and lower reservoirs, including identification of any pollutants and contaminants.

Response

The Project is not designed to be a source of water for fire fighting for NSW NPWS. Therefore, no additional assessments of water quality in the context of firefighting in the Glen Nature Reserve are proposed.

Notwithstanding, water quality in the PHES would be similar to existing water quality in SMC storages, which may be used by NPWS for firefighting, should the need arise.

Potential ETL Upgrade within Wallaroo National Park

The EIS however only considers the potential impacts of the construction of a new on-site substation and a realignment of the existing ETL around the lower reservoir to enable safe construction of the project.

The remainder of the ETL upgrade, including the augmentation to a double circuit line, will be subject to a separate environmental assessment, presumably under Part 5 of the Environmental Planning and Assessment Act 1979

...

5.1 Any future works to the Transgrid ETL alignment within the Wallaroo National Park is undertaken in accordance with the requirements of the NSW National Parks and Wildlife Act 1974, and in consultation with the NPWS Hunter Coast Area via npws.huntercoast@environment.nsw.gov.au.

Response

Yancoal agrees with this recommendation. Further consultation would be conducted if required, and subject to any ETL upgrade designs by Transgrid.

4.1.8 DPIRD – Fisheries and Forestry

A submission was received from DPIRD – Fisheries and Forestry which provided advice regarding fish habitat potentially impacted by the Project. Responses to DPIRD – Fisheries and Forestry’s comments are provided below.

- *It is noted that EIS does not reference section 3.2.4.2 of DPIRD Fisheries Policy and guidelines for fish habitat conservation and management (Update 2013) (nsw.gov.au) (P&Gs) in determining the width of proposed riparian corridor buffers for waterways. Where waterways are determined to be key fish habitat (3rd order streams or above), DPIRD Fisheries recommends that the proponent reviews whether proposed riparian buffers meet DPRID policy and guidance, and adjust them accordingly if needed.*

Response

The Aquatic Ecology Impact Assessment (GHD, 2024e), provided as Appendix E of the EIS, outlines the habitat type and classification for waterways that would interact with the Project as per the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Section 4.2.1 of the Aquatic Ecology Impact Assessment (GHD, 2024e) states that the third and fourth order sections of Avondale Creek (which are classified as Class 1, Type 1) are the only waterways recognised as key fish habitat within the Project Disturbance Footprint. The third and fourth order sections of Avondale Creek can be seen on Figure 4-10. All other waterways within the Project Disturbance Footprint are not considered key fish habitat (GHD, 2024e).

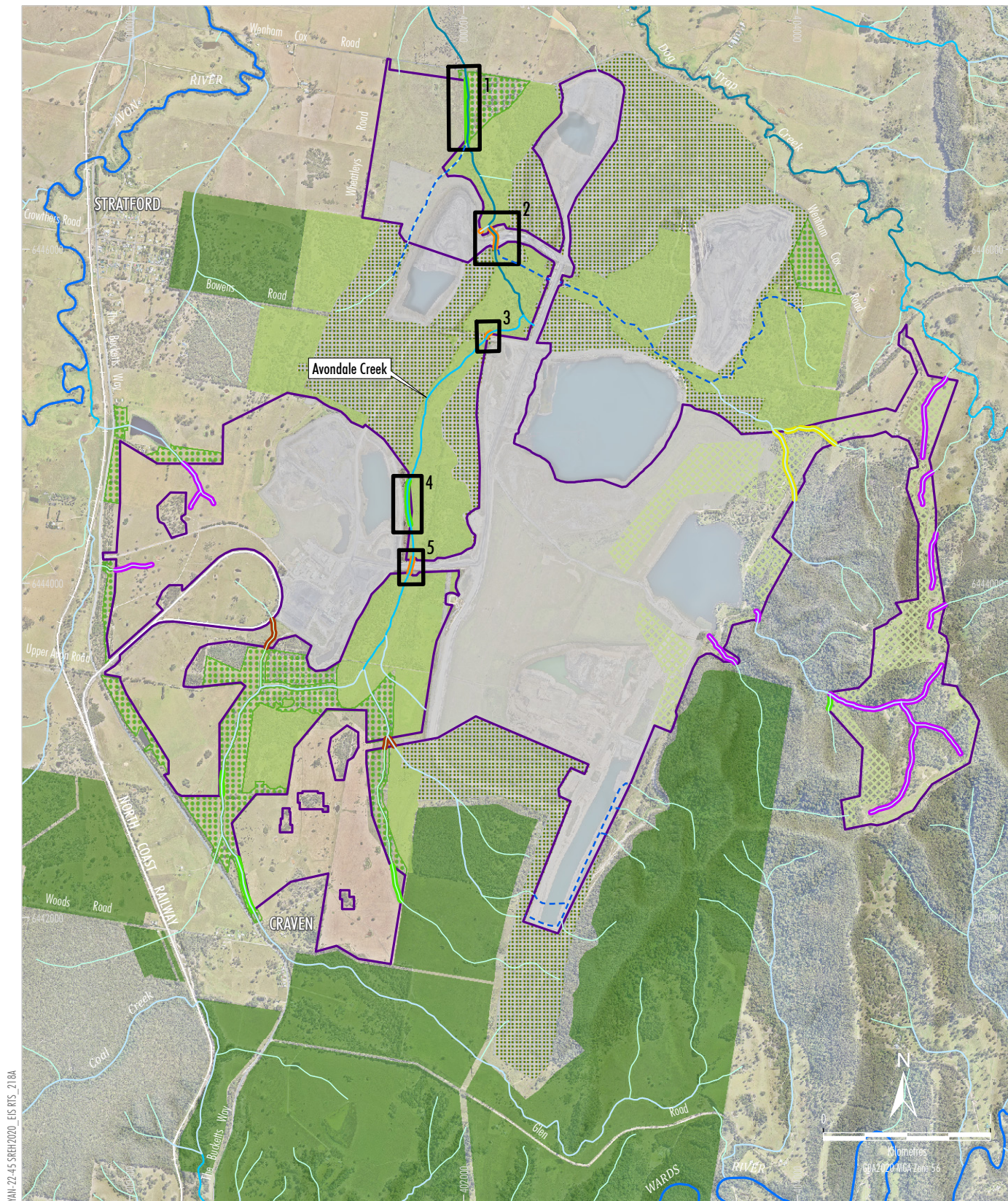
Section 3.2.4.2 of *Fisheries Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPE, 2013) recommends a riparian buffer width of 100 m for key fish habitat.

The Project’s interaction with key fish habitat is shown on Figure 4-10 at Inset Boxes 1, 2, 3, 4 and 5. This habitat is generally of poor quality as it has been subject to previous clearing of riparian vegetation and there is restricted fish passage (GHD, 2024e). Notwithstanding, it is expected there would be no substantial removal of riparian vegetation from key fish habitat during Project construction.

Inset Boxes 2, 3 and 5 are associated with existing road crossings that would be used for the Project (i.e. no additional disturbance for the Project).

For the areas shown within Inset Boxes 1 and 4, the EIS states a 30 to 40 m Riparian Corridor Protection Zone would be maintained between the creek line and Project infrastructure as recommended in the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022e). On the opposite side of these sections of Avondale Creek, no Project infrastructure is proposed. Significant revegetation works for the SMC and the Project are proposed/required in these areas, meaning the final riparian corridor would be greater than 100 m in width (in total across both sides of the creek).

With these revegetation works, areas of key fish habitat would meet the recommended riparian corridor buffer width of a total of 100 m according to the *Fisheries Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPE, 2013).



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LEGEND

- Approximate Extent of SMC Existing/Approved Surface Development
- Project Disturbance Footprint
- Area Available to be Rehabilitated or Repurposed During Operations
- Potential Areas to Achieve Project Rehabilitation Obligation Associated with the SMC
- SMC Development Consent SSD-4966 Components
- Biodiversity Offset Area
- Indicative Reconfigured Biodiversity Enhancement Area
- Native Vegetation
- SCPL Retained Water Infrastructure

Strahler Stream Order

- 1st Order
- 2nd Order
- 3rd Order
- 4th Order
- 5th Order
- Project Interaction
- Existing SMC Road Crossing
- Riparian Corridor Protection Zone
- Riparian Corridor Protection Zone and New Road Crossing
- New Road Crossing
- Disturbance

Source: NSW Spatial Services (2023); Yancoal (2023)



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Riparian Corridor Protection Zones
Along Key Fish Habitat

Figure 4-10

- *To enhance fish habitat, the P&Gs recommend that riparian corridors to be revegetated should include native in-stream vegetation (macrophytes) and snags where appropriate. For any waterways that are determined to be key fish habitat (3rd order streams or above), that are directly affected by the proposal, and would be revegetated, DPIRD Fisheries recommends that proponent reviews whether revegetation in these areas is consistent with recommendations as proposed in the P&Gs.*

Response

Yancoal accepts these recommendations. Further details regarding revegetation of riparian corridors would be developed as part of any post-approval management plan requirements, as appropriate.

- *DPIRD Fisheries notes the proposal requires unavoidable loss of aquatic habitat for spiny and terrestrial crayfish associated with flooding of the valley to form the upper reservoir. To mitigate the impact on existing crayfish species within the area, the feasibility of relocating native crayfish species should be investigated prior to works taking place. The relocation site would need to be an area of unimpacted, suitable habitat that is agreed to in consultation with DPIRD Fisheries and relocation would be required prior to flooding of the valley to form the upper reservoir.*

Response

Yancoal would accept a condition requiring it to investigate the feasibility of relocating native crayfish species prior to construction of the Project.

- *DPIRD Fisheries notes no there are no new waterway crossing proposed for key fish habitat (stream order 3 or above) however, if the proposal is modified to require waterway crossing over key fish habitat they should comply with 4.2.2 of DPIRD Fisheries Policy and guidelines for fish habitat conservation and management (Update 2013) (nsw.gov.au).*

Response

Yancoal accepts this recommendation.

4.1.9 NSW Environmental Protection Authority

A submission was received from the EPA which requested that further information is needed to complete their assessment of the EIS. The comments and recommendations addressed potential water pollution, groundwater pollution, wastewater management, erosion and sediment control, sediment basin discharge, noise impacts, monitoring programs and management plans. Responses to EPA's comments are provided below.

Overview

The EPA provided queries regarding the management of excavated material and water quality.

Emplacement of excavated material is a common consideration of tunnel-based PHES projects, however, the SREH has the unique benefit of being located within and nearby previously disturbed areas and voids associated with the existing SMC. The open pit voids that are approved to be left following closure of the SMC can be used for permanent emplacement of any excavated materials that are not suitable for reuse in construction. In comparison to material stockpiled and emplaced for the SMC, the amount of excavated material from the Project would be minor.

In addition to the open pit voids, the existing SMC has an extensive water management system in place to control and manage surface water flow from a number of catchments, including clean water diversions, sediment traps and runoff capture systems. As the SMC closure project progresses, it is expected that some of the existing water management infrastructure would be decommissioned when it can be demonstrated that the associated landform/runoff is safe, stable and non-polluting. The timing of this is unknown as it would depend on water quality monitoring results and other factors associated with the SMC closure project. As a result, the need for water management infrastructure to facilitate the Project would need to be reviewed depending on the state of existing SMC water management infrastructure at the time of commencement of Project construction. That is, the “existing environment” for the Project would change depending on the rate of progress for closure of the SMC.

As with any project that proposes beneficial reuse of a mine site, there are complexities in assessing an existing environment as a baseline where the existing environment is undergoing (and will continue to) change throughout the assessment and approvals process and up until the commencement of construction. Accordingly, it is not possible to accurately design the Project water management infrastructure at this stage, as this would depend on whether existing SMC infrastructure remains in place or has been decommissioned as part of closure.

The environment outside of the existing SMC presents other complexities to baseline assessment. The area of the Upper Reservoir and the tunnel is heavily vegetated, steep terrain, with most areas unable to be accessed by heavy vehicles without impacting the existing environment. There are currently no approvals in place for the vegetation clearing or ground disturbance works that would be required to undertake further geochemical characterisation drilling. As a result, it is not possible to confirm characteristics of all material prior to determination.

However, the potential for impact to the environment as a result of these uncertain factors is considered to be low due to the far more extensive excavation, stockpiling and water management that has been successfully managed at the SMC since the mid-1990s.

A protocol for the Project to minimise the potential for impact to the environment as a result of runoff or sediment dam releases would indicatively follow the steps detailed below:

- Following granting of necessary approvals to enable access and ground disturbance works, geochemical characterisation of materials to be excavated would be undertaken and appropriate management of runoff determined. This process would delineate:
 - material for which runoff would be considered “clean”, and could be managed through the implementation of standard erosion and sediment controls (e.g. bunding and sediment traps); and
 - if required, material for which runoff would need to be captured, contained and transferred to the SMC water management system / mine voids.
- Based on the status of the closure project at the time of construction, determine the most appropriate location for temporary excavated material stockpiles (prior to reuse or permanent emplacement) within the Project infrastructure/laydown area boundaries. This would determine whether sufficient water management infrastructure remains in place from the existing SMC to appropriately control runoff and/or sediment trap releases, or otherwise construct new water management infrastructure.

- Implement appropriate standard erosion and sediment controls as required, similarly to management of waste rock successfully undertaken for the SMC, informed by the *Stratford Mining Complex Waste Management and Minimisation Strategy* (SCPL, 2021). The design of any new water management structures would be informed by the *Managing Urban Stormwater: Soils and Construction* guidance series² and *Best Practice Erosion and Sediment Control Books 1-6* (International Erosion Control Association [IECA], 2008).
- Monitor surface water and confirm surface water quality is as expected following commencement of the Project.

All excavated materials would either be reused for construction, or rehandled to be permanently emplaced within the existing mine voids. This means that all stockpiles of excavated materials would be in place only temporarily over the construction period, limiting the potential for long-term environmental impacts.

Noting the significant environmental benefits of the Project being located at the SMC and the complexity of overlapping development inherent in post-mining land use projects, it is considered that the potential impact to water as a result of the Project could be conditioned using a similar approach to the Snowy 2.0 tunnel-based PHES project, including requirements to:

- maximise the recycling and reuse of water on site;
- maximise the diversion of clean water runoff around disturbance areas;
- implement erosion and sediment controls in accordance with the *Managing Urban Stormwater: Soils and Construction* guidance series;
- conduct instream works and development within 40 m of watercourses generally in accordance with the *Controlled Activities – Guidelines for instream works on waterfront land* (DPE, 2022f); and
- develop and implement a Water Management Plan in consultation with the EPA.

It is also noted that an Environment Protection Licence (EPL) would be required for the Project. In the first instance, the Project would temporarily overlap some activities currently covered by SMC EPL 5161. The Project may rely on the SMC EPL 5161 to conduct these activities, which would be subject to commercial agreement. Alternatively, the SMC EPL 5161 may be amended and/or replaced by the Project EPL for other activities.

A new EPL for the Project, and any amendments to the existing SMC EPL 5161, would occur in consultation with the EPA.

It is noted that there is some precedence for activities for a secondary project being covered by an existing EPL. This includes the Silver City Energy Storage facility (recently approved in February 2025 [SSD-47065463]) which proposed an approach for overlapping EPLs in which it would utilise the EPL of the mine (EPL 2683) in which the project is proposed to be developed on during construction (for transfer and placement of material) and operate under a separate EPL during its operations.

² *Managing Urban Stormwater: Soils and Construction – Volume 1* (Landcom, 2004); *Managing Urban Stormwater: Soils and Construction – Volume 2A Installation of services* (DECC, 2008a); *Managing Urban Stormwater: Soils and Construction – Volume 2C Unsealed roads* (DECC, 2008b); *Managing Urban Stormwater: Soils and Construction – Volume 2D Main road construction* (DECC, 2008c); *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and quarries* (DECC, 2008d).

The Project would also require transfer of water from the SMC EPL 5161 area (e.g. voids) and transfer of waste/water to the SMC EPL 5161. There are many examples of beneficial transfer of material between EPLs. This includes Mount Thorley Warkworth which operates under separate EPLs that allow the transfer of mine water and overburden between Mount Thorley Coal Mine (operates under EPL 1976 and Development Consent SSD-6465) and Warkworth Coal Mine (operates under EPL 1376 and Development Consent SSD-6464).

Matters to be Addressed Prior to Determination

Potential Water Pollution Impacts and Management

Management of excavated rock and spoil

The project will generate a significant amount of waste rock from excavation of the tunnelled waterways, powerhouse silo and reservoirs, however it is unclear how much is expected to be generated. The EIS indicates that material won on-site would be used for construction, wherever possible, with excess to be temporarily stockpiled prior to permanent emplacement within existing mine voids.

The material to be excavated does not appear to have been characterised

The EIS indicates that exploration drilling has been conducted and the Groundwater Impact Assessment has been informed by geotechnical and hydraulic testing. However, laboratory analysis of soil/rock samples does not appear to have been included in the assessment. It is unclear if these materials may contain naturally occurring pollutants (e.g. coal, heavy metals, acid forming rock) and whether they would pose a risk to waters once excavated

...

It is recommended the proponent:

- a. confirms the volume of spoil expected to be generated, reused and disposed of*
- b. characterizes the material expected to be excavated, including (but not limited to):*
 - i. chemical and leachability testing for all pollutants that have the potential to be present at non-trivial levels*
 - ii. laboratory limits of reporting suitable to detect pollutants at levels related to their environmental risk and guideline value (where available)*

Response

The expected volume of material to be generated during construction of the Project is approximately 10 million cubic metres (Mm³). Wherever possible, excavated materials would be used in construction, including of the Upper Reservoir dam wall, and otherwise permanently emplaced within the SMC mine voids. Initial estimates indicate approximately 8 Mm³ would be reused for construction, while 2 Mm³ would be disposed in the mine voids (subject to commercial agreement).

In comparison, greater than 20 Mm³ capacity would be available in the existing SMC mine voids. In addition, as the Project would involve the expansion of the Lower Reservoir storage, as well as the construction of a new Upper Reservoir, this would effectively increase the total storage available due to the transfer of the existing water stored in mine voids into the new system.

As described above, complete geochemical characterisation is not possible prior to determination, however the potential risk to the environment is considered to be minimal as a result of the controls to be implemented based on the outcomes of the protocol.

Drill and blasting may introduce pollutants into spoil

The EIS indicates that tunnelling would be conducted using drill and blast techniques and that explosives would include ammonium nitrate. It is unclear whether pollutants such as ammonium nitrate have been considered as potential risks during temporary and permanent spoil emplacements.

It is recommended the proponent:

...

- c. identifies all pollutants that have the potential to be introduced into the spoil during the project (e.g. ammonium nitrate) and predicts likely resultant concentrations*

Response

Potentially dangerous and hazardous goods that would be required in limited quantities for the Project have been identified in Section 3.10 of the EIS, including diesel, petrol, sulphur hexafluoride, transformer oil and explosives.

Hydrocarbons would be used for fuel throughout construction and operation, and is not expected to be introduced to spoil. Sulphur hexafluoride and transformer oil would be used in electrical applications in minor quantities, and are not expected to be introduced to spoil.

The tunnelled waterways and powerhouse silo would be constructed using blasting. Explosive materials required for the Project would include initiating products and detonators, ammonium nitrate fuel oil, and emulsion explosives.

Compared to blasting for the SMC, Project construction blasting would involve significantly lower blast sizes and therefore significantly smaller quantities of blast materials. As a result, the likely final concentration of blast products is not expected to be greater (and likely significantly lower) than that found in overburden/interburden previously emplaced within mine voids.

As described above, if required, runoff from material in temporary stockpiles would be captured and transferred to the contained water management system, while material emplaced permanently would be within the existing SMC mine voids. Therefore, any potential pollutants would be managed within the water management system and pose negligible risk to the environment.

The spoil management approach is unclear

The EIS indicates that surplus spoil would be temporarily stockpiled prior to permanent emplacement within existing mine voids. No details appear to have been provided regarding spoil management. It is unclear whether naturally occurring or introduced pollutants have the potential to impact waters through sedimentation or leaching from temporary stockpiles or permanent emplacements.

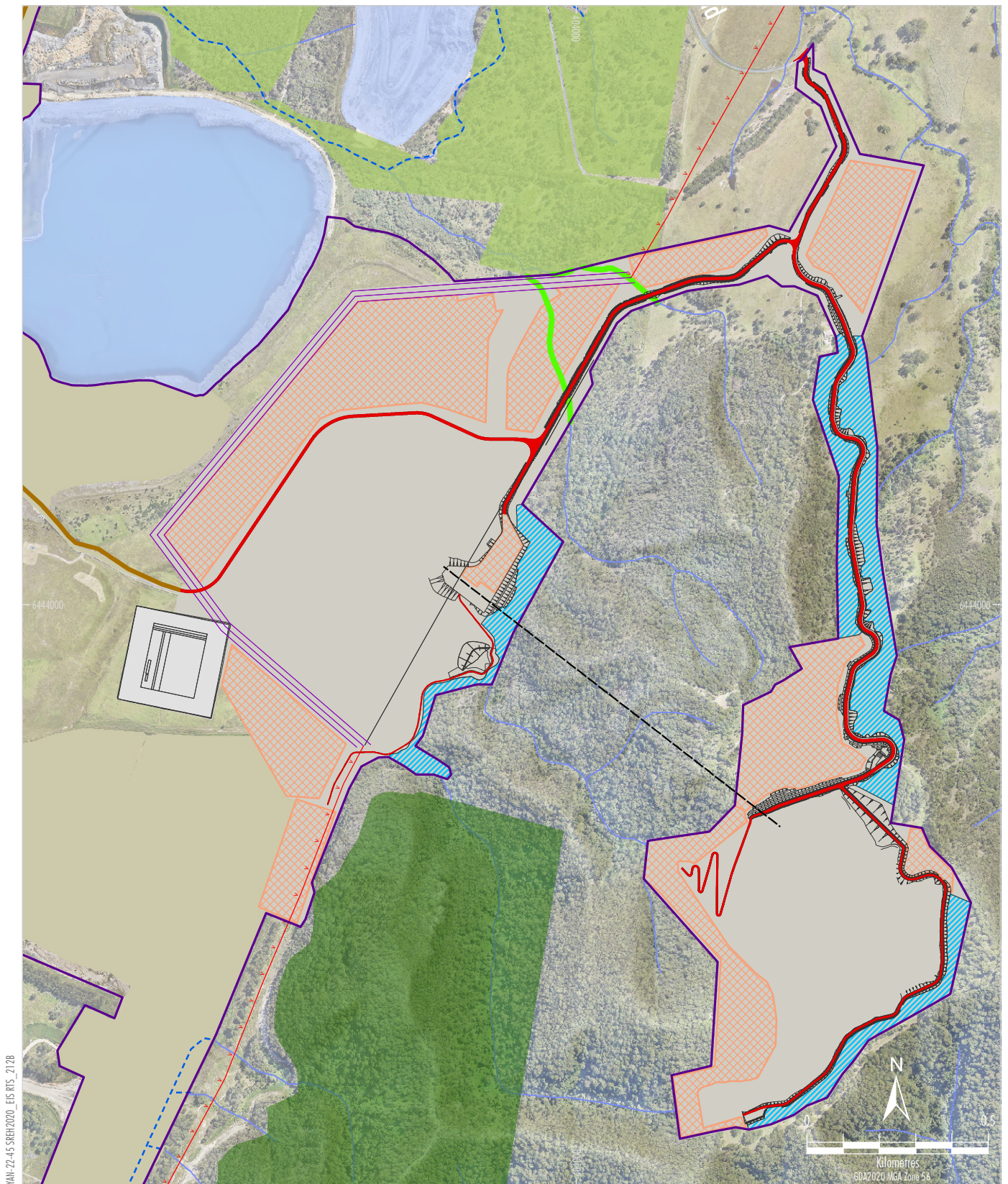
It is recommended the proponent:

...

- d. develops suitable procedures for handling, storing, treating and disposing of excavated materials and proposes specific locations for temporary and permanent emplacement*

Response

Management of excavated materials would be undertaken similarly to management of waste rock previously undertaken for the SMC, informed by the *Stratford Mining Complex Waste Management and Minimisation Strategy* (SCPL, 2021), with permanent emplacement within the existing mine voids where material cannot be reused for construction. Temporary emplacement of excavated material would be located entirely within laydown/construction areas illustrated on Figure 4-11.



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LEGEND

Project Components

- Project Disturbance Footprint
- Existing Internal Access Roads
- New Internal Access Roads
- Construction Disturbance Extent
- Riparian Corridor Protection Zone
- Laydown/Construction Area
- Area Available for Erosion and Sediment Control
- Indicative Underground Tunnel
- Realigned 132kV Transmission Line

SMC Development Consent SSD-4966 Components

- Biodiversity Offset Area
- Indicative Reconfigured Biodiversity Enhancement Area
- SMC Rehabilitation (Once Completed Available for Solar Development)
- Final Void
- SCPL Retained Water Infrastructure

Source: NSW Spatial Services (2023); Yancoal (2023)



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Proposed Laydown/Construction Area
for the Project

Figure 4-11

Surplus spoil would be disposed of within existing mine voids

The EIS indicates that permanent emplacement of spoil surplus to construction requirements would be within existing mine voids at Stratford Coal Mine. As such, the risk of the proposed permanent emplacements to surface waters may be low, however this is not clear given the detail provided. Spoil emplacement within the mine voids may also present risks to groundwater.

It is recommended the proponent:

...

- e. identifies the testing frequency for excavated material prior to permanent emplacement*

Response

Confirmation geochemical characterisation testing would be undertaken at a minimum ratio of one test per 50,000 t of material excavated.

It is recommended the proponent:

...

- f. outlines mitigation measures and contingencies to be put in place to manage runoff and potential pollution from stockpiled material yet to be classified*

Response

A Surface Water Management Plan (including a Sediment and Erosion Control Plan) would be prepared as a sub-plan of a CEMP prior to commencement of construction. The Surface Water Management Plan would include details of how impacts to surface water would be managed, including from sediment-laden runoff.

Management measures that may be implemented include bunding and construction of sediment basins where appropriate, maximising separation of runoff from disturbed and undisturbed areas, and selective use of benign flocculants. Construction would be undertaken in accordance with the *Managing Urban Stormwater: Soils and Construction* guidance series, as well as the *Best Practice Erosion and Sediment Control Books 1-6* (IECA, 2008).

It is recommended the proponent:

...

- g. identifies alternative handling and disposal options for material unsuitable for permanent emplacement areas*

Response

There is not expected to be any excavated material unsuitable for permanent emplacement within the mine voids.

Material that is currently emplaced within mine voids includes overburden and coal seam interburden, comprising non-acid-forming materials, potentially acid-forming materials, and coal handling and processing plant reject materials. Waste materials emplaced within the mine voids have been successfully managed to date.

Regardless, material would be assessed and identified throughout construction and any material deemed unsuitable for permanent emplacement would be transported off site and disposed of at an appropriately licensed facility.

It is recommended the proponent:

...

- h. identifies contingency measures for unforeseen impacts from temporary stockpiles*

Response

In the event that unforeseen impacts are identified as a result of temporary stockpiles, an investigation would be undertaken to determine the cause of the impact, and appropriate management measures implemented, which may include capping/covering, implementation of a low permeability base layer, or rehandling of material into permanent emplacement.

It is recommended the proponent:

...

- i. considers and assesses any residual risks to receiving waters from temporary stockpiles, including leachate, migration of sediment and surface water runoff. If any residual risks are identified, then appropriate management and mitigation measures should be proposed.*

Response

As described above, excavated materials would be tested, and appropriate water management and erosion and sediment control measures implemented as part of development. Materials unsuitable for reuse in construction would be permanently emplaced within existing mine voids, which would not present any significant risk to receiving waters. Materials deemed unsuitable for permanent emplacement would be transported off site and disposed of at an appropriate facility.

Potential Groundwater Pollution Impacts and Management

Groundwater, process water and construction-phase water transfers between the project and existing mine voids

Permanent underground infrastructure including tunnels are proposed to be lined with steel and/or concrete. During construction and prior to lining, the vertical shaft, tunnels, and other underground works would generate groundwater inflow and water used in the tunnelling process (process water). Groundwater may also be intercepted by reservoir excavations, footing excavations for transmission towers, and bulk earthworks. The Surface Water Assessment (SWA, EIS Appendix B) indicates that tunnel affected water will be collected in sumps underground and disposed of in existing mine voids.

Groundwater does not appear to have been adequately characterised

The Groundwater Impact Assessment (GIA, EIS Appendix C) includes a limited level of characterisation of groundwater expected to be intercepted by tunnelling and excavation works. Section 6.6 includes some commentary of groundwater quality results from monitoring bores but is limited to total dissolved solids, electrical conductivity, cations and anions. Section 6.6 also notes exceedances of environmental values for total phosphorus and copper, however results do not appear to have been provided.

It is recommended that the proponent provides a construction phase water balance to demonstrate that the mine voids will have adequate capacity to receive spoil, intercepted groundwater, process water, and water from Stratford East Dam. The construction phase water balance should include (but not limited to):

- a. quantification of:

 - i. mine void capacity*
 - ii. existing water in mine voids*
 - iii. natural inputs and outputs (e.g. rainfall, evaporation, seepage, etc)*
 - iv. proposed project inputs and outputs (e.g. spoil, intercepted groundwater, process water and water from Stratford East Dam as appropriate)**

Response

The maximum estimated yearly groundwater inflow to tunnels and other underground infrastructure is 74 ML, for a maximum total of 148 ML (or 0.148 Mm³) over the construction period, prior to steel/concrete lining (SLR, 2024a). Groundwater inflow to tunnels would be dewatered and treated as construction water, and therefore pumped into the mine voids (pending commercial agreement).

In addition, approximately 2 Mm³ of the excavated material would be permanently emplaced within mine voids.

Greater than 20 Mm³ capacity would be available in the existing SMC mine voids. The construction of the Project would also result in an increase in total storage of approximately 5 Mm³. As a result, there is considered to be more than sufficient capacity within mine voids to facilitate all emplacement proposed for the Project.

Water transfers between the project and existing mine voids

In addition to spoil, intercepted groundwater and process water is proposed to be transferred to existing mine voids. Additionally, the existing Stratford East Dam (which will be augmented to serve as the lower reservoir) currently appears to contain water which will presumably require transfer to mine voids during construction before being transferred back to the PHES during the 'initial fill'. The EIS also suggests that smaller transfers between the PHES and existing mine voids will be required to maintain an optimal water level in the PHES. It is unclear whether the mine voids would have sufficient capacity to receive spoil, intercepted groundwater, process water and water from the Stratford East Dam during construction and whether they would have the potential to overflow. If overflows are likely, the risk to receiving surface waters is unknown as the groundwater and existing water in the mine voids do not appear to have been characterised in the EIS. Water transfers to the mine voids may also present risks to groundwater.

The construction phase water balance should include (but not limited to):

...

- b. quantitative modelling of likely water levels over time for the construction phase of the project. The level of detail of the model should be commensurate with the risk of overflows.*
- c. estimation of the risk of overflows from mine voids for a range of environmental/climatic scenarios*
- d. characterisation of water quality for each type of water expected to be stored in mine voids (e.g. existing mine void water, intercepted groundwater, process water, water from Stratford East Dam) including analysis for all pollutants that have the potential to be present at nontrivial levels*
- e. if overflows from mine voids could occur, the potential impact on receiving waters should be assessed.*

Response

Overflow from mine voids is not permitted, as management of the existing SMC mine voids to prevent any spill is an existing requirement of Development Consent SSD-4966 and EPL 5161. This would continue to be the case, irrespective of the Project.

As described above, construction of the Project would also increase the total storage available by approximately 5 Mm³.

In consideration of the above, the risk of overflows from mine voids as a result of the Project is considered to be negligible. If the risk is non-negligible (e.g. due to significant rainfall in the lead up to construction) the Project may be delayed, alternative storages (e.g. within the footprints of the reservoirs) may be required, and/or alternate construction staging may be required (e.g. construction of the Upper Reservoir and Lower Reservoir in series rather than in parallel).

Wastewater Management

Wastewater (STP) discharges

Sewage is currently treated onsite and irrigated in accordance with Environmental Guidelines: Use of Effluent by Irrigation (NSW Department of Environment and Conservation [DEC], 2004). It is proposed that existing sewage treatment facilities would continue to be used for the project during construction and that additional treatment facilities may be located at the pumphouse and upper reservoir. The effluent irrigation areas would continue to be operated in accordance with DEC (2004).

Given the limited detail provided regarding existing irrigation of effluent, the likely increase in sewage to be treated and decrease in available irrigation area, it should be ensured that irrigation of effluent is sustainable.

It is recommended the proponent prepares an effluent irrigation sustainability assessment consistent with DEC (2004), including (but not limited to):

- a. identification of all sources of sewage requiring treatment (e.g. existing and proposed toilet facilities, other waste water sources reporting to sewage treatment plants)*
- b. proposed treatment methodologies (i.e. existing STP configurations and any additional treatment measures or treatment plants)*
- c. estimation of expected influent and effluent quality for each STP*
- d. identification of all proposed effluent irrigation areas*
- e. assessment of potential landform and soil limitations for each effluent irrigation area*
- f. details of cropping practices and required buffers*
- g. water and nutrient balance assessments*
- h. details of the design and construction of any wet weather storages (including design storm sizing and liner specifications)*
- i. consideration of a) to h) above for both construction and operational phases.*

Response

Existing wastewater treatment plants for the SMC would be used to treat sewage generated by the Project – no other wastewater sources would be directed to the wastewater treatment facilities. The existing wastewater treatment includes primary treatment and aeration tank systems, septic tank systems, and an active aeration system. Treated water from the system is sprayed onto grassed or vegetated areas. The existing sewage treatment facilities have been successfully managed to date, and would continue to be operated in a manner to the satisfaction of the MidCoast Council for the Project and in accordance with the *Environmental Guidelines: Use of Effluent by Irrigation* (NSW Department of Environment and Conservation, 2004).

The existing wastewater treatment facilities are considered sufficient to facilitate the Project, however, if any changes or upgrades are determined to be required (e.g. to accommodate the larger workforce required for Project construction), they would be developed in consultation with the EPA and the MidCoast Council.

Wastewater (Other Sources)**Concrete Batching Plants**

Concrete batching plants will be required to supply concrete during the construction phase. It is unclear how many are proposed and where they would be located. It is also unclear how stormwater and wastewater from the plants would be managed, including whether treatment is proposed, the expected effluent quality and proposed method of disposal/discharge. A discharge impact assessment will be required if a discharge to waters is proposed.

Substation(s)

The EIS does not appear to have considered the potential water quality impacts associated with the construction and operation of a new substation. It is unclear if an oil spill containment system is proposed, and if so, if stormwater pits are appropriately sized and where water used for testing the containment system would discharge to. It is unclear how captured stormwater during routine operation of the substation will be managed. There has been no characterisation of the stormwater discharge and it is unclear if the substation site will store materials/equipment that may leach pollutants. If a discharge to the downstream receiving environment is proposed a discharge impact assessment is required.

It is recommended the proponent prepares a discharge impact assessment for all proposed wastewater discharges including (but not limited to):

- a. characterisation of expected wastewater from each concrete batching plant, substation and STP (where discharges are proposed) for all pollutants at non-trivial concentrations*
- b. characterisation of each discharge in terms of the expected concentrations and loads of all pollutants that may be introduced into the water cycle by source and discharge point, including any chemical additives (e.g. pH buffering, coagulants, antifoamants)*
- c. identification of proposed discharge point(s) and wastewater storage specifications including design storm sizing and details of any liners (if applicable)*
- d. assessment of potential impacts of discharges on the environmental values of the receiving waterway(s), including typical through to worst-case scenarios with reference to the relevant guideline values. Where a mixing zone is proposed, demonstrate how the National Water Quality Guideline criteria for relevant chemical and non-chemical parameters are met at the edge of the initial mixing zone of the discharge*
- e. demonstration that all practical and reasonable measures to avoid or minimise water pollution and protect human health and the environment from harm are investigated and implemented*
- f. demonstration that the proposal will be designed and operated to:

 - i. protect the NSW Water Quality Objectives for receiving waters where they are currently being achieved; and*
 - ii. contribute to achieving the NSW Water Quality Objectives over time where they are not being achieved.**
- g. proposed additional or alternative treatment measures if non-trivial risks to waters are identified and contingency measures in the event of the water treatment plant(s) being unoperational*
- h. proposed discharge criteria for any pollutants that have the potential to cause non-trivial harm based on the impact assessment.*

Response

Discharge of concrete batching water is not proposed as part of the Project. Any construction water (including water from concrete batching plants) generated as part of the Project would be transferred to the existing water management system (i.e. disposed in the mine voids), following completion of construction.

The electrical substation would be banded as per Australian Standard (AS) 1940:2017 *The storage and handling of flammable and combustible liquids* in order to minimise the potential for leaks or spills. As described above, effluent from the existing water treatment facility would continue to be managed as per the existing SMC, and treated water sprayed onto grassed or vegetated areas.

Erosion and Sediment Control

It is unclear where sediment basins will be required or located. The SWA indicates that sediment basins will be designed in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Best Practice Erosion and Sediment Control, Books 1-6 (IECA, 2008), with a minimum 5-day, 85th percentile rainfall depth design capacity. However, the EIS also indicates that the project would last for approximately four years and Managing Urban Stormwater: Soils and Construction Volume 2E, Mines and Quarries (DECC, 2008) recommends basins sized for 5-day, 90th percentile rainfall depths for disturbances over three years with 'standard' receiving environments and 95th percentile for 'sensitive' receiving environments.

Given the level of detail provided it is unclear whether there would be any sediment basins for the duration of the project (i.e. over three years), or if all basins would exist for less than three years due to project staging.

It is recommended that the proponent:

- a. *provides further details and commitments on the erosion and sediment control approaches with reference to practices and principles of Volumes 1 and 2 of the Managing Urban Stormwater series and other industry best practice. This could include (but not be limited to):*
 - i. *engaging a specialist soil and erosion control practitioner to oversee soil and erosion control for the site during construction*
 - ii. *consideration of spoil characterisation assessments undertaken where relevant*
 - iii. *identification of sediment basin locations*
 - iv. *installing larger basins where practicable*
 - v. *prioritising reuse over discharge and pumping between storages to avoid a discharge*
 - vi. *staging construction activities so that land disturbance is confined to the minimum area possible, including the solar farm area*
 - vii. *use of timber windrows during clearing to assist erosion control*
 - viii. *retention of vegetation within flow lines for as long as possible*
 - ix. *retention of groundcover on soils to minimise the potential loss of sediment.*
- b. *provides further details of the soil and erosion control measures proposed for areas with specific considerations, including access tracks and transmission tower pylon areas.*

Response

Prior to commencement of construction, the remaining water management infrastructure would be assessed based on the status of the SMC closure project, and additional water management infrastructure would be developed if required to facilitate the Project.

As described in Section 5.7 of the Surface Water Assessment (HydroBalance Pty Ltd [HydroBalance], 2024) (Appendix B of the EIS), if required, sediment basins would be constructed in accordance with the relevant guidance, including *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and quarries* (DECC, 2008d). As a result, at a minimum, the sediment basins would be constructed with a five-day, 85th percentile rainfall depth design capacity, however if Project staging requires a sediment basin to be in place for a period longer than three years, a five-day, 90th percentile design capacity would be specified.

A Sediment and Erosion Control Plan would be developed in consultation with the EPA prior to commencement of construction, and would detail proposed sediment basin placement and erosion and sediment control measures, which may include:

- maximum separation of runoff from disturbed and undisturbed areas;
- priority reuse of these waters where practicable and/or natural controlled release to buffer zones in a manner that minimises the potential for change to downstream turbidity;
- selective use of benign flocculants such as gypsum to assist in the settlement of suspended solids if required;
- construction of surface drains to facilitate the efficient transport of surface runoff;
- construction of silt fences downslope of disturbed sites; and
- rapid and progressive stabilisation of disturbed surfaces.

Diversion of clean water around disturbed areas would be prioritised (where practicable) using diversion drains/bunds, in order to act as a source control to minimise sediment laden water.

All sediment dams would be inspected/monitored on a minimum quarterly basis or following receipt of sufficient rain whereby such dams have the potential to spill. Maintenance activities would be undertaken on sediment dams as required. Sediment dams would be cleaned out when the storage volume is reduced by sediment deposition (i.e. when 30% of storage volume is lost to sediment build up) and inspected after major rainfall events.

Where significant erosion or sediment mobilisation is predicted or identified, additional controls would be developed in consideration of relevant guidance, including the *Managing Urban Stormwater: Soils and Construction* guidance series.

Discharges from Sediment Basins

The EIS has not characterised the expected sediment basin discharge quality

It is unclear where sediment basins will be required or located, and the expected discharge quality for each sediment basin is unclear. Some sediment basins may contain pollutants other than 'clean' sediment, for example runoff from temporary spoil and excavated rock stockpiles or dewatered groundwater from excavations.

The SWA indicates that coagulants and/or flocculants may be required to facilitate effective treatment. Chemical additives such as coagulants and flocculants can contain toxicants such as aluminium that also have the potential to cause harm to the environment. Any discharges which contain chemical additives would also require consideration

It is recommended that the proponent prepares a discharge impact assessment for all pollutants that may be present at non-trivial levels for each sediment basin. The discharge impact assessment must, at a minimum:

- a. be informed by the proposed erosion and sediment controls*
- b. identify all potential pollutants at non-trivial levels which may be present in a discharge from the site (including flocculants, coagulants and/or spoil/stockpile leachate)*
- c. estimate the expected frequency and volume of discharges*
- d. provide details of any proposed treatment and other measures to minimise potential impacts of discharges*
- e. assess the potential impact of discharges on receiving waters with reference to the ANZG (2018) guidelines. Where a mixing zone is proposed, demonstrate how the National Water Quality Guideline criteria for relevant chemical and non-chemical parameters are met at the edge of the initial mixing zone of the discharge*
- f. where pollutants have the potential to cause non-trivial harm in discharges, additional or alternate treatment measures should be developed to avoid, minimise and mitigate water pollution risks.*

Response

As described above, there are currently no approvals in place for access and ground disturbance works that would be required to undertake geochemical characterisation drilling. As a result, it is not possible to confirm characteristics of all material prior to determination. However, excavated materials would undergo geochemical characterisation testing at a minimum ratio of one test per 50,000 t, and would inform the appropriate water management of runoff from temporary stockpiles.

The existing SMC water management infrastructure (and therefore the baseline existing environment) includes sediment basins with discharge (under allowable conditions), which will continue up until the sediment basins are decommissioned, irrespective of the Project. The timeframe for decommissioning of the existing water management infrastructure is unknown. Accordingly, the status of the existing SMC water management infrastructure would be assessed prior to commencement of construction. Where possible, the Project would utilise the existing water management infrastructure, which would continue to involve discharge from sediment basins.

The use of a coagulant or flocculant may be required under the *Managing Urban Stormwater: Soils and Construction* guidance series, in which case selection would be undertaken in accordance with the IECA *Sediment Control Fact Sheet - Chemical Coagulants and Flocculants* (2018). This would include development of a "Floc Performance Report", which requires either characterisation or samples of the material to be emplaced. There are currently no approvals in place to facilitate characterisation or sampling.

The proposed use of a coagulant or flocculant would be integrated into the Surface Water Management Plan in consultation with the EPA.

It is noted that groundwater inflow into excavations would be handled as construction water and dewatered into the existing water management system (i.e. disposed in the existing mine voids).

Monitoring Program

It is unclear whether sufficient baseline water quality monitoring has been conducted

Surface water quality monitoring data has been provided in Appendix B of the Aquatic Ecology Impact Assessment (AEIA, EIS Appendix E). The data includes the results of a single monitoring round (June 2023) for physio-chemical parameters, major ions, nutrients, dissolved metals and other parameters, and is supplemented with historical results for electrical conductivity, temperature, pH and dissolved oxygen recorded for the existing coal mine.

Historical water quality data associated with the existing coal mine was sourced from a report by Invertebrate Identification Australasia (IAA, 2022). It is possible that additional surface water data was collected, however the report does not appear to have been provided. Given the limited analytical suite for historical data provided in the EIS, and the limited temporal range provided for recent monitoring, it is unclear whether baseline surface water for the project has been adequately characterised.

It is recommended that the proponent undertakes further surface water monitoring to adequately characterise baseline surface water condition prior to construction. This could include (but not be limited to):

- a. desktop review and incorporation of historical surface water monitoring conducted for the existing coal mine*
- b. review and identification of all pollutants that have the potential to impact receiving waters, including (but not limited to):*
 - i. naturally occurring pollutants in material to be excavated*
 - ii. pollutants that have the potential to be introduced into excavated material during its extraction or handling*
 - iii. pollutants that may be present in groundwater intercepted by the project or associated process water*
 - iv. pollutants associated with wastewater from other activities such as STPs, concrete batching and substations*
 - v. pollutants associated with erosion, sedimentation, and treatment of sediment laden water (if applicable).*
- c. identification and justification of appropriate monitoring locations, which should be informed by consideration of potential sources of pollution listed above*
- d. collection and analysis of surface water samples for all pollutants that have the potential to impact receiving waters during construction or operation of the project*
- e. sampling frequency and temporal range appropriate to characterise surface water over a range of environmental conditions.*

Response

As described above, the existing environment (“baseline”) would continue to change throughout the assessment and approvals process, however, a surface water monitoring program is implemented for the existing SMC, with data reported as part of the requirements of EPL 5161³, as well as summarised in annual reviews⁴. The data recorded under the monitoring program includes historical and contemporary surface water monitoring data on Avondale Creek and Dog Trap Creek.

³ <https://www.yancoal.com.au/our-sites/stratford/stratford-documents-page/#mon-docs>

⁴ <https://www.yancoal.com.au/our-sites/stratford/stratford-documents-page/#annual-docs>

The Project is not predicted to have any significant impact on surface water quality, as the PHES would be constructed to operate as a closed system. In order to confirm that the Project continues to have a negligible impact on surface water quality, a Surface Water Management Plan would be developed prior to the commencement of construction in consultation with the EPA. The plan would incorporate monitoring sites with sufficient baseline data from the SMC surface water monitoring program to demonstrate that the Project continues to have no significant impact on surface water.

Proposed surface water monitoring for construction and operational phases is unclear

The EIS indicates that surface water monitoring is conducted for the existing coal mine and a subset of this program is proposed to continue for the project. However, further details for the proposed surface water monitoring do not appear to have been provided.

It is recommended the proponent prepares a surface water quality monitoring program for construction and operational phases of the project (and further baseline monitoring, if required). The surface water quality monitoring program should include (but not be limited to):

- a. consideration of pollutants that have the potential to impact surface waters and existing baseline monitoring*
- b. identification of water quality monitoring locations during baseline, construction and operational phases*
- c. analyte list and limits of reporting with reference to the relevant ANZG (2018) assessment criteria for a slightly to moderately disturbed receiving environment*
- d. sampling frequency for each project phase commensurate with risk that will adequately inform trigger action response plans (TARPs)*
- e. a TARP (or series of TARPs) detailing water quality triggers and operational responses for water quality exceedances*
- f. develops a plan to regularly confirm that water quality is consistent with water quality triggers.*

Response

The Project has been designed to avoid potential impacts to surface water through diversions and operation as a closed system. Regardless, as described in Section 6.3.4 of the EIS, a Surface Water Management Plan would be developed as a sub-plan of the CEMP prior to commencement, in consultation with the EPA. The plan would include monitoring sites on waterways downstream of the Project to confirm impact predictions, sites with appropriate baseline data from the existing SMC monitoring program, and trigger action response plans (TARPs) to inform actions to be undertaken based on monitoring results.

Potential Noise Impacts

Noise Impacts to Receiver 23

The Construction Noise Assessment a minor noise impact (exceedances of the Noise Management Levels) at receiver 23.

The EPA notes that the draft Construction Noise Management Plan would need to be updated if the project were to be approved and indicate how the proponent would mitigate noise levels at receiver 23 using all feasible and reasonable construction noise mitigation measures.

Response

As described in the EIS, a Noise Management Plan would be developed as a sub-plan of the CEMP prior to the commencement of Project construction. The Noise Management Plan would detail best practice noise management and mitigation measures, including the feasible and reasonable measures to mitigate the noise levels at Receiver 23.

Matters to be Addressed with Conditions

Potential Impacts to Groundwater and Management

The EIS does not address all SEARS related to groundwater

The EIS does not cover all environmental assessment requirements specific to groundwater. The EIS is required to identify the current groundwater environment through baseline monitoring, as well as potential impacts from the management and emplacement of spoil.

Expand the groundwater monitoring network to include the proposed reservoir locations to establish existing conditions

The current number of groundwater monitoring bores near the proposed upper and lower reservoir areas is insufficient. Considering the variability in predicted seepage rates and the use of mine void water to replenish the reservoirs, there is insufficient spatial coverage of the groundwater monitoring network to identify any potential impact.

Should the project be approved, it is recommended that the proponent:

Prepare and provide a Water Management plan

The proponent must prepare a Water Management Plan before construction or operation. This plan should include:

- A comprehensive Groundwater Management Plan;*
- A Groundwater Monitoring and Management Program, which includes trigger action response plans, site-specific guideline values, and mitigation measures;*
- Regular updates to baseline monitoring data;*
- Construction and spatial details of newly installed groundwater monitoring bores around reservoirs and mine voids; and*
- Details on the monitoring frequency and water quality parameters to be tested*

Response

The EIS fulfils the SEARs requirement by utilising baseline data collected opportunistically during resource sterilisation drilling. There are currently no approvals in place for ground disturbance works that would be required to undertake further drilling for the purpose of groundwater monitoring.

The reservoirs would be treated to minimise seepage. Any latent seepage from the Lower Reservoir would likely migrate towards the SMC Main Pit and back into the SMC water management system as it is a groundwater sink. Any latent seepage from the Upper Reservoir is expected to be small in comparison to the likely overall groundwater system. Seepage that reaches the surface via springs is expected to be diluted by the surface water component of the drainage line (i.e. there is expected to be significantly more rain than groundwater expressed to the surface).

Regardless of the above, the proposed groundwater monitoring program for the Project has been developed in consultation with a groundwater specialist with the objective of being sufficient to allow comparison between the observed groundwater response and the predictions of the groundwater model.

As described in Section 6.4.4 of the EIS, a Groundwater Management Plan would be developed as a sub-plan of the CEMP prior to commencement of construction. The Groundwater Management Plan would be prepared in consideration of DCCEE Water's groundwater guidelines for major projects.

4.1.10 NSW Rural Fire Service

A submission was received from RFS which requested further consideration of bushfire protection measures, particularly regarding office facilities and infrastructure. Response to RFS's comment is provided below.

The EIS documentation includes a 'Bushfire Assessment' prepared by Peterson Bushfire dated 25 July 2024. The bushfire protection measures/strategies nominated within the report should be included in any approval issued.

In addition, it is noted the bushfire consultant's report makes no reference to any workers compound that will be required during the construction phase of the development (stated as up to 350 persons) or the office/worker facilities that will be provided during the ongoing operation of the PHES.

As such the RFS also recommends these aspects of the development be considered in relation to bushfire protection and appropriate bushfire protection measures applied.

Response

The EIS states that during Project construction, existing SMC infrastructure would be used, including existing carpark and office facilities. Once Project construction is complete and the relevant infrastructure is no longer needed (including the existing SMC office), it would be decommissioned, demolished and the area required to facilitate further development activities would be rehabilitated.

During Project operation, a building above the powerhouse silo would be the Project office and control room.

The Bushfire Assessment (Peterson Bushfire, 2024) indicated that an APZ is to be provided and maintained around the PHES powerhouse, with the following dimensions:

- north: 31 m;
- east: 20 m;
- south: 48 m; and
- west: 25 m.

The EIS also states that a Bushfire Emergency Management and Operations Plan would be prepared for the Project.

No workers compound is proposed as part of the Project.

4.1.11 Conservation Programs, Heritage and Regulation Group

Responses to comments from the then NSW Biodiversity and Conservation Science (BCS) Directorate (now CPHR) on the EIS, received on 16 December 2024, have been provided below.

1. The avoid, minimise and offset hierarchy of the Biodiversity Offset Scheme

Biodiversity values of the site

The site and in particular the upper reservoir contain areas with high biodiversity values. A total of 28 threatened species have been recorded within the site as have a number of Threatened Ecological Communities (TECs). Significant habitat features include a Sooty Owl nest tree, multiple rocky outcrops, numerous waterbodies, including permanent and ephemeral creek lines, small and large dams, holding basins and approximately 133 hollow-bearing trees.

A total of 28 threatened species listed under the BC Act and/or the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) were recorded in the study area during surveys, which comprises two flora and 26 fauna species:

- *Rhodamnia rubescens* (Scrub Turpentine)
- *Eucalyptus largeana* (Craven Grey Box)
- *Black-necked Stork* (*Ephippiorhynchus asiaticus*)
- *Brush-tailed Phascogale* (*Phascogale tapoatafa*)
- *Eastern Coastal Free-tailed Bat* (*Micronomus norfolkensis*)
- *Eastern False Pipistrelle* (*Falsistrellus tasmaniensis*)
- *Grey-crowned Babbler* (*Pomatostomus temporalis temporalis*)
- *Grey-headed Flying-fox* (*Pteropus poliocephalus*)
- *Koala* (*Phascolarctos cinereus*)
- *Large Bent-winged Bat* (*Miniopterus orianae oceanensis*)
- *Large-eared Pied Bat* (*Chalinolobus dwyeri*)
- *Latham's Snipe* (*Gallinago hardwickii*)
- *Little Bent-winged Bat* (*Miniopterus australis*)
- *Little Lorikeet* (*Glossopsitta pusilla*)
- *Long-nosed Potoroo (northern)* (*Potorous tridactylus tridactylus*)
- *New Holland Mouse* (*Pseudomys novaehollandiae*)
- *Masked Owl* (*Tyto novaehollandiae*)
- *Parma Wallaby* (*Notamacropus parma*)
- *Powerful Owl* (*Ninox strenua*)
- *Glossy Black-cockatoo* (*Calyptorhynchus lathami lathami*)

The following three migratory species listed under the EPBC Act that are not listed as threatened under the BC Act were recorded:

- *Black-faced Monarch* (*Monarcha melanopsis*)
- *Rufous Fantail* (*Rhipidura rufifrons*)
- *Spectacled Monarch* (*Symposiachrus trivirgatus*)

The following two species were assumed present within the development footprint:

- *Common Planigale* (*Planigale maculata*)
- *Stephen's Banded Snake* (*Hoplocephalus stephensii*)

The Project would directly impact the following TECs:

- 6.14 hectares (ha) of Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Endangered Ecological Community (EEC) under the BC Act.
- 6.02 ha of Lowland Rainforest of Subtropical Australia Critically Endangered Ecological Community (CEEC) under the EPBC Act.

- 20.62 ha of Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion EEC under the BC Act.
- 19.53 ha of Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland EEC under the EPBC Act.

The Project also has the potential to have direct and indirect impacts on adjacent forested vegetation, including the nearby Glen Nature Reserve, through changes to hydrology, water quality, impacts from edge effects, light pollution, weed incursion and fragmentation of habitats. Construction would create noise and vibration that may affect native fauna in the locality.

Avoidance and minimisation

The BDAR does not demonstrate that the avoid and minimise provisions of the Biodiversity Assessment Method (BAM) and BC Act have been adequately applied. The BDAR does not identify how the significant findings of the Stage 1 BAM Assessment have informed the avoid and minimise strategy and led to impacts to biodiversity being avoided.

The assessor should document the analysis and evolution of the avoid and minimise options in the BDAR (see Section 3.3 of the manual) to provide transparency and support decision making. The assessor needs to demonstrate how reasonable avoid and minimise measures have been genuinely and robustly explored.

Chapter 7 of the BAM details a number of ways in which a proposed development can demonstrate avoidance and minimisation of impacts. Relevant to this assessment is the analysis of alternatives, including:

- *Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.*
- *Alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location.*
- *Alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site.*

The BDAR should provide a detailed analysis of how the proponent has explored the range of technologies available and other alternative design options.

The BDAR describes a number of measures as demonstrating avoidance such as some drainage lines and associated riparian corridors that would not be impacted, the tunnelled waterways and excluding approximately 68.51 hectares (ha) of native vegetation previously associated with the development footprint. The proponent should consider additional avoidance measures that would more substantially reduce the biodiversity impact of the project.

Large areas of high biodiversity value occur within the site that could be set aside for conservation and this would demonstrate further avoidance of impacts to biodiversity values. The avoid and minimise strategy used for the proposal should complement and integrate with the offset strategy of the previous consent and act to connect habitats and enhance biodiversity within the site.

For instance, the project will have substantial impacts to the local koala population. The subject land is less than two kilometres (km) northeast of the Bulahdelah priority population identified Koala Area of Regional Koala Significance (ARKS), as identified by the Koala Prioritisation Project. The koalas identified within the subject land and study area likely form part of this population as the upper reservoir is connected via contiguous vegetation.

The proposal will remove up to 106.70 ha of identified koala habitat (as per the current species polygon) and will impact connectivity to the Koala ARK, the surrounding Glen Nature Reserve and ultimately Ghin-Doo-Ee National Park to the south.

Although the assessor only recorded four observations of koalas during survey works, the observations within the study area confirmed the presence of broadcasting males, potentially indicating breeding.

Section 2 of the BAM Operational Manual – Stage 2 outlines that reasonable measures must be implemented and proposed within the BDAR that seek to maintain the biodiversity values of avoided land for example, consent conditions, conservation agreements or similar covenants that prevent disturbance and degradation.

Rehabilitation areas

The main strategy proposed in the BDAR to demonstrate how the proponent has avoided and minimised biodiversity impacts is placing the solar farm within existing disturbed areas. However, large areas proposed for the Solar Farm are subject to existing approval obligations under Development Consent SSD 4966. The BDAR describes these areas as “disturbed areas” however a portion of these areas are subject to mine rehabilitation (350 ha of native vegetation to be re-established) as part of the Biodiversity Offset Strategy detailed in Condition 33, Schedule 3 of Development Consent SSD 4966 (Table 6). The completion criteria for these areas are as follows:

- *Rehabilitation and Revegetation Areas* - Woodland/riparian areas on trajectory towards criteria, as indicated in annual rehabilitation reviews, towards self-sustaining ecosystem and/or measures of ecosystem function (e.g. vegetation cover, landform stability, species diversity) equivalent to reference sites.
- *Grazing Areas* - Approximately 300 ha of grazing lands will be re-established with a combination of pastures and scattered endemic trees (e.g. Class 4 Agricultural Suitability classification).

BCS does not support identifying these areas as “disturbed areas” or “excluded areas” as it does not acknowledge existing rehabilitation obligations over the land. The BDAR should accurately reflect the impacts from the proposal and detail the interactions between the existing and proposed projects.

Along with this, the BDAR also lists avoidance of areas that are part of the offset strategy for the existing consent (SSD 4966). Figure 9.1 – Avoidance of impacts depicts areas of avoidance as part of the previous offset strategy. This cannot be considered as part of the new application as this was intended to offset the previous impact. The BDAR must clearly distinguish between the previous offset strategy and measures proposed to offset the impacts of the proposed project.

Chapter 7 of the BAM and Chapter 3 and Appendix B of the BAM 2020 Operational Manual – Stage 2 detail the ways in which the principal of avoid and minimise is to be demonstrated. BCS expects that the avoid, minimise, offset hierarchy is implemented regarding the findings outlined within the BDAR and repeated above.

Recommended action:

The site is known to contain numerous threatened species, Threatened Ecological Communities (TECs) and high biodiversity values. The proponent should revise the project design to demonstrate that the avoid, minimise and offset hierarchy has been adhered to, especially in consideration of the avoid and minimise principles outlined in Chapter 7 of the BAM to reduce the substantial impacts of the development particularly as a result of the upper reservoir.

Along with this the BDAR should update its avoid and minimise strategy and identify areas (not included within the SSD 4966 offset strategy) that link and compliment the already established offset areas and biodiversity enhancement areas. This will include proposing appropriate management strategies that compliment obligations already existing onsite and a mechanism for ensuring these areas as conserved in-perpetuity.

In addition, the BDAR should provide more details of how options and alternatives have been considered that could achieve the proposal’s objectives with a reduced environmental footprint.

Response

CPHR Request to Revise the Project Design

The BC Act outlines that a BDAR should assess the biodiversity value of the land in accordance with the BAM, and outline measures to avoid or minimise the impact of the proposed activity.

The BAM (DPIE, 2020a) requires a BDAR to “document the reasonable measures taken by the proponent to avoid or minimise clearing of native vegetation and threatened species habitat during proposal design” and to avoid or minimise prescribed impacts. The BAM outlines potential strategies to achieve this.

The Project demonstrably incorporates avoidance as required by the BC Act and the BAM, which is described in Section 9.1 of the BDAR and Section 6.5.3 of the EIS (Yancoal, 2024). These sections outline how the Project Disturbance Footprint has been purposefully designed and modified where reasonable to avoid impacts to areas with relatively higher biodiversity values. Moreover, Table 9.1 of the BDAR summarises alternative technologies, routes, and locations for all Project components to maximise avoidance (Table 4-4).

The Project comprises two key elements:

1. PHES; and
2. the Solar Farm.

The Solar Farm footprint comprises approximately 96% SMC disturbance areas or areas of non-native vegetation.

The PHES already reuses the existing Stratford East Dam to avoid and minimise impacts at the Lower Reservoir. The PHES design includes an underground tunnel, as opposed to overland pipes, to avoid and minimise impacts.

The Upper Reservoir cannot be located in any other location as it is entirely constrained by proximity to the Lower Reservoir (lateral difference) and topography (elevation difference). This is described in Section 9.1.3 of the BDAR and Section 2.13.2 of the EIS.

As such, impacts in the Upper Reservoir footprint cannot be avoided. Minimisation measures are included in the Project design, as described in the BDAR and the EIS.

As outlined in Part 7 of the BC Act, it is the role of the determining authority to take into consideration the likely impact on biodiversity values outlined in the BDAR.

The *Biodiversity Assessment Method 2020 Operational Manual – Stage 2* (DPE, 2023a) states:

Reasonable measures will vary with the circumstances of each proposal and may be somewhat subjective. This provides decision-makers with discretion to consider each proposal on merit.

Accordingly, it is the role of the determining authority to assess whether the avoidance incorporated for the Project is reasonable.

If Yancoal adopts the CPHR recommendations to avoid impacts in the Upper Reservoir, the Project would be unfeasible (i.e. there would be no Project). The consequences of not proceeding with the Project are outlined in Section 2.13.1 of the EIS, which outlines that none of the strategic benefits of the Project for NSW would be realised if the Project does not proceed.

In this regard, CPHR's recommendation does not take into consideration the merits of the Project, as the recommendation to redesign the Project does not consider the Project's strategic context, namely:

- The Project has been declared Critical State Significant Infrastructure by the NSW Government on the basis that it is essential for NSW. Pumped hydro projects provide reliable energy generation and capacity to supplement variable renewable energy (VRE) generation.
- The NSW Government has legislated 'Long Duration Storage' (LDS) targets, which the Project would contribute towards. A significant number of LDS projects will be required to achieve legislated targets, noting pumped hydro is the most recognised form of LDS. Alternative pumped hydro projects are likely to have similar or greater impacts to biodiversity when compared to the Project.
- The Project proposes beneficial reuse of the SMC, consistent with the *Hunter Regional Plan 2041* (DPE, 2022g) and *Practical guide: Post mining land use* (NSW Department of Regional NSW, 2023). The CPHR submission does not consider the clear environmental benefits of locating the Project at the SMC when compared to greenfield pumped hydro projects.

CPHR Request to Revise the Avoid and Minimisation Strategy

CPHR recommends:

the BDAR should update its avoid and minimise strategy and identify areas (not included within the SSD 4966 offset strategy) that link and compliment the already established offset areas and biodiversity enhancement areas. This will include proposing appropriate management strategies that compliment obligations already existing onsite and a mechanism for ensuring these areas as conserved in-perpetuity.

As above, the requested redesign of the Project to avoid impacts (particularly at the Upper Reservoir) would make the Project unfeasible.

It is incorrect for CPHR to state the Project includes existing SMC Biodiversity Offset Areas as part of its avoidance strategy. The SMC Biodiversity Offset Areas are shown on Figure 9.1 of the BDAR (repeated below as Plate 4-13), along with other regional features such as roads and railways. It is a statement of fact that the Project Disturbance Footprint is outside the existing SMC Biodiversity Offset Areas; these areas are shown to provide context to the BDAR reader as to why the Project Disturbance Footprint is shaped the way it is. "Areas omitted from impact" are separately shown on Plate 4-13, and these areas are those that have been avoided through the iterative Project design, as they are generally associated with areas of relatively higher biodiversity value.

The only overlap between "Areas omitted from impact" and the SMC Biodiversity Offset Areas is where the approved SMC ETL realignment corridors under SMC Development Consent SSD-4966 overlaps with a Biodiversity Offset Area, noting this overlap was assessed and approved for the SMC and is contemplated in the conditions of the Biodiversity Offset covenants. Despite this approved (but not developed) ETL realignment corridor, the Project has redesigned the ETL realignment to a shorter route, and therefore, no development in the Biodiversity Offset Area is required. If the Project had retained the SMC approved ETL realignment corridor, this would have been permissible under the existing terms of the Biodiversity Offset covenants, and on this basis is considered genuine avoidance for the Project.

It is also incorrect for CPHR to state that the Project would affect the 350 hectares (ha) of native revegetation for the SMC. As is described in the Rehabilitation Review (Attachment 6 of the EIS), the Project would result in a reduction in the size of the SMC rehabilitation area available for native vegetation (nominally, 350 ha to 305 ha). As such, the Project would take on the responsibility to rehabilitate the residual area required to achieve the total 350 ha of native ecosystem (45 ha [additional to any existing SMC offsets, and offsets for the Project]) on land currently mapped as non-native vegetation.

Potential areas for this rehabilitation are proposed and mapped in the Rehabilitation Review (Attachment 6 of the EIS). The Rehabilitation Review concludes that there would be no net reduction in revegetation, with the responsibility for 350 ha shared across the Project and the SMC.

Biodiversity Offset Areas proposed for the Project would target land adjacent to where there are other biodiversity obligations (e.g. under SMC Development Consent SSD-4966) to complement and enhance habitat connectivity in the region.

CPHR Request to Provide More Details of Options and Alternatives

Table 9.1 of the BDAR (repeated below as Table 4-4) breaks down the Project Disturbance Footprint into 19 sub-components, and describes for each sub-component how the Project has considered (where applicable):

- alternative modes/technologies;
- alternative routes;
- alternative locations; and
- alternative sites within a property.

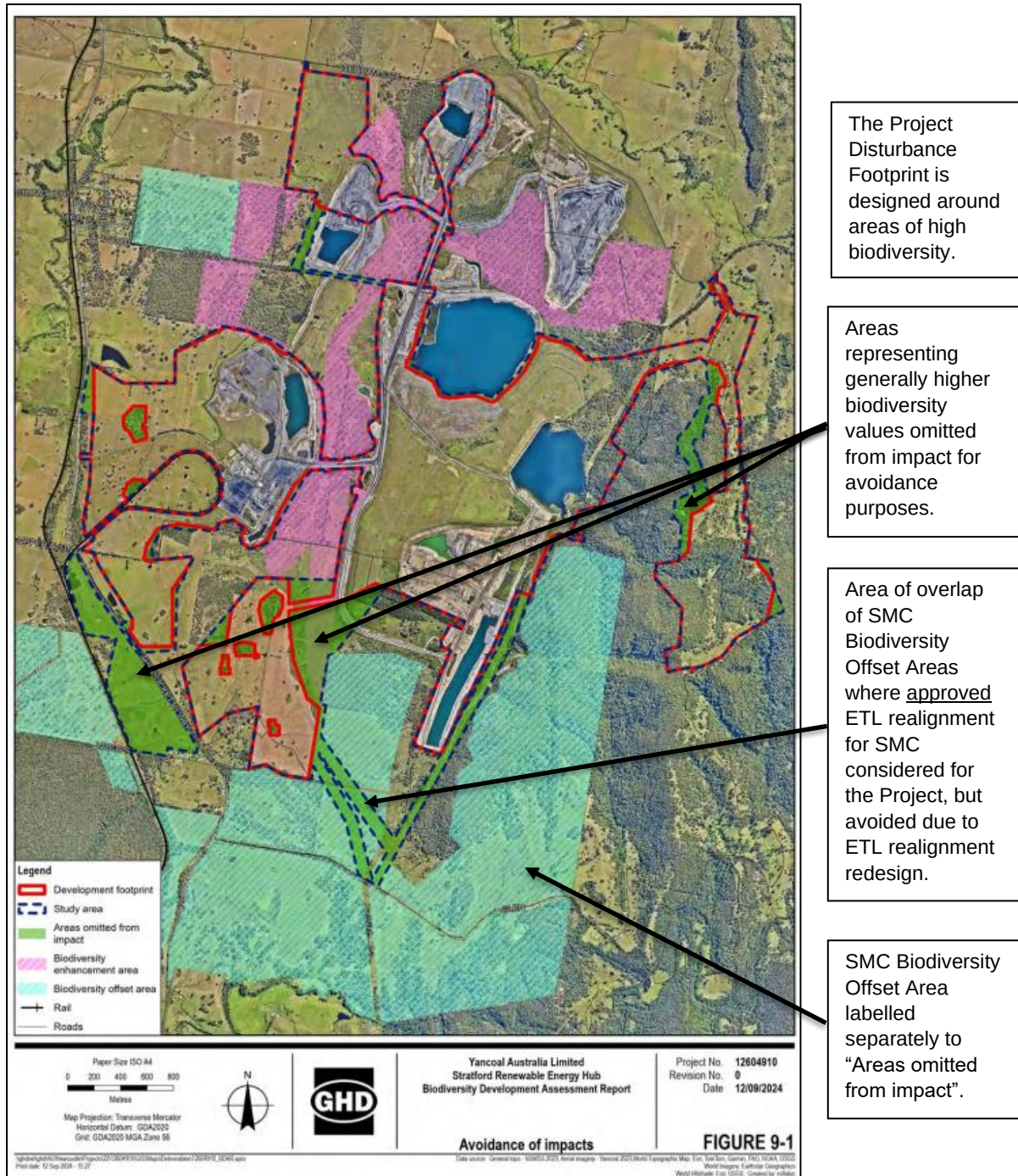


Plate 4-13: Figure 9-1 of the BDAR

Table 4-4
Copy of BDAR Table 9.1 Application of avoidance – SREH

Project component		Alternative modes/technologies	Alternative routes	Alternative location	Alternative sites within a property
1	Upper reservoir				
a	Inundation footprint	Alternative technology not applicable. Alternative (smaller) footprint would equate to smaller generation capacity of the PHES, and reduce its benefits in providing long duration storage (which has been considered “essential” to NSW by the NSW Government).	Not applicable.	There is no other feasible location for the upper reservoir, given this is determined by suitable topography, proximity to the lower reservoir and located on Yancoal-owned land.	As per ‘location’ column.
b	Dam Wall	Alternative technologies – that would reduce development footprint – are not available for the dam wall. The design of the dam wall is fundamentally driven by safety requirements and engineering specifications.	Not applicable.	There is no other feasible location for the upper reservoir dam wall, given this is determined by suitable topography.	As per ‘location’ column.
c	Spill Way	The spillway is required for dam safety reasons.	Not applicable.	An alternative to the location of the spillway was considered, but not selected as any extremely rare overflow events would be directed to a different catchment (being Dog Trap Creek). Accordingly, the spillway is located in the only remaining available location.	As per ‘location’ column.

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

Project component		Alternative modes/technologies	Alternative routes	Alternative location	Alternative sites within a property
d	Construction/laydown areas	The footprint of the upper reservoir traverses very steep slopes. Accordingly, construction areas, including laydown areas, are required beyond the inundation/dam wall footprint to enable a safe working environment, and allow for stockpiles, equipment parking, stabilisation of steep slopes, etc.	Not applicable.	The locations of construction/laydown areas are located immediately adjacent to the upper reservoir construction area. Alternative locations would require additional haul roads to connect to the construction area, and more vehicle movements.	As per 'location' column.
e	Water management areas	Water management areas beyond the inundation/dam wall footprint are required to control/manage clean water runoff via establishment of erosion and sediment controls.	Not applicable.	Not available – as determined by slope and flow paths.	Not applicable.
2	Tunnelled waterways	Avoidance of disturbance is incorporated into the design, as the alternative to tunnelled waterways is overland pipes, with greater disturbance.	Not required – as avoidance demonstrated through the design.		

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
3 <i>Upgraded access track to upper reservoir</i>	<i>Alternative technology not applicable – access to construction site required. Use of the existing track is not suitable from a safety perspective, and so upgrades required.</i>	<i>Alternative routes from the south, and a second access to the west considered, but not included in final project design to minimise disturbance. The proposed access track upgrades an existing track, minimising disturbance compared to a new track.</i>	<i>As per 'route' column.</i>	
4 <i>Construction/Laydown area (north-east)</i>	<i>This laydown area is required to stockpile soil and mulch from the upper reservoir area. It has been located in an area that has limited native vegetation.</i>	<i>Not applicable.</i>	<i>The location of this area has been designed to be as close to the access track to the upper reservoir as possible. Alternative locations not considered to be required given limited native vegetation.</i>	<i>As per 'location' column.</i>
5 <i>New access track between upper reservoir and lower reservoir</i>	<i>This track is required to facilitate construction traffic between the upper reservoir and lower reservoir. It also enables the use of existing SMC roads for upper reservoir construction traffic (maximising the use of previously disturbed areas through the SMC site). No alternative technologies are available.</i>	<i>The only credible alternative route would be via public roads, however, this is not proposed due to interaction with traffic on the public road network (particularly Wenham Cox Road).</i>	<i>The route has been selected on the basis of limited native vegetation, and also in consideration of slope (i.e. avoiding steeper areas to facilitate safe use of the road).</i>	<i>As per 'location' column.</i>

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
6	<i>Construction/Laydown area (east-west)</i> <i>An additional construction/laydown area is proposed due to its proximity to the new section of access track between the upper reservoir and lower reservoir to stockpile materials from construction activities.</i> <i>This area is largely located on nonnative vegetation.</i> <i>It would avoid the riparian corridor of the minor drainage lines, notwithstanding that these areas are shown in the disturbance polygon.</i>	<i>Alternative route/location for this area not proposed, given its proximity to the access road.</i>	<i>As per 'route' column.</i>	

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

	<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
7	Lower reservoir				
a	<i>Inundation footprint</i>	<i>Compared to a new reservoir, disturbance at the lower reservoir has been minimised through the reuse of the existing SED.</i> <i>The increased footprint of the lower reservoir (relative to the SED) is required to increase the SED capacity to match the capacity of the upper reservoir and maximise generation from the PHES.</i> <i>Alternative methods of increasing the capacity of the SED were considered, including additional excavation of the base of the SED, however, these were not proposed to optimise the elevation difference between the base of the lower reservoir and the elevation of the turbines in the powerhouse.</i>	<i>Not applicable.</i>	<i>The lower reservoir is in its optimal location.</i> <i>It minimises additional disturbance through reuse of the existing SED.</i>	<i>As per 'location' column</i>

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
<i>b</i>	<i>Clean water diversion system</i> <i>A new clean water diversion system is proposed upslope of the lower reservoir.</i> <i>The clean water diversion system is required to minimise the impact of the PHES to downstream surface water flow, as the clean water diversion system directs flows from the drainage lines upslope of the SED around the lower reservoir.</i> <i>The size of the clean water diversion system is determined by the upstream catchment, and slope (i.e. affects the disturbance area to construct a safe and stable diversion).</i> <i>The only credible alternative is no clean water diversion system. This was not incorporated as it would mean the lower reservoir is capturing clean water runoff, which would negatively affect downstream flows and affect the ability of the PHES to remain a 'closed system'.</i>	<i>No alternative routes/locations are available, as this is determined by flow path and slope.</i>	<i>As per 'route' column.</i>	

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
c	Spillway	As per upper reservoir spillway, this is required for dam safety reasons.	The route/location of the spillway is fixed, as the spillway must direct flows to the downstream environment in the extremely unlikely event of overflow from the lower reservoir.	As per 'route' column.
d	Construction/laydown areas	The area associated with the lower reservoir, powerhouse, ETL realignment and substation is a key construction area. This construction/laydown area is required for parking equipment, stockpiling material and other construction activities. It is largely located on areas previously disturbed by the SMC, hence additional impacts have been avoided through this design. It would avoid the riparian corridors of minor drainage lines, notwithstanding that these areas are shown in the development footprint.	Not applicable.	Not considered as this construction/laydown area is required to be proximal to the key construction area.

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
8	Relocated 132 kV ETL	A section of the existing Transgrid 132 kV ETL requires relocation to enable the safe construction of the powerhouse. The ETL would be relocated largely across areas previously disturbed by the SMC, hence additional impacts have been avoided through this design. The ETL would avoid the riparian corridors of minor drainage lines, notwithstanding that these areas are shown in the development footprint.	The SMC has a longer approved ETL realignment corridor, that crosses through SMC biodiversity offset areas (noting the offset areas were established on this basis). However, this longer route has not been adopted, and hence the approved impacts to the biodiversity offset areas would be avoided. The shorter realignment proposed for the Project reduces environmental impacts compared to the approved route	As per 'route' column.

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

	<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
9	Substation	The substation is required to export and import power from/to the Project. It is located on disturbed SMC land. Accordingly, no further consideration of avoidance is required.	Not applicable.		
10	Main site access	The existing SMC site access would be used for the Project. This avoids the need for construction of a new main access off the public road network. Accordingly, no further consideration of avoidance is required	Not applicable.		
11	Internal construction roads – solar	Internal roads required for construction traffic would use the existing internal SMC road network where possible. Minor new access roads are required to access solar areas outside the existing SMC footprint. These new roads have been designed with the shortest route possible to minimise disturbance and maximising non-native areas.	Alternative routes beyond existing routes not considered, as impacts are already avoided through the use of existing roads. Alternative routes for new access tracks would be longer and have greater impact as the shortest routes have been designed to avoid and minimise additional impacts.	As per 'route' column.	

Table 4-4 (continued)
Copy of BDAR Table 9.1 Application of avoidance – SREH

<i>Project component</i>	<i>Alternative modes/technologies</i>	<i>Alternative routes</i>	<i>Alternative location</i>	<i>Alternative sites within a property</i>
12	<i>Solar Farm</i> <i>The solar farm is proposed to provide a source of local and renewable energy to supply a portion of the energy required to charge the PHES.</i> <i>The solar farm has been designed to maximise the use of previously disturbed SMC land and areas of non-native vegetation, while avoiding impacts to existing SMC biodiversity offset properties.</i> <i>There are no other renewable energy types that could be feasibly developed on-site to provide a local supply of renewable energy.</i> <i>If the solar farm were not included as part of the Project, an equivalent amount of energy would need to be sourced from elsewhere, from a project that may have greater environmental impacts than the solar farm for the Project (e.g. if previously disturbed land such as at the SMC is not available to build an alternative energy supply on).</i>	<i>Not applicable.</i>	<i>The location of the solar farm has been optimised to maximise the use of previously disturbed land (both SMC and areas of non-native vegetation previously cleared for agriculture).</i> <i>Avoidance has been incorporated in the design, as larger wooded areas have been excluded from the footprint of the solar farm.</i>	<i>As per 'location' column.</i>

Source: GHD (2024c).

Note: SED = Stratford East Dam; kV = kilovolt.

2. SAIL risks

BCS considers that SAIL cannot be ruled out for the following species as the accredited assessor has not completed surveys in accordance with the Threatened Biodiversity Data Collection (TBDC) or relevant guidelines to confidently conclude that these species are absent from the site:

- *Southern Stuttering Frog (Mixophyes balbus)*
- *Large-eared Pied Bat (Chalinolobus dwyeri)*
- *Eastern Cave-bat (Vespadelus troungtoni)*

The Eastern Cave Bat was previously recorded onsite. Section 5.2 of the BAM requires that if any past surveys of the subject land have recorded the species, the species must be assessed in accordance with Subsections 5.2.2–5.2.6. Further assessment of this species is required given the past record and presence of suitable foraging and breeding habitat.

In the case of the Southern Stuttering Frog, BCS is concerned that the report author did not survey/inspect areas of most suitable breeding habitat within the site, without providing any clear reason why (refer to issue 17 for more detail).

The proponent may either complete further survey work, provide an expert report, revise an existing expert report or assume presence for these species. Suitable breeding habitat is present within the upper reservoir impact footprint in the form of rocky outcrops (microbats) and suitable water features (Stuttering Frog).

Recommended action:

The proponent should complete surveys, provide a report from a species expert to address BCS's comments or assume presence for relevant species.

As an expert report has already been prepared for Stuttering Frog BCS recommends that the proponent undertake surveys or assume presence for the species.

SAIL assessments should be prepared for these species if impacts to breeding habitat are predicted.

Response

Stuttering Frog

As outlined in the BDAR, GHD engaged in aural/visual survey efforts during the recommended survey period. However, survey effort could not be completed in the Lower Reservoir and Solar Farm areas because of time and access constraints (particularly lack of access to the site in wet weather causing safety issues). GHD assumed presence for the species in the BDAR as per the BAM.

GHD nominated Dr Frank Lemckert, as a 'Biodiversity Expert' in the Project region on 21 August 2024, however this was only confirmed by CPHR on 4 October 2024 (after EIS lodgement).

Dr Frank Lemckert found that there are no suitable breeding streams within or close to the Project Disturbance Footprint. As such, Dr Frank Lemckert concluded that the Stuttering Frog is not present within the Project Disturbance Footprint or immediate surrounds, and therefore a species polygon is not required.

It is noted that Dr Frank Lemckert's pedestrian access tracks are not presented on a figure in his expert reports. Confirmation that Dr Frank Lemckert walked a section of Unnamed tributary 1 (from the Upper Reservoir downstream) is provided as a response to CPHR Issue 15 (in which CPHR provide additional recommendations on frog survey coverage, rather than Issue 17 which addresses other listed matters) and in Attachment 6.

CPHR provides no evidence for its statement “suitable breeding habitat is present within the upper reservoir impact footprint” nor the qualifications of the persons making this statement (to allow comparison with the expert qualifications of Dr Frank Lemckert).

In summary, the conclusions of Dr Frank Lemckert – the CPHR accredited expert for the Stuttering Frog – should be relied upon. This species is not a SAIL species for the Project. Therefore, a SAIL assessment is not required for the Stuttering Frog, nor is a species polygon required to be prepared.

Large-eared Pied Bat and Eastern Cave Bat

CPHR claims “suitable breeding habitat is present within the upper reservoir impact footprint in the form of rocky outcrops” with no survey effort or technical justification to support this statement.

This is not the conclusion of the Accredited Assessor. In summary:

- GHD engaged in survey efforts across the Project Disturbance Footprint as per the BAM survey guidelines, undertaking habitat assessment using a combination of on-ground survey and review of topographic/Light Detection and Ranging (LiDAR) data.
- No areas suitable for breeding have been identified within the Project Disturbance Footprint by the ecologists.
- The closest area of potential breeding habitat is a rocky outcrop located approximately 250 m from the Project Disturbance Footprint.
- Acoustic surveys were undertaken within the recommended survey period.
- No Eastern Cave Bat individuals were recorded within the study area.
- The Large-eared Pied Bat was recorded, and a species polygon was prepared accordingly for potential foraging habitat (i.e. the conclusion remained that no breeding habitat is present). On the basis that the area of potential breeding habitat is more than 100 m from the Project Disturbance Footprint, no SAIL assessment was prepared.

Further detail is provided below.

Large-eared Pied Bat

The ‘*Species credit threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method*’ (DPIE, 2021) outlines:

Passive acoustic detection may be used; however, this method does not allow for reproductive status to be identified. If acoustic detectors are the only survey method used and the target species is detected, breeding must be assumed, and all potential breeding habitat mapped as breeding habitat.

Potential breeding habitat for this species is defined by DPIE (2021) as (emphasis added):

All potential habitat on the subject land where the subject land is within 100 metres of caves, scarps, cliffs, rock overhangs and disused mines.

Acoustic detectors recorded the Large-eared Pied Bat within the Project Disturbance Footprint. However, GHD ruled out potential breeding habitat within 100 m of the Project Disturbance Footprint on the basis that there are no suitable rocky features (per the definition above). As no potential breeding habitat is considered present, there is no requirement to assume breeding habitat.

A SAI assessment is only required under the BAM if there is potential breeding habitat, as outlined below (DPIE, 2021) (emphasis added):

Currently, the breeding habitat of two bat species is listed as a potential SAI (see below). In accordance with Section 1.5 of this guide breeding habitat is considered present on the subject land if there is 1) potential breeding habitat, AND 2) breeding individuals of the target species.

As no breeding habitat (i.e. a suitable rock feature and all habitat within a 100 m radius of that feature) is considered present within the Project Disturbance Footprint, no SAI assessment is required.

As described above, the closest potential breeding habitat identified is the rocky outcrop located approximately 250 m from the Project Disturbance Footprint. A species polygon and associated credits for potential impacts to foraging habitat was prepared around this rocky outcrop for the BDAR, as per Figure E-20 of the BDAR (reproduced as Plate 4-14).

Eastern Cave Bat

For the Eastern Cave Bat, no individuals were recorded via the acoustic surveys. Therefore, there is no requirement to assume breeding individuals on the Project Disturbance Footprint.

Breeding habitat for the Eastern Cave Bat requires caves or human-made structures (e.g. tunnels and abandoned mine shafts).

As per the habitat assessment, no suitable caves or human-made structures are located on site, including the rocky outcrop located 250 m away from the Project Disturbance Footprint. It is noted that GHD conducted surveys of the human-made structures proximal to the Project (e.g. abandoned houses and culverts) and no signs of use were recorded.

A SAI assessment is not required for the Eastern Cave Bat, nor is a species polygon required to be prepared.

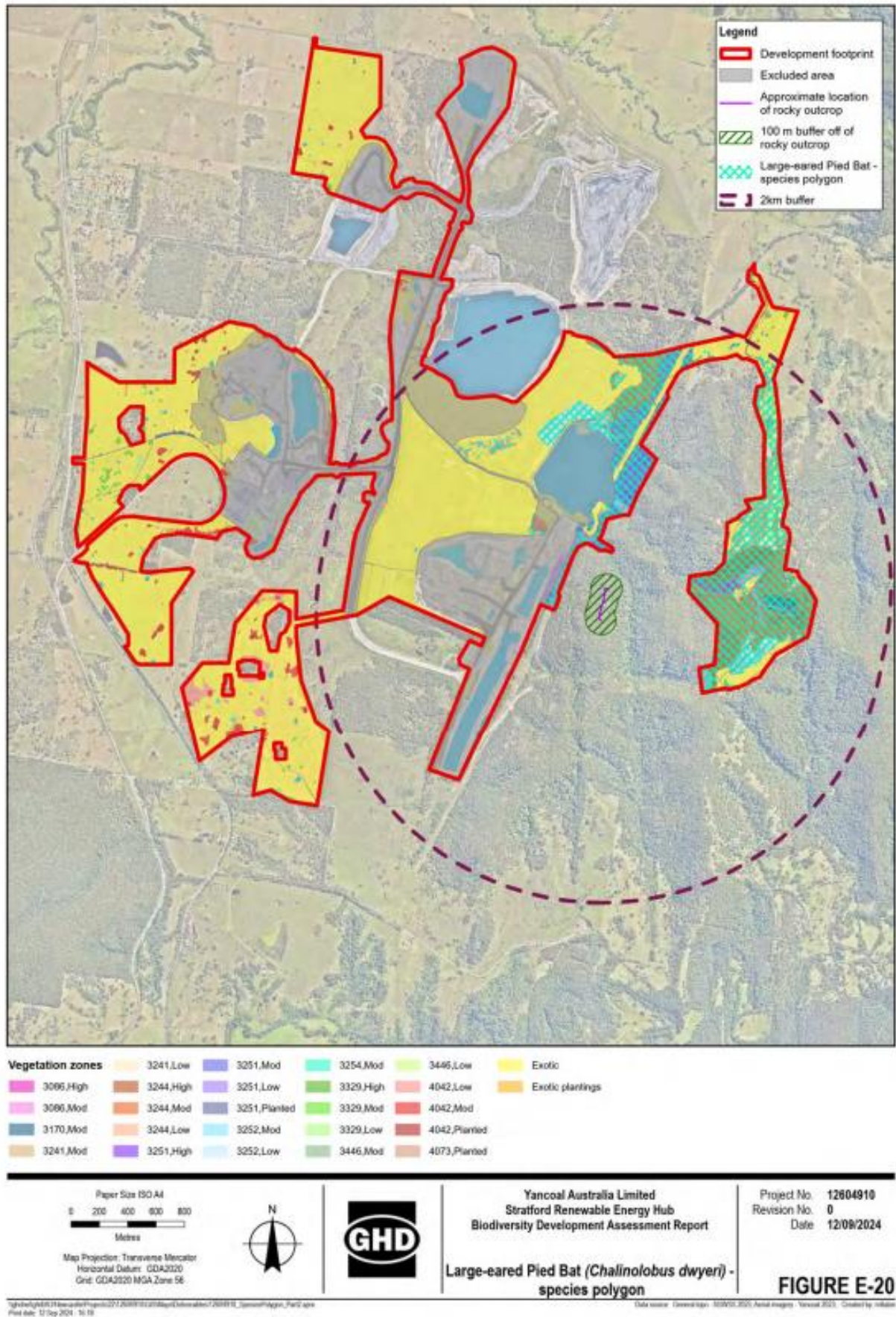


Plate 4-14: Figure E-20 of the BDAR

3. Prescribed Impacts

The BDAR does not adequately identify and assess the wide range of prescribed impacts that will result from the proposal. The BDAR is inconsistent throughout in its conclusions in relation to these impacts and plays down the severity of impacts on biodiversity.

Further information is required from the proponent to describe any prescribed impacts that the proposal will have on surrounding threatened entities and habitats in accordance with section 8.3 of the BAM and section 4.3 of the BAM operational Manual – Stage 2.

The following prescribed impacts have been identified as occurring/ likely to occur both within and outside the development footprint.

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

Multiple areas of potential threatened species breeding habitat in the form of rocky outcrops exists within and in proximity to the development footprint. Fieldwork by BCS also identified a number of additional rocky outcrops and rockfaces containing cracks, voids and crevices not included within the BDAR. Where the BDAR has identified these important areas, it does not adequately assess the importance of these features, their role in the life cycle of threatened species and does not acknowledge the impacts of removing these features.

Along with this, the assessor has not provided any evidence to demonstrate that they have completed adequate habitat assessment to conclude that other features of this nature are absent from the surrounding landscape. Further survey effort is required to identify all areas containing these features that are in proximity to the development and to then confidently conclude that these features are not being used as breeding habitat by threatened entities. Maps and shapefiles should be provided to demonstrate evidence of adequate assessment and findings.

The BDAR has identified a significant rocky outcrop approximately 80 metres (m) long and 30 m high outside the development footprint. The BDAR states that as this outcrop is located more than 100 m from the development footprint, there are no prescribed impacts expected for this habitat. However, the assessor has not considered or adequately assessed the impacts from blasting.

Human-made structures

Abandoned structures, such as homesteads, sheds and a silo are present in the development footprint, as well as four culverts that could be suitable habitat.

Further survey effort is required to confidently conclude that these structures are not being used as breeding habitat by microbats.

Habitat connectivity

The BDAR has not adequately assessed the potential impacts on connectivity within the surrounding landscape including impacts to the adjacent National Park. The direct and indirect impacts have the potential to impact how species move through and utilise the landscape, specifically for less mobile and flora species and species that rely on hydrological features for dispersal.

*The BDAR acknowledges construction of the upper reservoir may fragment the Craven Grey Box (*Eucalyptus largeana*) and Scrub Turpentine (*Rhodamnia rubescens*) population into two or more sub populations, could impact the breeding cycles of species, and would increase the risk and energy cost of moving between patches of habitat. It also identifies that amphibian species using the unnamed tributary would be restricted to the downstream section of the tributary once the dam wall is constructed.*

The conclusions within the BDAR are contradictory stating that impacts to connectivity is unlikely to significantly disrupt the life cycles of any native species long term and that impacts on habitat connectivity are unlikely to have significant residual impacts on any native species life cycles.

BCS request further information to demonstrate this conclusion with reference to peer-reviewed and other reliable sources.

Waterbodies, water quality and hydrological processes

The BDAR states that it is expected that all waterbodies in the development footprint will be removed as a part of the proposal. The proposal will impact numerous ephemeral watercourses that run through or around the boundary of the development, 10 artificial dams located in the upper reservoir and two steep, ephemeral tributaries (unnamed tributary 1 and 2) drain from the upper reservoir footprint northwest. Impacts also include removing approximately 36 farm dams in the solar farm and lower reservoir footprints. Another 11 waterbodies are also likely to be removed as part of closure works associated with the previous approval. The waterbodies within the development footprint, including larger artificial dams, cover an approximate combined area of 3.24 ha.

The impact also includes damming waterbodies, which will result in impacts to flow regimes, polluted water being released and introduction of a polluted waterbody to the landscape (the upper reservoir).

Recommended action:Prescribed impacts

The proponent should ensure that all prescribed impacts have been identified and adequately assessed in accordance with the BAM, the BDAR is updated and data provided to demonstrate evidence of this.

The location of all prescribed impacts, including polygons identifying the extent of the impact, should be mapped on the Site and Location maps included in the BDAR.

Sections 7.1 and 7.2 of the BAM state that a BDAR should describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through the proposal. Prescribed impacts must be assessed as part of the Biodiversity Offset Scheme (BOS), as per clause 6.1 of the Biodiversity Conservation Regulation 2017. Section 8.6 of the BAM states that biodiversity credits may be retired to mitigate the impacts of a proposal on areas of adjacent native vegetation, TECs and/or threatened species, or their habitat adjacent to the subject land.

As the proposal does not offer mitigation measures to prevent impacts to threatened species connectivity within the subject land footprint or impacts from removing waterbodies, consideration should be given to using biodiversity credits to offset indirect and prescribed impacts, as per 8.6 (1) of the BAM.

For residual indirect and prescribed impacts, the BAM does not provide a standard method for calculating offset requirements however Section 4.5.11 of the BAM Operation Manual – Stage 2 provides examples of how residual indirect or prescribed impacts can be addressed.

BCS recommend that species polygons are extended for those entities using these features and to include areas of suitable habitat which occurs within the external subject land boundary which will become isolated as a result of the proposal, as per 8.6 (1) of the BAM.

The BDAR should be updated to include a detailed approach for estimating an offset for the residual prescribed impacts from the proposal. All amendments to species polygons must be reflected within the BDAR and BAM-C, with updated shapefiles submitted.

Waterbodies, water quality and hydrological processes

The following further information should be included within the BDAR:

- A riparian assessment should be completed of all waterbodies that will be subject to direct and indirect impacts from the proposal. This includes waterbodies both on and offsite. The assessment should ground truth, map, provide stream order and details of habitat features in accordance with the BAM. Maps and shapefiles should be provided as evidence that the assessment is adequate assessment and the findings are justifiable.

- *The BDAR does not adequately identify and assess the impacts of flow reduction, changes to water chemistry, stream form characteristics, and silt loads to downstream ecosystems and threatened species habitats. The BDAR and The Surface Water Impact Assessment conclude that impacts will be minor however, any change in the structure and composition to a watercourse can have effects on the surrounding environments and habitats. Given this the assessor needs to reference peer reviewed literature and other reliable sources to justify concluding that impacts will be minor, and also to support the statements about the species found or assumed to use these habitats.*
- *An emergency valve in the dam wall of the upper reservoir requires intermittent opening every 6-12 months which would result in approximately 1 megalitre of poorer quality water (sourced from the mine) being released into unnamed tributary 1 water body. This has the potential to alter stream processes, stream structure and sediment loads as well as impact riparian and threatened species habitats. The assessor has concluded that impacts will be minor however, these conclusions need to be supported by adequate assessment with reference to peer reviewed literature and other reliable sources. The assessor also needs to assess the impacts to species found or assumed to utilise these habitats.*
- *Further information is required to understand the impacts of releasing polluted water on downstream environments, threatened entities and habitats. The BDAR should provide additional information and assess water quality impacts associated with the initial fill of the upper and lower reservoirs, including identifying any pollutants and contaminants and any impacts from introducing these to the existing environment. The assessment should refer to peer reviewed literature and other reliable sources.*

Further information is required to understand and assess the impacts of groundwater drawdown on vegetation and threatened species habitats. The BDAR concludes that that impacts are unlikely to be significant however it does not provide any details to support this. The BDAR does not show that all areas of vegetation, waterbodies and threatened species habitat within the vicinity of the proposed drawdown have been surveyed for/ identified. The BDAR acknowledges that areas of regionally mapped low, medium or high potential Groundwater Dependent Ecosystems (GDEs) are within the predicted area of predicted drawdown up to 2 m and concludes that long-term impacts on GDEs are unlikely, considering that operational drawdown is likely to be negligible. It is not clear how the assessor has reached this conclusion. All groundwater associated features should be surveyed for and specifically assessed for groundwater impacts.

Response

The BDAR identifies and assesses prescribed impacts in Section 8 and Sections 9.5.1 to 9.5.6.

The locations of the relevant prescribed impact features in the Project Disturbance Footprint are mapped in the BDAR , as per Table 4-5 below.

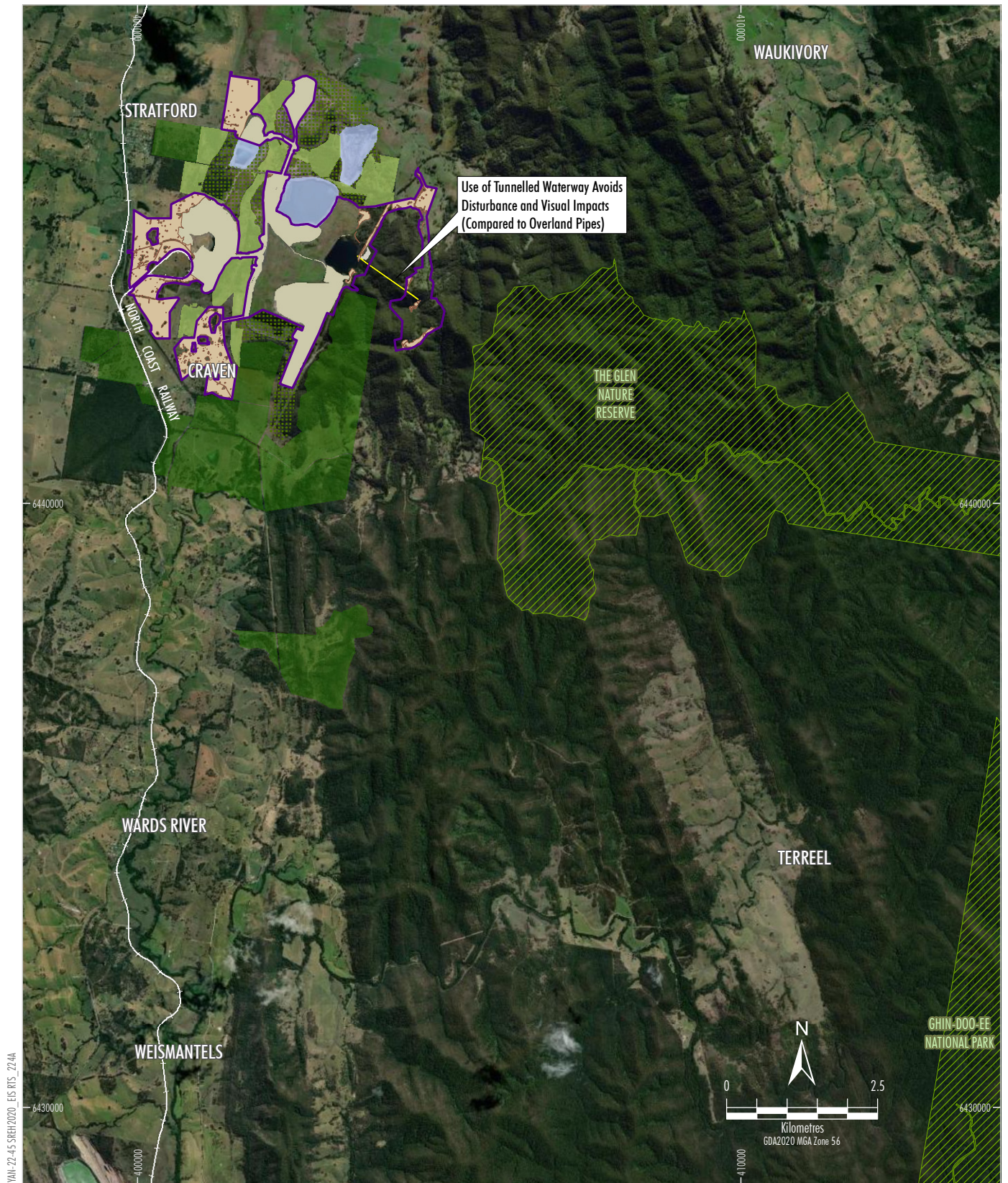
Clause 6.1 (2) of the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation) outlines that an assessor may choose to offset additional biodiversity impacts (defined in the BC Regulation as prescribed impacts). As such, it is not a requirement to offset prescribed impacts.

Table 4-5
BDAR References to Prescribed Impact Features Required by the BC Regulation and the BAM

BC Regulation	BAM	Section in BDAR	Figure in BDAR
(1) The impacts on biodiversity values of the following actions are prescribed (subject to subclause (2)) as biodiversity impacts to be assessed under the biodiversity offsets scheme— (a) the impacts of development on the following habitat of threatened species or ecological communities—	1. Prescribed additional biodiversity impacts (prescribed impacts) must be assessed as part of the BOS, as per clause 6.1 of the BC Regulation. Such prescribed impacts (including direct and indirect impacts) are impacts: a. on the habitat of threatened entities including:	-	-
(i) karst, caves, crevices, cliffs and other geological features of significance,	i. karst, caves, crevices, cliffs, rocks and other geological features of significance, or	Table 9.6	Figures 3.10 and 9.2
(ii) rocks,			
(iii) human made structures,	ii. human-made structures, or	Table 9.7	Figure 9.2
(iv) non-native vegetation,	iii. non-native vegetation	Table 9.8	Figure 5.1
(b) the impacts of development on the connectivity of habitat of threatened species that facilitates the movement of those species across their range,	b. on areas connecting threatened species habitat, such as movement corridors	Table 9.9	Figure 4.1
(c) the impacts of development on movement of threatened species that maintains their lifecycle,	N/A	Section 6.3	N/A
(d) the impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development),	c. that affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)	Table 9.10	Features shown on Figures 4.1, 3.10 and 9.2
(e) the impacts of wind turbine strikes on threatened species of animals or on animals that are part of a threatened ecological community.	d. on threatened and protected animals from turbine strikes from a wind farm	N/A	N/A
(f) the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.	e. on threatened species or fauna that are part of a TEC from vehicle strikes.	Table 9.11, Section 9.5.6	Figure 9.2

In the context of the Project, it is justified that no offset credits are proposed for prescribed impacts, given the following:

- ***Impacts on the following habitat of threatened species or ecological communities - karst, caves, crevices, cliffs and other geological features of significance, rocks, human made structures, non-native vegetation:***
 - These features existing within and surrounding the Project Disturbance Footprint have been identified in the BDAR (refer to Table 4-5 for cross references to BDAR figures).
 - Some of these features, which may support habitat of threatened species or ecological communities, are located within the Project Disturbance Footprint. Accordingly, species polygons have already been prepared for direct disturbance to any such habitat features due to the associated PCTs, and offset credits proposed accordingly.
 - Beyond the Project Disturbance Footprint, the only credible impact mechanism that would affect these features, to the extent that impacts occur to any habitat for threatened species, is vibration from construction blasts. However, given the small size of blasts (i.e. blasts are designed to construct a maximum 7 m diameter underground tunnel), it is implausible that these blasts would materially damage these features. This is also supported by the fact that any such features would have been subject to blasting from the SMC, which assessed blasts orders of magnitude higher than those proposed for the Project construction (refer to Section 6.12.3 of the EIS).
- ***Impacts of development on the connectivity of habitat of threatened species that facilitates the movement of those species across their range; and the impacts of development on movement of threatened species that maintains their lifecycle:***
 - Impacts to connectivity and movement are assessed in the BDAR.
 - No offset credits are proposed as the Project is located on the edge of an extensive and contiguous vegetated ridge, that extends the length of the Gloucester Valley (Figure 4-12). The Project would not isolate vegetated areas, maintaining connectivity and movement around the Project (the Upper Reservoir in particular).
 - Indeed, the Project design avoids impacts to connectivity due to the proposal to use underground tunnelled waterways, as opposed to overland pipes, for the PHES.
- ***The impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development:***
 - Impacts to water quality, water bodies and hydrological processes are addressed in the BDAR.
 - Areas of direct disturbance to water bodies have been considered in the establishment of species polygons and associated offset credits (e.g. the species polygon for the Southern Myotis [*Myotis macropus*] due to its potential use of farm dams that may be decommissioned for the Project).
 - Beyond the Project Disturbance Footprint, no material impacts to water resources are predicted by HydroBalance (2024) downstream of the Project, primarily as the PHES is designed as a closed system with a clean water diversion system around the Lower Reservoir. Notwithstanding, there may be minor localised increased flood levels and velocities within and adjacent to the solar panel fields under extreme flood events. However, these impacts are not predicted to propagate more than 1 km downstream of the Solar Farm and under conditions where there would be extensive flooding irrespective of the Project (HydroBalance, 2024).



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LEGEND

- Project Disturbance Footprint
- NPWS Estates
- Non-native Vegetation
- Tunnelled Waterway
- SMC Development Consent SSD-4966 Components
- Biodiversity Offset Area
- Indicative Reconfigured Biodiversity Enhancement Area
- SCPL Rehabilitation
- Native Vegetation
- Final Void

Source: NSW Spatial Services (2023); Yancoal (2023)



YANCOAL - STRATFORD RENEWABLE ENERGY HUB

Contiguous Vegetation in
Gloucester Valley

Figure 4-12

- For Unnamed tributary 1, which is located immediately downstream of the Upper Reservoir, the Project would reduce its uppermost catchment area (i.e. the Upper Reservoir footprint would no longer contribute to downstream flows). HydroBalance (2024) predicts the change in flow days to reduce from 19.7% to 13.3% of the year (under average rainfall).
- It is likely the riparian corridor of Unnamed tributary 1 contains the threatened ecological community (TEC) Lower North Hinterland Riparian Dry Rainforest (PCT 3086). However, with the Project, the stream would still flow following rainfall (albeit on fewer days) and the vegetation would receive direct rainfall and up-catchment runoff. Monitoring of this vegetation is proposed in Section 9.2 of the BDAR and Section 6.5 of the EIS to confirm no significant change to its composition or extent downstream of the Project Disturbance Footprint.
- It should be noted the Project no longer requires the originally proposed low level outlet for the Upper Reservoir dam wall, and accordingly water releases during safety maintenance testing is no longer required (refer to Section 3.2.1 of this Submissions Report).
- ***Impacts of wind turbine strikes on threatened species of animals or on animals that are part of a threatened ecological community:***
 - Not applicable to the Project.
- ***Impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community:***
 - As concluded in the BDAR, the Project would not materially increase the risk of vehicle strike.
 - Vehicle strike rates are expected to be relatively low in the heavily industrialised landscape in the Lower Reservoir and Solar Farm footprint. Risk of vehicle strike is higher in the Upper Reservoir footprint due to the adjacent connected vegetation. As such, mitigation measures such as speed limit restrictions would be outlined in the CEMP.
 - Construction of the Solar Farm and Lower Reservoir would likely result in a similar risk of vehicle strike to that associated with the SMC. This risk is expected to significantly decrease during the Project operational phase.
 - These risks would be mitigated through signposting and enforcement of appropriate speed limits along internal roads. Therefore, the BDAR concludes vehicle strikes are unlikely to generate a significant residual impact on threatened species.

Waterbodies, Water Quality and Hydrological Processes

CPHR states:

- *A riparian assessment should be completed of all waterbodies that will be subject to direct and indirect impacts from the proposal. This includes waterbodies both on and offsite. The assessment should ground truth, map, provide stream order and details of habitat features in accordance with the BAM. Maps and shapefiles should be provided as evidence that the assessment is adequate assessment and the findings are justifiable.*

The BAM does not require a riparian assessment to be prepared. Rather, rivers, streams and estuaries (including riparian buffers) are required to be identified as a landscape feature in accordance with Section 3.1.3 of the BAM, and the assessor must consider the impacts of the proposals on these features.

A Surface Water Assessment (HydroBalance, 2024), Aquatic Ecology Impact Assessment (GHD, 2024e), and Groundwater Impact Assessment (SLR, 2024a) were prepared for the Project. Relevant findings were incorporated into the BDAR and supported the conclusions on riparian vegetation summarised in the BDAR (Sections 4.2.3, 9.5.5, and 9.6) and the EIS (Sections 6.3.3 and 6.6.3).

Waterway features relevant to the Project are identified in Sections 4.1 and 4.2.3 of the BDAR and the prescribed impacts to these features are described in Section 9.5.5 of the BDAR. The BDAR outlines that there is limited remaining riparian vegetation across the Project Disturbance Footprint (particularly the Solar Farm). The Project has been designed to avoid removal of any remaining native vegetation along watercourses in the Solar Farm footprint, and riparian buffer zones have been outlined as per the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022e) (Figure 6-9 of the EIS).

Downstream impacts to waterways have been avoided and minimised through the Project design, where the PHES would function as a closed system. Refinement of the Project to remove the low level outlet means the maintenance releases no longer form part of the Project.

Notwithstanding, flows from Unnamed tributary 1 would be reduced with the construction of the Upper Reservoir dam wall. There would be a reduction in flow days in Unnamed tributary 1 located between the upper and lower reservoirs, but limited change in surface flow downstream of the Project. At Unnamed tributary 1, there would be a reduction in minimum flow days per year from 19.7% (existing) to 13.3% (with the Project) of the year (under average rainfall); flows into the catchment areas between the upper and lower reservoirs would continue to occur during the operational phase of the Project due to direct rainfall runoff and runoff downstream of the Upper Reservoir dam wall.

Mitigation, management, and monitoring measures would be described in the Surface Water Management Plan (sub-plan of the CEMP and OEMP), which would be developed prior to construction.

A Biodiversity Management Plan would be prepared for the Project which would form a sub-plan of the CEMP and OEMP for the Project. This would include monitoring and adaptive management of the Lowland Rainforest species along Unnamed tributary 1 between the upper and lower reservoirs to achieve a performance measure of no material change to vegetation distribution and composition.

Flood-dependent TECs, TECs that may be maintained by hydrological processes, and those associated with higher water availability that are present in the Project Disturbance Footprint are outlined in Section 9.5.5 of the BDAR. Additionally, the BDAR describes the riparian vegetation which would be removed due to the construction of the Upper Reservoir, namely the Lower North Hinterland Riparian Dry Rainforest vegetation community (PCT 3086). Offsets have been proposed for this PCT in Section 11.2.1 of the BDAR.

Surface Water Impacts on Downstream Ecosystems

CPHR states:

- The BDAR does not adequately identify and assess the impacts of flow reduction, changes to water chemistry, stream form characteristics, and silt loads to downstream ecosystems and threatened species habitats. The BDAR and The Surface Water Impact Assessment conclude that impacts will be minor however, any change in the structure and composition to a watercourse can have effects on the surrounding environments and habitats. Given this the assessor needs to reference peer reviewed literature and other reliable sources to justify concluding that impacts will be minor, and also to support the statements about the species found or assumed to use these habitats.*

Downstream impacts have been avoided through the Project design, namely through designing the PHES system as a closed system and incorporating a clean water diversion system.

The conclusions of the Surface Water Assessment are based on modelling undertaken by HydroBalance (2024).

The Project is unique on the basis that it proposes a dam at the top of a catchment where there is no permanent flow. That is, there are limited precedents to this type of development, and case studies related to dams/weirs on perennial rivers are contextually different to the Project. Unnamed tributary 1 would continue to receive rainfall runoff downstream of the Upper Reservoir, which would be diverted north via the clean water diversion system to avoid reporting to the Lower Reservoir. As such, the impacts to surface water as a result of the Project would be minor.

Residual impacts to Unnamed tributary 1 are summarised above.

Impacts Associated with Maintenance Releases

CPHR states:

- *An emergency valve in the dam wall of the upper reservoir requires intermittent opening every 6-12 months which would result in approximately 1 megalitre of poorer quality water (sourced from the mine) being released into unnamed tributary 1 water body. This has the potential to alter stream processes, stream structure and sediment loads as well as impact riparian and threatened species habitats. The assessor has concluded that impacts will be minor however, these conclusions need to be supported by adequate assessment with reference to peer reviewed literature and other reliable sources. The assessor also needs to assess the impacts to species found or assumed to utilise these habitats.*
- *Further information is required to understand the impacts of releasing polluted water on downstream environments, threatened entities and habitats. The BDAR should provide additional information and assess water quality impacts associated with the initial fill of the upper and lower reservoirs, including identifying any pollutants and contaminants and any impacts from introducing these to the existing environment. The assessment should refer to peer reviewed literature and other reliable sources.*

Yancoal has outlined a Project refinement following review of the engineering requirements, which removes the low level outlet in the Project design. Accordingly, the low level outlet, and the impacts to downstream waterways associated with maintenance releases, no longer form part of the Project. This refinement is described in Section 3.2.1.

Groundwater Drawdown Impacts on Vegetation and Threatened Species Habitat

CPHR states:

- *Further information is required to understand and assess the impacts of groundwater drawdown on vegetation and threatened species habitats. The BDAR concludes that that impacts are unlikely to be significant however it does not provide any details to support this. The BDAR does not show that all areas of vegetation, waterbodies and threatened species habitat within the vicinity of the proposed drawdown have been surveyed for/ identified. The BDAR acknowledges that areas of regionally mapped low, medium or high potential Groundwater Dependent Ecosystems (GDEs) are within the predicted area of predicted drawdown up to 2 m and concludes that long-term impacts on GDEs are unlikely, considering that operational drawdown is likely to be negligible. It is not clear how the assessor has reached this conclusion. All groundwater associated features should be surveyed for and specifically assessed for groundwater impacts.*

The conclusions of the BDAR regarding groundwater are based on the modelling and conclusions of the Groundwater Impact Assessment (SLR, 2024a) prepared for the Project. The Groundwater Impact Assessment predicted a 2 m drawdown of regional groundwater levels up to 1.1 km from the Project during the construction phase, while the tunnel remains unlined. This may result in a temporary reduction in baseflow to some ephemeral drainage lines, however, this is unlikely to have a significant impact on stream flow. Operational drawdown is likely to be negligible and groundwater levels are expected to recover.

The modelled drawdown represents a depressurisation of the groundwater system around the tunnelled waterway, which would result in limited impact at water table elevation (i.e. water table drawdown of generally 1 m or less). However, in reality, drawdown would be offset by inflows parallel to the tunnel alignment through natural upgradient lateral flow.

Plate 4-15 is a cross-section of the tunnel (facing the Lower Reservoir) showing the diameter of the tunnel in the context of the geology surrounding the Project. This shows how insignificant the Project's stress on the groundwater system would be (i.e. construction of the tunnel, prior to it being concreted-lined and steel-lined) compared to the surrounding groundwater system.

On the basis of the conclusions of the Groundwater Impact Assessment (SLR, 2024a), no further investigation of Groundwater Dependent Ecosystems (GDEs) is required.

As outlined in Section 1.6 of the EIS, the Groundwater Impact Assessment (SLR, 2024a) was peer-reviewed by HydroAlgorithmics Pty Ltd. This is included as Appendix D to the Groundwater Impact Assessment.

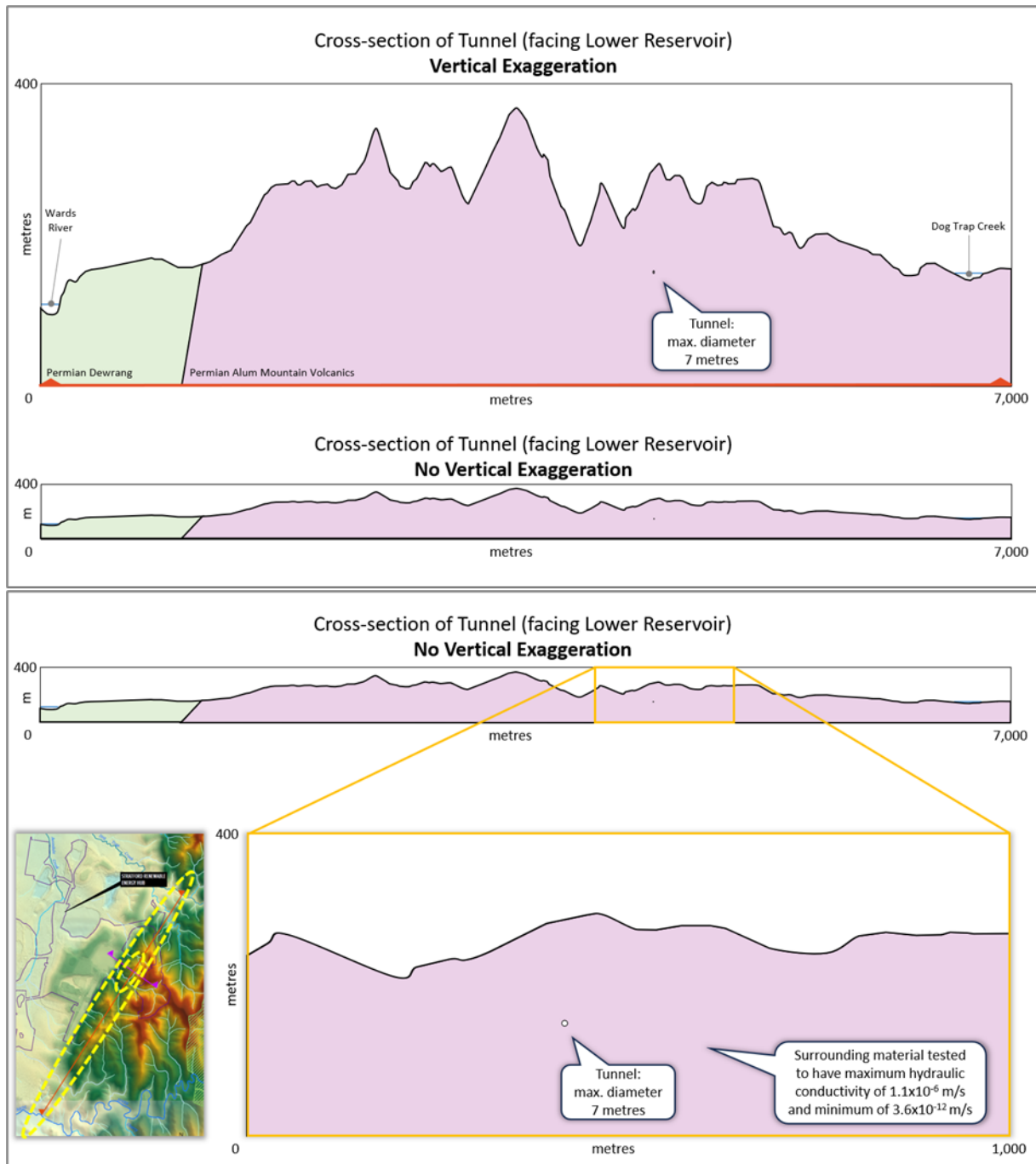


Plate 4-15: Cross-section of Tunnel (Facing Lower Reservoir)

4. Indirect Impact Assessment

The BDAR does not adequately identify and assess the wide range of indirect impacts that will result from the proposal. Further information should be provided to describe any indirect impacts that the proposal will have on the surrounding areas and habitats as required by Section 8.2 of the BAM and Section 4.2 of the BAM Operational Manual – Stage 2. The assessor should consider the following issues:

- *Edge effects will extend into areas of high-quality vegetation and threatened species habitats beyond the boundary of the development footprint. This will likely include but is not limited to exotic species incursion, changes to Plant Community Type (PCT) assemblages, localised change in microclimate e.g. changes in temperature, wind, light and humidity.*
- *Localised changes in species interactions such as pollination and seed dispersal.*
- *Changes in hydrology that could affect vegetation assemblage and habitat. Specifically, the proposal has the potential to indirectly impact ecological communities and threatened species habitats supported by unnamed tributary 1 outside the development footprint through altered hydrology.*
- *The assessor has not adequately identified or assessed the impacts of noise and vibration particularly from blasting in the BDAR. Of particular concern are impacts to offsite breeding habitat for microbats that may be present but have not been adequately surveyed for. Impacts from blasting has the potential to impact species particularly during the breeding season as well as the potential to structurally impact features such as caves and rock features. The Outer Envelope Noise Contour dB(A) Map (Appendix C) within the Noise and Vibration Impact Assessment indicates construction noise impacts for the project. The table suggests significant noise impacts with upper limits of 124 dBA. These limits have the potential to significantly harm wildlife subjected to these levels. The BDAR should be updated to acknowledge and assess impacts from noise levels above 40 dB(A).*
- *Indirect impacts from releasing contaminated water and introducing a contaminated permanent reservoir to the landscape and the indirect impacts of this on species and habitats.*
- *Loss of hollow-bearing trees.*

Recommended action:

The proponent should ensure that all indirect impacts are identified and adequately assessed in accordance with the BAM. Indirect impacts should be included within mapping and associated data to show both the direct and indirect impact zones.

Section 8.6 of the BAM states that biodiversity credits can be used to mitigate or offset indirect or prescribed impacts from the proposal. The proponent should consider retiring biodiversity credits as a measure to mitigate the indirect impacts of the proposal. Section 4.5.10 of the BAM Operation Manual – Stage 2 sets out the best approach for estimating an offset for the residual indirect impact, which is:

- *Mapping an area of vegetation adjacent to an existing vegetation zone as a management zone. The area of the management zone can be defined by a set distance (e.g. X m buffer) from the outer edge of the direct impact area. The management zone is then used to estimate the indirect impact in terms of partial loss in the VI score. The partial loss (e.g. a percentage of the original condition), scored in future value of the vegetation in that management zone, is estimated by considering the impact of the changed land use on each of the condition attributes used to determine the VI score. Partial loss will depend on the type of development, the condition of retained vegetation and its proximity to the development.*

The Noise and Vibration Impact Assessment should be updated to identify important habitat features as sensitive receivers so impacts can be adequately assessed.

The location of the indirect impacts, including polygons identifying the extent of the impact, must be mapped on the Site and Location maps included in the BDAR.

Response

CPHR states:

The proponent should ensure that all indirect impacts are identified and adequately assessed in accordance with the BAM. Indirect impacts should be included within mapping and associated data to show both the direct and indirect impact zones.

The BAM defines indirect impacts as:

impacts that occur when the proposal affects native vegetation and threatened species habitat beyond the development footprint or within retained areas (e.g. transporting weeds or pathogens, dumping rubbish). This includes impacts from activities related to the construction or operational phase of the proposal and prescribed impacts.

Indirect impacts are different from prescribed impacts, with prescribed impacts being those identified in clause 6.1 of the BC Regulation (refer to Table 4-6). Section 8.2 of the BAM outlines indirect impacts to be described and assessed in a BDAR. The indirect impacts, and respective mitigation measures, relevant to the Project are described in Section 9.4 of the BDAR and quoted in Table 4-6.

Table 4-6
Summary of Indirect Impacts and Mitigation Measures

Indirect Impact	Description	Mitigation Measures
Edge effects	<i>'Edge effects' can include increased noise and light or erosion and sedimentation at the interface of intact vegetation and cleared areas. Edge effects may result in impacts such as changes to vegetation type and structure, increased growth of exotic plants, increased predation of native fauna or avoidance of habitat by native fauna. Edge effects would result from construction activities and then continue to affect the viability of vegetation and habitats adjoining the development area.</i> <i>Altered environmental conditions along new edges can allow invasion by pest animals specialising in edge habitats and/or change the behaviour of resident animals. Edge zones can be subject to higher levels of predation by introduced mammalian predators and native avian predators.</i> <i>Edge effects may result from the clearing of native vegetation and other construction activities in all areas where development is proposed, such as the construction of the basin in the upper reservoir and expansion of the lower reservoir, the construction of the power house and clearing of vegetation for the installation of solar panels; and then continue to affect vegetation and habitats retained outside the development footprint. Most of the solar farm areas adjoins land that has been cleared for agriculture, road infrastructure and public recreational activities. The proposed lower reservoir footprint similarly falls in areas impacted by the operations of the SMC, and subsequently is subject to regular disturbance and existing edge effects. Edge effects have the potential to increase in both footprints, however this increase is unlikely to be greater than those associated with the SMC. The upper reservoir footprint is located outside the primary operations of the SMC and abuts intact native vegetation. Any edge effects would be more evident in this footprint following the construction and during operation of the PHES, if not appropriately managed.</i> <i>Overall, the contribution to edge effects arising from clearing of native vegetation across the solar farm and the primary extent of the lower reservoir are expected to be negligible, however potential edge effects to intact native vegetation surrounding the upper and lower reservoirs are likely in the absence of successful management strategies. Measures to mitigate potential edge effects resulting from the Project are provided in the CEMP (Section 9.2). These measures are likely to reduce the impact potential of any edge effects that may arise in retained native vegetation.</i>	Mitigation measures would be outlined in the CEMP.

Table 4-6 (continued)
Summary of Indirect Impacts and Mitigation Measures

Indirect Impact	Description	Mitigation Measures
<i>Introduction and spread of weeds, pests and pathogens</i>	<i>In general, disturbance associated with vegetation clearing and vehicle traffic during construction increases the potential for the spread, introduction and establishment of weed species, pest species, diseases and pathogens.</i> <i>The primary extent of the development footprint has been strategically positioned in areas impacted by operations associated within the SMC. These areas, particularly those utilised for agricultural practices such as cattle grazing, are often dominated by a high cover and abundance of exotic plant species. The Project is considered unlikely to significantly exacerbate the spread of disease, pests or weeds in the lower reservoir and solar farm footprints given the high level of existing disturbance in these areas through their longstanding industrial management. The level of risk will be further reduced through the implantation of mitigation measures during the construction phase of the Project.</i> <i>The upper reservoir footprint is located outside the primary operations of the SMC but has previously been subject to land-clearing, historical logging and intermittent grazing. Despite this, the primary extent of the footprint is of generally higher condition and is more vulnerable to the introduction of weeds, pathogens and pests. It also forms a small part of a large patch of forested vegetation that continues to the coastline of NSW. The pathogen <i>Austropuccinia psidii</i> (the fungus associated with Myrtle Rust disease) is already present within the Project area and surrounding environment as is evident from surveys across Yancoal's adjacent land holdings and in the Glen Nature Reserve where all identified individuals of the Scrub Turpentine (<i>Rhodamnia rubescens</i>) were observed to be infected. The risk of spreading this pathogen as well as other pathogens, exotic plants and pest species will be mitigated through actions outlined in the CEMP. These measures include the development of a flora and fauna management sub-plan as part of the Project CEMP, including relevant hygiene protocols that would be implemented throughout the construction phase of the Project.</i>	Mitigation measures associated with spreading pathogens, exotic plants, and pest species would be detailed in the CEMP.
<i>Noise and light impacts on fauna</i>	<i>Impacts to biodiversity values via light and noise pollution have been reduced through the strategic positioning of the development footprint within the operational footprint of the SMC (i.e. the solar farm and lower reservoir footprints). This area has been subject to industrial scale noise and light pollution over several decades. In the context of this disturbance, the construction and operational phase of the SREH in the lower reservoir and solar farm footprints is unlikely to result in a significant increase in noise and light levels. Additionally, most noise disturbance would be specific to the construction phase of the Project, rather than the operation of the SREH, where noise is expected to decrease compared to those produced by the SMC.</i> <i>The proposed upper reservoir footprint is positioned outside of the primary operations of the SMC and is more vulnerable to noise, vibration and light disturbance.</i> <i>The upper reservoir's topographic position provides shielding from direct impacts beyond the direct disturbance area. Aras to the north, east and south are separated from construction areas in the upper reservoir by topography, minimising noise and light emissions. The area to the west of the upper reservoir dam wall is located downslope and in complete line of site to the SMC. Any fauna in this area would have experienced noise and light from the SMC, which has operated since the 1990s. the number of species recorded for this BDAR in close proximity to the SMC indicates some tolerance to noise/light emissions.</i>	Impacts would be temporary and generally reduced compared to the baseline conditions during operation of the SMC.

Table 4-6 (continued)
Summary of Indirect Impacts and Mitigation Measures

Indirect Impact	Description	Mitigation Measures
<i>Aquatic disturbance and impacts on habitat</i>	<i>Erosion and sediment control would be undertaken in accordance with Landcom (2004) on areas of surface disturbance, particularly near waterways including solar arrays, the upper reservoir and lower reservoir. The Surface Water Impact Assessment (HydroBalance 2024) has determined that, with these implemented controls, there would be no more than minor, temporary impacts to surface water quality due to construction and operation of the SREH.</i> <i>As reported in HydroBalance (2024), during operation of the PHES, there is expected to be a reduction in catchment flows (reduction in flow days greater than 0.5 megalitre per day (ML/d) from 20% to 13%) to the ephemeral upland tributary that extends west from the proposed upper reservoir (unnamed tributary 1). This is due to the upper reservoir comprising the headwaters of this unnamed tributary.</i> <i>The proportion of catchment excision for the upper reservoir lessens further downstream of unnamed tributary 1, in the unnamed tributary of Avondale Creek, with a negligible reduction in flow days (greater than 1 ML/d) from 23% to 21% (HydroBalance, 2024). There may be a reduced magnitude of medium and high flow events in this unnamed tributary, which may reduce the extent of flooding, although, the frequency of these medium and high flow events is not expected to change significantly (HydroBalance, 2024). Most sections of this unnamed 2nd Order tributary have been previously diverted for mining infrastructure and, therefore, are not expected to be strongly associated with flood-dependent vegetation. The area on the unnamed tributary near S3 (see Figure 3.15) where persistent ponding was observed during flora surveys is likely due to groundwater influence to the drainage line (see GHD, 2024 for further discussion) and, therefore, water ponding would be unlikely to reduce due to the potential reduced magnitude of medium and high flow events in this unnamed tributary, especially as low flows are not expected to change substantially.</i> <i>The reduction in flows from the upper reservoir to Avondale Creek are expected to be negligible (a less than 2% reduction in low flows). Therefore, frogs would not be expected to be impacted in Avondale due to the catchment excision from the upper reservoir.</i> <i>...</i> <i>Groundwater modelling (SLR, 2024) results show that the 1 m drawdown contour may reach the water table at a radial distance of approximately 1 km from the tunnel alignment. The model drawdown reflects a depressurisation of the groundwater system surrounding the tunnel, with limited impact at water table elevation (i.e. water table drawdown of 1 m or less, except for one area approximately 250 m southwest of the tunnel alignment). It is noted that the radial drawdown is likely to be conservative, due to the assumption of 2D flow only. In reality, the drawdown will be offset by inflows parallel to the tunnel alignment (upgradient lateral flow not included in the model).</i>	Erosion and sediment controls would be implemented in areas of surface disturbance and documented in the CEMP.

Table 4-6 (continued)
Summary of Indirect Impacts and Mitigation Measures

Indirect Impact	Description	Mitigation Measures
<i>Dust</i>	<i>The closure of the SMC will result in the reduction of dust produced in the locality, although dust generation will continue during the construction phase of the SREH. The proposed solar farm and PHES are not anticipated to generate a high level of dust disturbance during operation. Mitigation measures during construction would further reduce the risk of residual impacts.</i>	Mitigation measures would be implemented during clearing and construction. Enforcement of appropriate speeds for construction and contractor vehicles to limit dust generation.
<i>Fire</i>	<i>The risk of fires would be minimised with the implementation of APZs around the Solar Farm and Powerhouse (i.e. areas of the Project with key electrical components) and managed through a Bushfire Management Plan (Peterson Bushfire, 2024).</i>	Mitigation measures would be outlined in a Bushfire Emergency Management and Operations Plan to be developed for the Project.
<i>Impacts to groundwater and GDEs</i>	<i>As reported in SLR (2024), the initial drawdown of the groundwater table during construction of the tunnel waterway between the upper and lower reservoirs is expected to be limited to the construction phase of the Project, and as such, is expected to recover. According to the Australian Government Atlas of Groundwater Dependent Ecosystems (BOM, 2024), there are no aquatic groundwater dependent ecosystems (GDE) are in the development footprint, however there are a number of potential terrestrial GDEs. As discussed in Section 9.6, any potential impacts to these terrestrial GDEs are expected to be negligible. The water required for the proposed PHES would be sourced from reserves in retired mining pits associated with the SMC, eliminating the need to extract water from natural systems. Any changes to groundwater quality are expected to be negligible due to the construction of a low permeability reservoir to minimise seepage from the reservoirs.</i>	Impacts are expected to be negligible, as per conclusions of SLR (2024a).

Source: GHD (2024c).

The BDAR outlines how the Project has been designed to minimise and manage indirect impacts. Considering these mitigation measures, no significant indirect impacts are likely as a result of the Project (refer to Table 11.6 of the BDAR). These mitigation measures would be described in the Project CEMP, relevant flora and fauna sub-plans, and the Bushfire Emergency Management and Operations Plan.

Request to Offset Indirect Impacts from Edge Effects

CPHR states:

Section 8.6 of the BAM states that biodiversity credits can be used to mitigate or offset indirect or prescribed impacts from the proposal. The proponent should consider retiring biodiversity credits as a measure to mitigate the indirect impacts of the proposal. Section 4.5.10 of the BAM Operation Manual – Stage 2 sets out the best approach for estimating an offset for the residual indirect impact, which is:

- *Mapping an area of vegetation adjacent to an existing vegetation zone as a management zone. The area of the management zone can be defined by a set distance (e.g. X m buffer) from the outer edge of the direct impact area. The management zone is then used to estimate the indirect impact in terms of partial loss in the VI score. The partial loss (e.g. a percentage of the original condition), scored in future value of the vegetation in that management zone, is estimated by considering the impact of the changed land use on each of the condition attributes used to determine the VI score. Partial loss will depend on the type of development, the condition of retained vegetation and its proximity to the development.*

In its submission, CPHR suggests that areas subject to partial loss of vegetation could be used to develop a Vegetation Integrity (VI) score to offset such indirect impacts. However, edge effects have already been considered as a prescribed impact in the BDAR, namely in Table 9.5 of the BDAR (reproduced as Table 4-6 above). Edge effects have been avoided by adopting a realistic construction footprint such that management measures can be implemented. This includes, but is not limited to, fencing around Riparian Protection Zones and implementing APZs.

Requested Noise and Vibration Assessment Update

CPHR states:

The Noise and Vibration Impact Assessment should be updated to identify important habitat features as sensitive receivers so impacts can be adequately assessed.

The NSW Government issued SEARs required a NVIA be prepared for the Project in accordance with the ICNG (DECC, 2009) and for operational noise impacts to be assessed in accordance with the NPfl (EPA, 2017).

These guidelines do not require mapping or assessment of important habitat features.

The noise generated for the Project would be largely limited to the Project construction phase. Notwithstanding, the area has been subject to mining-related 24-hour-a-day noise since mining commenced in 1995. Cessation of mining operations will improve the background acoustic environment.

The BDAR relies on the results of the NVIA to assess potential indirect impacts on fauna. The BDAR confirms that construction-related noise and vibration would temporarily increase levels beyond background levels in the Upper Reservoir footprint. However, mitigation measures would reduce the risk of residual impacts and would be documented in the CEMP.

Mapping Indirect Impacts

CPHR states:

The location of the indirect impacts, including polygons identifying the extent of the impact, must be mapped on the Site and Location maps included in the BDAR.

The BAM does not require the location of indirect impacts to be mapped on the Site and Location Maps (refer to Section 3 of the BAM). The BAM requirements of the assessment of indirect impacts only involve a description of the impacts, their nature, extent and duration, additional to identifying the native vegetation, threatened species, TECs and their habitats likely to be affected. Notwithstanding, the location of these threatened entities are mapped in the BDAR where required, in accordance with the BAM.

Notably, it is unclear what mapping indirect impacts means in practice, given indirect impacts identified in the BDAR, such as dust, noise, fire, and lighting, are not features which can be mapped.

5. **Existing Obligations and Management Actions Under SSD-4966**

The complexity of the proposal is increased due to an existing consent that exists over the land (SSD-4966). The BDAR should provide further information about how the multiple development obligations will operate and how avoid and minimise measures interact. The BDAR should identify areas where previous obligations exist and where new actions/avoidance/management measures are proposed. Defining and separating previous measures and new proposed measures is required to ensure no doubled dipping occurs regarding offsetting or avoidance. Measures imposed to offset the loss of biodiversity from the previous development may not be considered as demonstrating avoidance for the new impact.

Figure 1-1 of the BDAR depicts biodiversity offset areas associated with the previous consent which are not associated with the current application. This should be made clear as these areas could be mistaken for new offsets.

The proponent should provide information to detail how the new proposal will interact with the following conditions of consent (SSD 4966) and offset obligations therein:

- 37 – Habitat for Threatened Fauna Species
- 38 – Squirrel Glider Management
- 39 – Biodiversity Management Plan

Further information should also be provided for mine rehabilitation and management of biodiversity offset areas. This should include details on the progress the proponent has made in meeting the requirements as detailed in Conditions 33 - 41 of the consent or where these conditions have been met. This should include the outcomes of re-establishing the 350 ha of native vegetation, establishing threatened species habitat and meeting other obligations outlined in the Biodiversity Management Plan (BMP).

Upon review of aerial imagery of the site areas including Revegetation Area (Management Zone A), Squirrel Glider Vegetation Pathways (Management Zone A1), Allocasuarina spp. Plantings (Management Zone A2) and Coastal Floodplain Forest Revegetation (Management Zone A3) do not appear to have plantings which is not in alignment with Table 16 - Revegetation and Regeneration Performance and Completion Criteria within the BMP.

Recommended action:

The BDAR should outline the status of previous obligations required as a condition of consent under SSD-4966. This should include details and evidence to demonstrate how the outcomes of existing obligations have been met for conditions 33 – 41.

The BDAR should be updated to clearly distinguish between obligations/ offsets under the previous consent and additional avoid and minimise measures for the new proposal. The proponent cannot re-using existing areas of offset for the current proposal. The proponent needs to propose new areas to be set aside to demonstrate avoidance and reference to the previous biodiversity offset strategy removed from the BDAR except in relation to how a new avoidance strategy will complement the old strategy.

Response

Yancoal acknowledges there is inherent complexity with overlapping development associated with post-mining land use projects, noting there is nothing preventing overlapping consents on the same land. Notwithstanding, the respective proponent for each approved development is required to comply with the conditions of consent for that development. Where required, a future application to modify the SMC Development Consent SSD-4966 would be made to accommodate the Project. However, this is not a component of the Project and is therefore not required to be considered in the BDAR, nor is it required to support approval of the Project.

The BAM does not require a proponent to assess the conditions of consent of a separate approved development (i.e. conditions of SMC Development Consent SSD-4966). Notwithstanding, Yancoal's consideration of rehabilitation obligations associated with the SMC are provided in Attachment 6 of the EIS (the Rehabilitation Review).

Importantly, the Project does not propose development in any existing SMC Biodiversity Offset Areas. The SMC Biodiversity Offset Areas are illustrated on Figure A6-5 of the Rehabilitation Review and Figure 3-6 of the EIS to give context to the design and shape of the proposed Solar Farm footprint. This figure has been reproduced as Figure 1-3 of this Submissions Report.

Yancoal reiterates that, while it is of significant environmental benefit that a portion of the Project can be located on previously disturbed land, the avoidance strategy for the Project is not solely defined by proposing development on SMC land, but is demonstrated through strategic project location and project design (as stated in the BDAR). The BDAR describes how the Project Disturbance Footprint has avoided impacts to biodiversity values as follows:

- *Utilisation of existing mine-related infrastructure and highly disturbed areas with no or limited native vegetation, where possible. The use of these areas further reduces the risk of indirect impacts given that limited native vegetation is located in adjacent areas (particularly for the footprint of the solar farm component of the Project).*
- *The confirmation of infrastructure required for the Project followed by the implementation of an iterative design process and incorporation of knowledge gained through preliminary biodiversity surveys. This process allowed for the exclusion of approximately 68.51 ha of native vegetation previously associated with the development footprint.*
- *Excluding patches of remnant woodland commensurate with subtropical floodplain forest TECs in the western extent of the development, some of which were confirmed to support the threatened species including the Squirrel Glider and Brush-tailed Phascogale.*
- *The proposed Biodiversity Enhancement Areas associated with SSD-4966 also largely avoided, with minor reconfiguration required which would achieve the objective defined in SSD 4966.*

6. Targeted flora searches need to be adequately completed for species credit species

Guideline requirements

Targeted flora searches should be completed as described by ‘Surveying threatened plants and their habitats’ (Department of Planning, Industry and Environment 2020).

Section 5.1 of the flora survey guidelines states: “To ensure detectability is not compromised it is recommended that multi-species searches be restricted to a maximum of five species in the stratum.” The BDAR states that over survey tranches across June, October and November 2023 survey effort included the assessment of multiple growth forms “e.g. forbs and shrubs surveyed at the same time”. A total of five species were surveyed for during November 2023 across three different growth forms, and during October 2023 across three.

The assessor has incorrectly used the large area survey method for species Maundia triglochinos, Thesium Australe, and Senna acclina as the area of suitable habitat does not exceed 50 ha within the subject land. In addition, where the large area survey method has been applied, the assessor has not comprehensively searched the man search circles.

Targeted surveys

A number of flora surveys appear to be incomplete, with entire areas of PCTs/Vegetation Zones (VZs) not surveyed.

BCS does not consider the targeted flora searches conducted between November 2022 and January 2023 (BDAR Figure 3.3) to be adequate. The assessor has stratified targeted searches, and searches do not cover PCTs 3170, 3086, 3241 or 3244 comprehensively. These searches were conducted across two growth forms (being tree and shrub species) within closed vegetation and therefore should have been completed 10 m apart, as per Section 4.1 of the Guideline. These PCTs are suitable habitat for the SAIL entity, Rhodamnia rubescens, and therefore should be comprehensively searched.

That is, BCS does not consider the survey to be adequate for the following species:

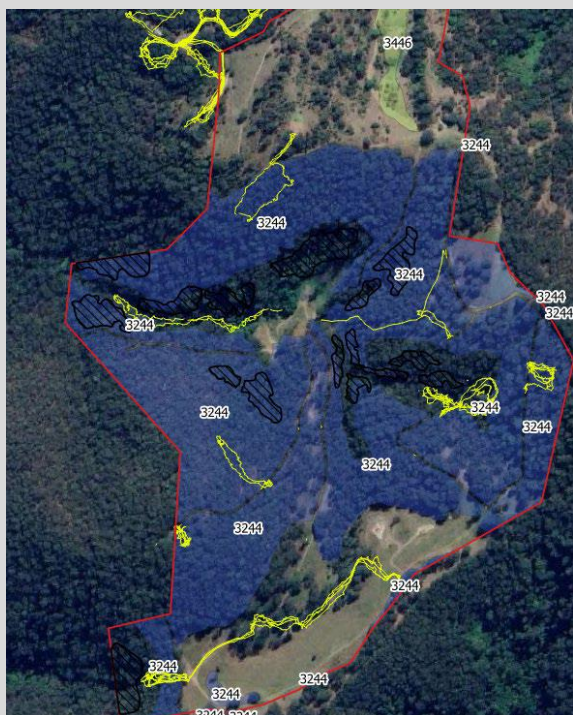
- Rhodamnia rubescens
- Eucalyptus largeana
- Eucalyptus glaucina
- Rhodomyrtus psidioides.

Targeted flora searches conducted over June 2023 and July 2023 do not comprehensively cover all areas of suitable habitat for species listed (see BDAR Figures 3.4 and 3.5). These species being:

- Syzygium paniculatum
- Eucalyptus camfieldii
- Melaleuca biconvexa
- Corybas doweringii

The BDAR does not contain information regarding a reference population being checked to determine flower timing for Corybas doweringii. This would have confirmed that surveys conducted in July 2023 occurred when the species was flowering. The Threatened Biodiversity Data Collection (TBDC) requires a reference population to be used to determine survey timing. Further evidence is required within the BDAR to demonstrate that the species was flowering at the time of survey.

November 2023 searches (see BDAR Figure 3-7d) were not adequately conducted within the upper reservoir, with searches for Grevillea parviflora not occurring across all associated PCTs. Surveys should have occurred across the entirety of VZs 3244 High, 3244 Mod, 3244 Low, 3446. See insert below, with associated PCTs and survey tracks indicated.



The assessor did not search areas of the associated PCTs for Maundia triglochinos or show the PCTs in any figures. If areas are discounted as suitable habitat (due to lack of waterbodies, for example) then the assessor needs to provide an evidence-based justification for excluding survey areas, as per Chapter 5 of the BAM.

BCS does not consider that the proponent has surveyed targeted threatened flora in accordance with the relevant guidelines and the TBDC.

The assessor should complete further survey and generate additional species polygons accordingly.

Recommended action:

Complete additional targeted flora searches within all associated PCTs for the following species:

- Rhodamnia rubescens
- Eucalyptus largeana
- Eucalyptus glaucina
- Rhodomyrtus psidioides.
- Syzygium paniculatum
- Eucalyptus camfieldii
- Melaleuca biconvexa
- Corybas doweringii
- Maundia triglochinos
- Thesium Australe, and
- Senna acclinis.

Any potential suitable habitat not searched requires evidence-based justification to demonstrate why the area does provide suitable habitat for the species.

If targeted surveys were not adequately conducted, BCS recommends conducting supplementary survey work, assuming presence for the species or seeking an expert report.

All amendments to species polygons must be reflected within the BDAR and BAM-C, with updated shapefiles submitted.

Response

Multiple rounds of targeted flora surveys were conducted across the Project Disturbance Footprint to assess the presence or absence of candidate plant species. Two threatened flora species were identified (Scrub Turpentine and Craven Grey Box) and species credits for the species were calculated accordingly. Scrub Turpentine and Craven Grey Box were recorded on multiple occasions in the location of the proposed Upper Reservoir, both opportunistically and during dedicated survey efforts. The survey methodology and effort documented in the BDAR are considered sufficient to conclude that all other candidate flora species are 'not present, or [are] unlikely to be present' within the subject land, in accordance with Section 5.2.4.4 of the BAM.

Surveys were completed in accordance with *Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE, 2020b), as far as reasonably practical. Equidistant traverses were completed with varying spacing dependant on the stratum the threatened species is associated with. For example, threatened orchids were surveyed with other groundcover species with 5-10 m spacing. Surveys were also conducted using the two-phase grid-based systematic survey method as outlined in Section 4.4.1 of *Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE, 2020b), given the size of the Project Disturbance Footprint (145.08 ha of native vegetation). The surveys completed were limited by general site accessibility with ongoing mine operations, terrain, weather conditions impacting access to the site, and GPS inaccuracy in gullies. Despite this, almost all surveys cover the primary extent of habitat for the relevant candidate species.

CPHR has identified instances where targeted surveys were either incomplete or employed methodologies that do not fully align with guidelines. Surveys conducted in June, October, and November 2023 concurrently targeted both shrub and tree species. Of the 12 species surveyed using this approach, the majority are considered readily identifiable, with the exception of *Rhizanthella slateri* (Eastern Australian Underground Orchid), which is cryptic in nature. *Tetratheca juncea* (Black-eyed Susan), *Pterostylis chaetophora*, and *Diuris flavescens* (Pale Yellow Doubletail) are also cryptic for most of the year but were surveyed during their respective flowering seasons, when identification is most reliable. In these instances, the applied methodology is considered appropriate for the following reasons:

- Survey timing constraints: As surveys were required to be conducted within specific months, multiple strata were assessed concurrently to optimise survey effort and ensure that no target species were overlooked for the year.
- Conservative survey distances: The most conservative distancing methodology was frequently adopted, regardless of the stratum being assessed. This meant that threatened trees and shrubs were surveyed at the finer-scale distances recommended for forbs (5-10 m) rather than the standard 10-20 m for shrubs and 20-40 m for trees. This resulted in an increased survey effort for trees and shrubs, which was deemed appropriate given the deviation from the standard one-stratum-per-survey approach.

Surveys were conducted in accordance with guidelines apart from some small areas that were unable to be surveyed due to inaccessible terrain (e.g. dense lantana thickets, steep slopes unsafe to access etc.) or reduced site accessibility during adverse weather conditions. As a result, select areas within the Upper Reservoir footprint received reduced survey coverage (see Figures 3-3, 3-4, and 3-5 of the BDAR) for the following species:

- Magenta Lilly Pilly;
- Camfield's Stringybark;
- Biconvex Paperbark; and
- Red Helmet Orchid.

Further justification for the adequacy of the survey effort to date for the above species is provided in Table 4-7 below.

Surveys completed between November 2022 and January 2023 targeted shrub and tree species including Scrub Turpentine, Craven Grey Box, Slaty Red Gum and Native Guava. Surveys were conducted at distances recommended for trees (20 m) as opposed to shrubs (10 m) resulting in reduced transect coverage in select areas. While surveys were completed at a distance greater than recommended, the survey effort (where completed) was generally suitable given the following:

- Multiple survey rounds were completed for other candidate flora species which allowed for the opportunistic observation of the above-mentioned tree and shrub species. This is supported by the fact that Scrub Turpentine and Craven Grey Box were identified many times opportunistically over the course of multiple surveys completed outside of the dedicated survey round.
- The targeted species are distinct and easily identifiable, allowing for their detection during surveys conducted for other species and habitat assessments. Additionally, these species are reliably detectable year-round, meaning surveys can be conducted at any time of the year.

Small-flower Grevillea (Grevillea parviflora sub sp. parviflora)

Survey coverage for the threatened species, Small-flower Grevillea, was not comprehensive, particularly in the Upper Reservoir footprint. However, multiple survey rounds targeting other candidate flora species provided ample opportunity to detect the species in associated habitat, including areas lacking targeted surveys. Despite extensive surveys within suitable habitat in the Upper Reservoir footprint, no visually similar plants were observed. The species can be distinguished by its growth form and the presence of rust-coloured hairs on the underside of its leaves. Further justification as to why survey effort completed to date is sufficient for this species is provided in Table 4-7 below.

Austral Toadflax (Thesium australe) and Rainforest Cassia (Senna acclinis)

Surveys for Austral Toadflax and Rainforest Cassia were conducted using the two-phase grid-based systematic survey method, whereas systematic transects across suitable habitat are required where less than 50 ha of suitable habitat occurs within the Project Disturbance Footprint. The method was utilised due to the size of the Project Disturbance Footprint and the high number of survey rounds required. Surveys completed in the grid circles were thorough in nature and did not detect either species.

Maundia triglochinoides

CPHR has also noted that surveys for the threatened plant, *Maundia triglochinoides*, were unable to be completed in associated habitat and incorrectly utilised the two-phased grid-based systematic survey method. Within the Project Disturbance Footprint, associated habitat is exclusively PCT 4042. Surveys were completed for this species in December 2023; however, as the species is an aquatic plant, surveys exclusively targeted waterbodies within the Project Disturbance Footprint such as farm dams, rather than terrestrial habitat (DCCEEW, 2025a). Most farm dams were sampled regardless of if they were in the associated PCT (PCT 4042) or otherwise. The exclusion of non-aquatic areas of PCT 4042 was not detailed in the BDAR, however it is noted that many of the waterbodies within the Project Disturbance Footprint were surveyed.

Vegetation Plots

A total of 86 vegetation plots were completed within the Project Disturbance Footprint to inform the assessment. In addition, several plots were initially established but later omitted from the final dataset as the Project Disturbance Footprint was refined. These excluded plots still contributed to the overall understanding of site conditions during early stages of assessment but were ultimately not included in the final analysis due to their location falling outside the revised Project Disturbance Footprint. During sampling of the plots, none of the candidate threatened flora species, excluding Scrub Turpentine and Craven Grey Box, were identified in the Project Disturbance Footprint, providing further support for the absence of these species within the Project Disturbance Footprint. Much of the site was traversed at this time to simultaneously inform vegetation mapping.

Further discussion outlining why surveys completed to date are sufficient is provided in Table 4-7 below.

Table 4-7
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Scrub Turpentine (<i>Rhodamnia rubescens</i>)	Stem count	Present (651 species credits)	No	See Figure 4-13.1 for survey effort. While surveys were completed at a distance greater than recommended, the survey effort completed to date is considered suitable given the following: - Multiple survey rounds were completed for other candidate flora species which allowed for the opportunistic observation of the species. This is supported by the fact that Scrub Turpentine was identified many times opportunistically over the course of multiple surveys completed outside of the dedicated survey round. - The target species is distinct and easily identifiable, and thus easily identified during surveys for other species/habitat. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW, 2025a). Whilst not officially being targeted at other times of the year, the species is readily identifiable and subsequently was recorded opportunistically.
Craven Grey Box (<i>Eucalyptus largeana</i>)	Stem count	Present (92 species credits)	No	See Figure 4-13.2 for survey effort. Targeted surveys were completed between November 2022 and January 2023. The survey effort was generally suitable given the following: - Multiple survey rounds were completed in the same PCTs for other candidate flora species which allowed for the opportunistic observation of the above-mentioned tree and shrub species. This is supported by the opportunistic identification of Craven Grey Box individuals over the course of multiple surveys completed outside of the dedicated survey round. - The target species is distinct and readily identifiable. As such, it was often opportunistically identified during surveys for other species/habitat. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW, 2025a).

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Slaty Red Gum (<i>Eucalyptus glaucina</i>)	Stem count	Not present	No	See Figure 4-13.3 for survey effort. Targeted surveys were completed between November 2022 and January 2023. The survey effort was generally suitable given the following: - Multiple survey rounds were completed in the same PCTs for other candidate flora species which allowed for the opportunistic observation of the above-mentioned tree species. This is supported by the opportunistic detection of other readily identifiable species outside of the dedicated survey round. - The target species is distinct and readily identifiable. As such, it would have been easily identified during surveys for other species/habitat. If present. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW, 2025a). - No records of the species exist in the locality, with the nearest being in Barrington, NSW.
Native Guava (<i>Rhodomyrtus psidioides</i>)	Area count	Not present	No	See Figure 4-13.4 for survey effort. Surveys were conducted at distances recommended for trees (20 m) as opposed to shrubs (10 m), resulting in reduced transect coverage in select areas. While surveys were completed at a distance greater than recommended, the survey effort completed to date is considered suitable for confirming the species is unlikely to be present given the following: - The target species is distinct and despite being impacted by Myrtle Rust, is usually readily identifiable. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW 2025a). - Multiple survey rounds were completed for other candidate flora species which allowed for the opportunistic observation of the species. This is supported by the opportunistic detection of other readily identifiable species outside of the dedicated survey round. No individuals were detected despite multiple rounds of surveys within suitable habitat in the Upper Reservoir.

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Magenta Lilly Pilly (<i>Syzygium paniculatum</i>)	Stem count	Not present	No	See Figure 4-13.5 for survey effort. Surveys were completed in accordance with guidelines apart from some small areas that were unable to be surveyed due to inaccessible areas (impenetrable lantana thickets, steep drops etc.) or reduced site accessibility during weather events. This has resulted in reduced transect coverage in select areas of the Project Disturbance Footprint. Despite this, the survey effort completed to date is considered suitable for confirming the species is unlikely to be present given the following: - The genus is readily identifiable, however Magenta Lilly Pilly is often confused with the closely related non-threatened species, <i>Syzygium australe</i>. Foliage and fruit were sampled from <i>Syzygium</i> sp. individuals identified in the Upper Reservoir footprint and sent to the National Herbarium of NSW to confirm their identity. The samples, collected from multiple individuals, were determined to represent the common, <i>Syzygium australe</i>. - Multiple survey rounds were completed for other candidate flora species which allowed for the opportunistic observation of the species. This is supported by the opportunistic detection of other threatened species outside of the dedicated survey round. No individuals were detected despite multiple rounds of surveys within suitable habitat in the Upper Reservoir.

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Camfield's Stringybark (<i>Eucalyptus camfieldii</i>)	Area count	Not present	No	See Figure 4-13.6 for survey effort. Surveys were completed in accordance with guidelines apart from some small areas that were unable to be surveyed due to inaccessible areas (impenetrable lantana thickets, steep drops etc) or reduced site accessibility during weather events. This has resulted in reduced transect coverage in select areas of the Project Disturbance Footprint. Despite this, the survey effort completed to date is considered suitable for confirming the species is unlikely to be present given the following: - The target species is distinct and readily identifiable, and thus would likely have been identified during surveys for other species/habitat. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW, 2025a). - Multiple survey rounds were conducted within the PCTs associated with <i>Eucalyptus camfieldii</i> to assess other candidate flora species, providing opportunities for incidental observations of the tree species. This is further supported by the opportunistic detection of other readily identifiable species outside the dedicated survey periods. - No records of the species exist in the locality, with the nearest being in Medowie, NSW approximately 69 km south of the Project Disturbance Footprint.

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Biconvex Paperbark (<i>Melaleuca biconvexa</i>)	Area count	Not present	No	See Figure 4-13.7 for survey effort. Surveys were completed in accordance with guidelines apart from some small areas that were unable to be surveyed due to the presence of inaccessible areas (impenetrable lantana thickets, steep drops, etc) or reduced site accessibility during weather events. This has resulted in reduced transect coverage in select areas of the Project Disturbance Footprint. Despite this, the survey effort completed to date is considered suitable for confirming the species is unlikely to be present given the following: - Multiple survey rounds were conducted within the PCTs associated with the Biconvex Paperbark to assess other candidate flora species, providing opportunities for incidental observations of the shrub species. This is further supported by the opportunistic detection of other readily identifiable species outside the dedicated survey periods. - The target species is distinct and readily identifiable, and thus would likely have been identified during surveys for other species/habitat. Additionally, the species can be surveyed any time of the year, as per the TBDC (DCCEEW, 2025a). - No records of the species exist in the locality, with the nearest being in Topi Topi, NSW approximately 45 km east of the Project Disturbance Footprint (DCCEEW, 2025a).

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Red Helmet Orchid (<i>Corybas dowlingii</i>)	Area count	Not present	No	See Figure 4-13.8 for survey effort. Surveys were completed in accordance with guidelines apart from some small areas that were unable to be surveyed due to inaccessible areas (impenetrable lantana thickets, steep drops, etc) or reduced site accessibility during weather events. This has resulted in reduced transect coverage in select areas of the Project Disturbance Footprint. Despite this, the survey effort completed to date is considered suitable given the following: - Multiple survey rounds were conducted within the PCTs associated with Red Helmet Orchid to assess other candidate flora species that also fell within the survey period of the species. This provided ample opportunity for the incidental observations of the orchid. - No records of the species exist in the locality, with the nearest being in Bulahdelah, NSW approximately 38 km south-west of the Project Disturbance Footprint (DCCEE, 2025a). - Within the Project Disturbance Footprint, a single parent species of the hybrid entity, <i>Corybas barbarae</i>, was identified. The other commonly occurring species, <i>Corybas acutiflorus</i>, was not recorded, suggesting that the hybrid entity is absent from the site.

Table 4-7 (continued)
Description of Targeted Flora Searches

Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
<i>Maundia triglochinoides</i>	Area count	Not present	No	See Figure 4-13.9 for survey effort. Surveys for the threatened plant, <i>Maundia triglochinoides</i> were completed in December 2023. The species is associated with a single PCT in the Project Disturbance Footprint; PCT 4042. As a strictly aquatic plant, surveys exclusively targeted waterbodies such as farm dams (DCCEEW, 2025a). Only one waterway occurred in PCT 4042, directly adjacent to the Project Disturbance Footprint. No individuals of the species were identified, despite surveys across this waterway. Very few of the farm dams are located within or near patches of PCT 4042. Most farm dams within the Project Disturbance Footprint were surveyed, regardless of whether they were within PCT 4042 or other vegetation communities. The exclusion of non-aquatic areas of PCT 4042 was not explicitly detailed in the BDAR. However, as many waterbodies within the Project Disturbance Footprint were surveyed, the survey effort for the species exceeds that would be required, noting that no survey guidelines are outlined on the TBDC (DCCEEW, 2025a). Additionally, no records of the species exist in the locality, with the nearest being in Bulahdelah, NSW approximately 38 km south-west of the Project Disturbance Footprint (DCCEEW, 2025a).

Table 4-7 (continued)
Description of Targeted Flora Searches

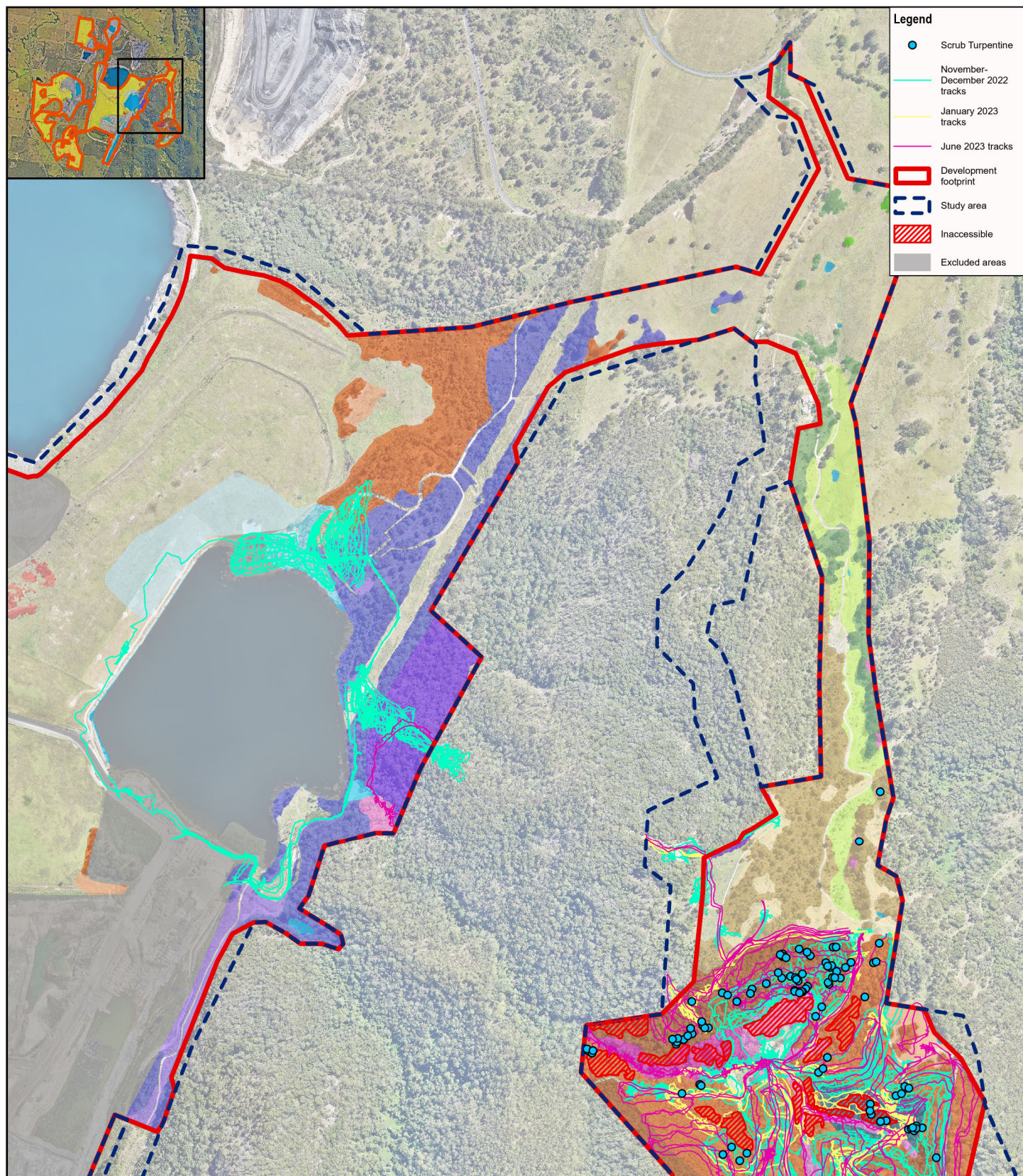
Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Austral Toadflax (<i>Thesium australe</i>)	Area count	Not present	No	See Figure 4-13.10 for survey effort. Surveys for Austral Toadflax were conducted using the two-phase grid-based systematic survey method, whereas systematic transects across suitable habitat are required where less than 50 ha of suitable habitat occurs within the Project Disturbance Footprint. The method was utilised due to the size of the Project Disturbance Footprint and the high number of survey rounds required. Surveys completed in the grid circles were thorough in nature and did not detect the species. The survey effort completed to date is considered suitable given the following: • Austral Toadflax is associated with a single PCT within the Project Disturbance Footprint; PCT 3252. Multiple survey rounds were conducted within this PCT to assess other candidate flora species, providing opportunities for incidental observations of the species. • The distribution of survey circles across the limited area of suitable habitat enabled for coverage of the majority of relevant area. Additional survey effort was achieved as the ecologists traversed between survey points, continuing to actively search for the species during transit. • No records of the species exist in the locality, with the nearest being in Old Bar, NSW approximately 56 km east of the Project Disturbance Footprint (DCCEEW, 2025a).

Table 4-7 (continued)
Description of Targeted Flora Searches

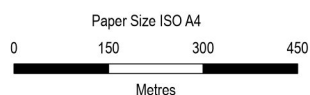
Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Rainforest Cassia (<i>Senna acclinis</i>)	Area count	Not present	No	See Figure 4-13.11 for survey effort. Surveys for Rainforest Cassia were conducted using the two-phase grid-based systematic survey method, whereas systematic transects across suitable habitat are required where less than 50 ha of suitable habitat occurs within the Project Disturbance Footprint. The method was utilised due to the size of the Project Disturbance Footprint and the high number of survey rounds required. Surveys completed in the grid circles were thorough in nature and did not detect the species. Multiple survey rounds were conducted within associated PCTs (PCT 3086, 3170) to assess other candidate flora species. As the species can be surveyed at any time of the year, all other surveys in suitable habitat provided opportunities for incidental observations of the species. The team incidentally identified a previously unrecorded population of the species in The Glen Nature Reserve, despite survey efforts in the area being limited to one week. Given that surveys for the SREH were conducted over several years in the Project Disturbance Footprint, it is expected that the species would have been detected in suitable habitat, if present.

Table 4-7 (continued)
Description of Targeted Flora Searches

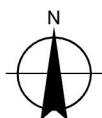
Species	Stem Count or Area Count	Conclusion in the BDAR Regarding Species Presence	Further Assessment Proposed (Yes/No)	Justification
Small-flower Grevillea (<i>Grevillea parviflora</i> sub sp. <i>parviflora</i>)	Area count	Not present	No	See Figure 4-13.12 for survey effort. Surveys conducted are considered sufficient to have detected the species if present, despite reduced transect coverage, mostly in the Upper Reservoir footprint. The Project Disturbance Footprint is considered unlikely to support the species given the following: - No visually similar plants were observed within the Project Disturbance Footprint despite multiple rounds of surveys within suitable habitat in the Upper Reservoir and Lower Reservoir. The species is distinguishable by its growth form and the presence of rust-coloured hairs on the underside of its leaves. The similarly-presenting <i>Grevillea humilis</i> was also not identified on site. - Multiple survey rounds were completed for other candidate flora species which provided the opportunity for the opportunistic detection of the species, as was the case for select individuals of Scrub Turpentine and Craven Grey Box. - No records of the species exist in the locality, with the nearest being in Clarence Town, NSW approximately 51 km south of the Project Disturbance Footprint (DCCEEW, 2025a). - The species is generally associated with elevations of 30 to 70 m above sea level in the Hunter region. The associated PCT 3244 occurs between 220 to 440 m above sea level in the Upper Reservoir, suggesting that this habitat is unsuitable (DCCEEW, 2024).



Vegetation zones	3241,Low	3251,Mod	3329,Mod
3086,High	3244,High	3251,Low	3446,Mod
3086,Mod	3244,Mod	3252,Mod	3446,Low
3170,Mod	3244,Low	3252,Low	4042,Low
3241,Mod	3251,High	3254,Mod	Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

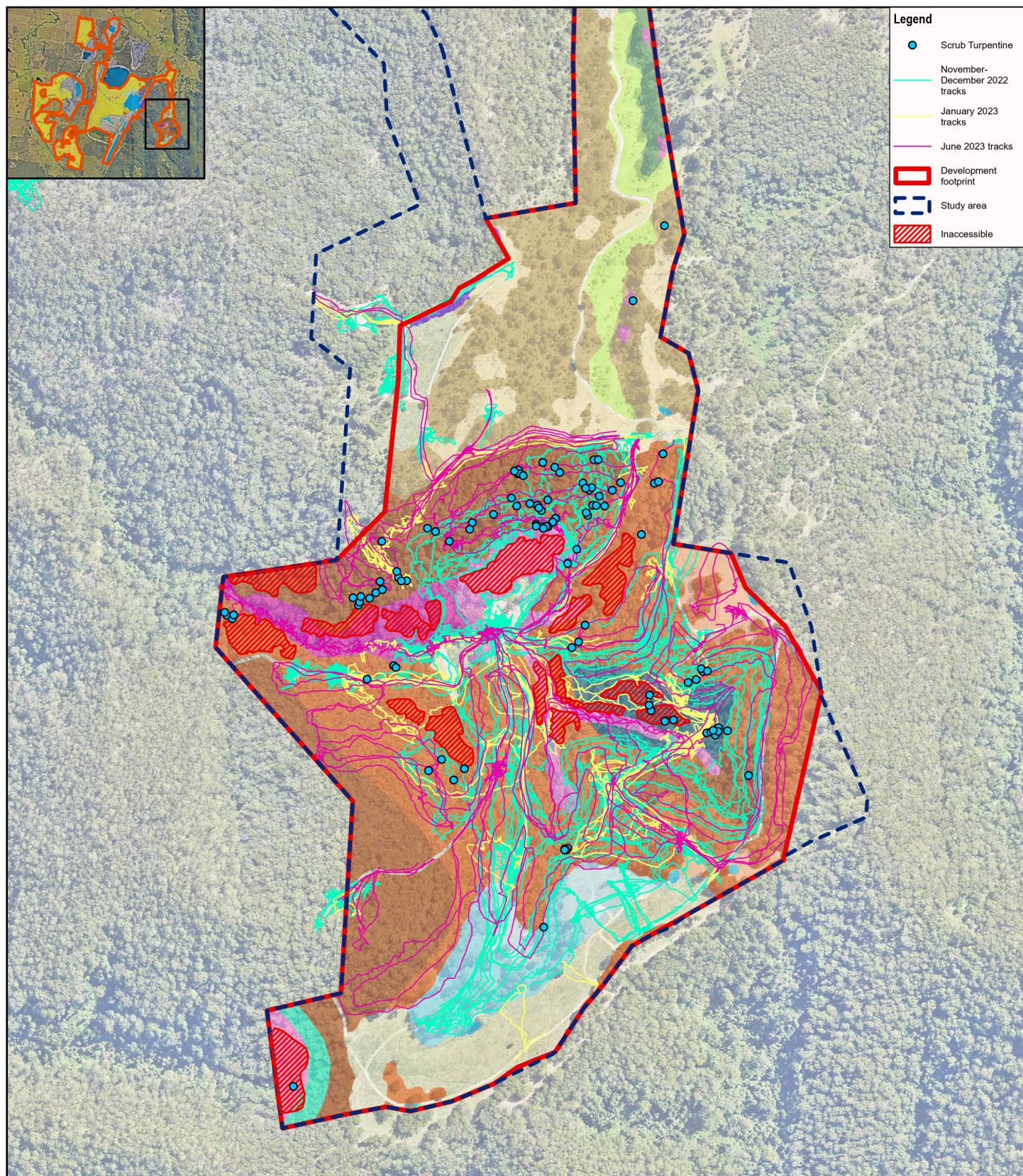


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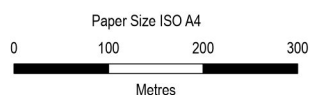
Project No. 12604910
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Scrub Turpentine (*Rhodamnia rubescens*)
surveys and identified stems

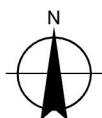
FIGURE 4-13.1a



Vegetation zones	3241,Low	3252,Mod	Waterbody
3086,High	3244,High	3252,Low	
3086,Mod	3244,Mod	3254,Mod	
3170,Mod	3244,Low	3446,Mod	
3241,Mod	3251,High	3446,Low	



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

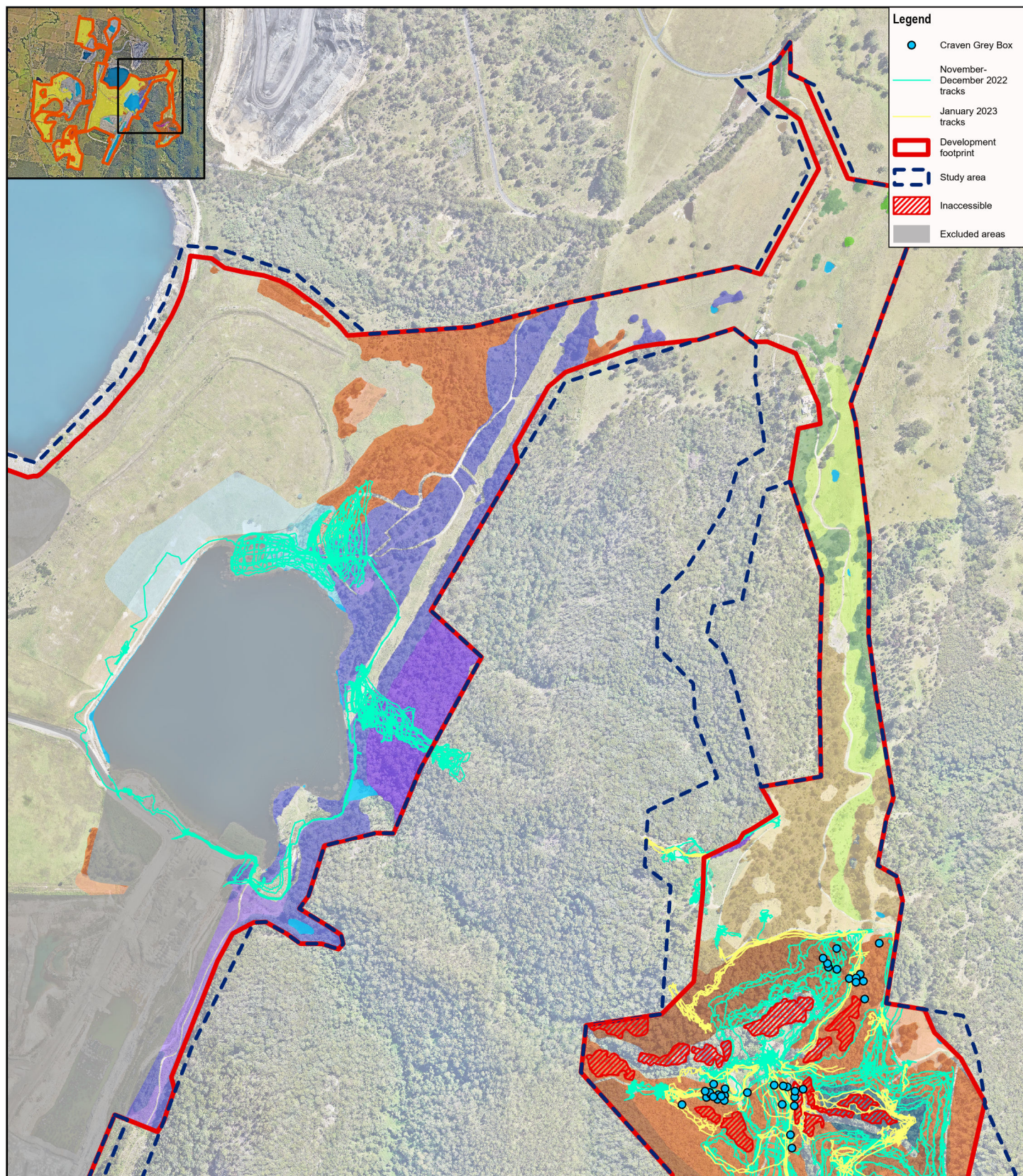


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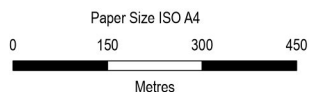
Project No. 12604910
Revision No. 0
Date 11/04/2025

Scrub Turpentine (*Rhodamnia rubescens*)
surveys and identified stems

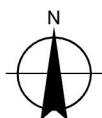
FIGURE 4-13.1b



Vegetation zones	3244,Mod	3252,Mod	3446,Low
3170,Mod	3244,Low	3252,Low	Waterbody
3241,Mod	3251,High	3254,Mod	
3241,Low	3251,Mod	3329,Mod	
3244,High	3251,Low	3446,Mod	



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

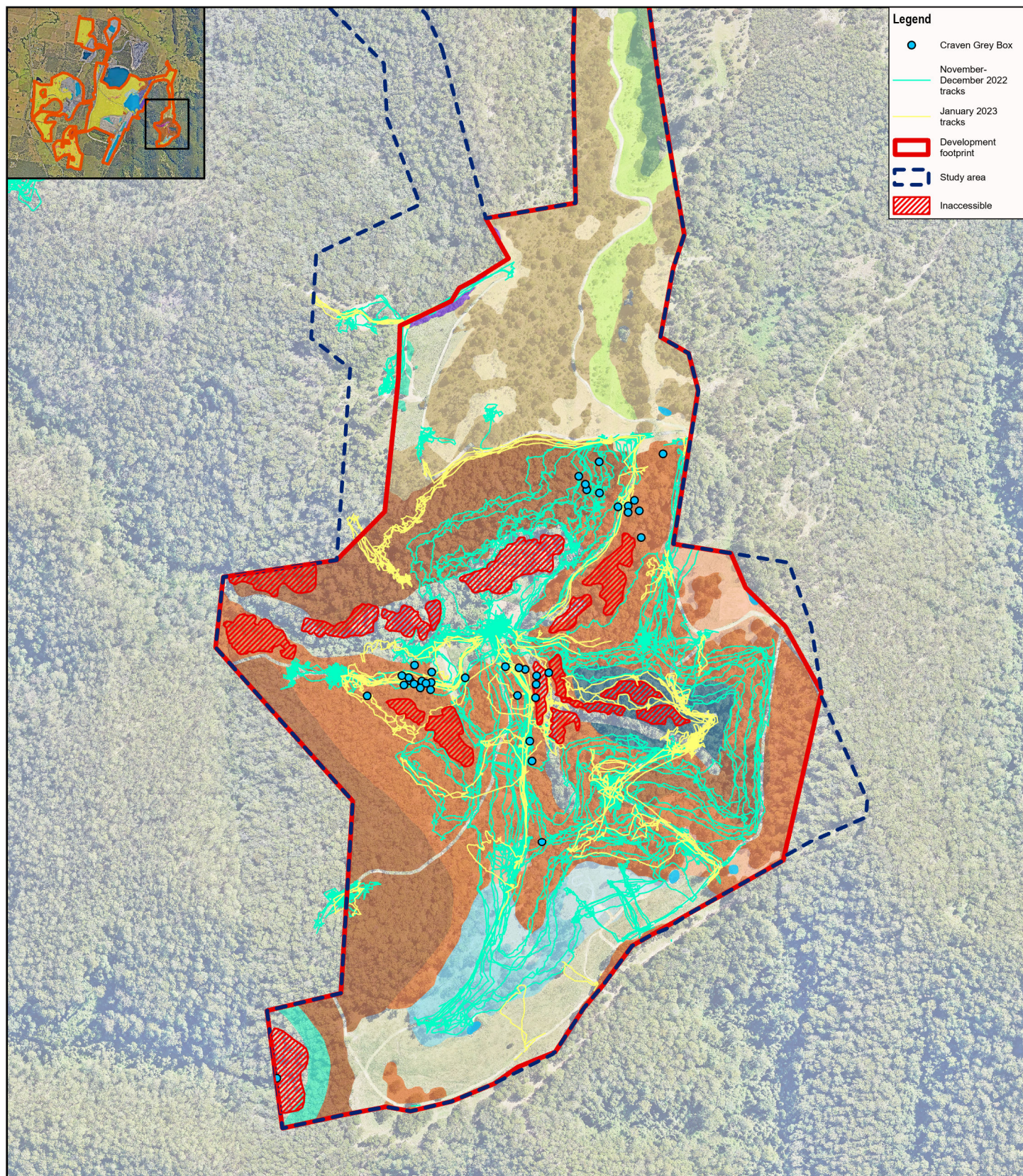


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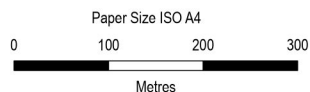
**Craven Grey Box (*Eucalyptus largeana*)
surveys and identified individuals**

Project No. 12604910
Revision No. 0
Date 11/04/2025

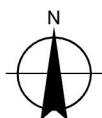
FIGURE 4-13.2a



Vegetation zones	3244,Mod	3254,Mod
3170,Mod	3244,Low	3446,Mod
3241,Mod	3251,High	3446,Low
3241,Low	3252,Mod	Waterbody
3244,High	3252,Low	



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

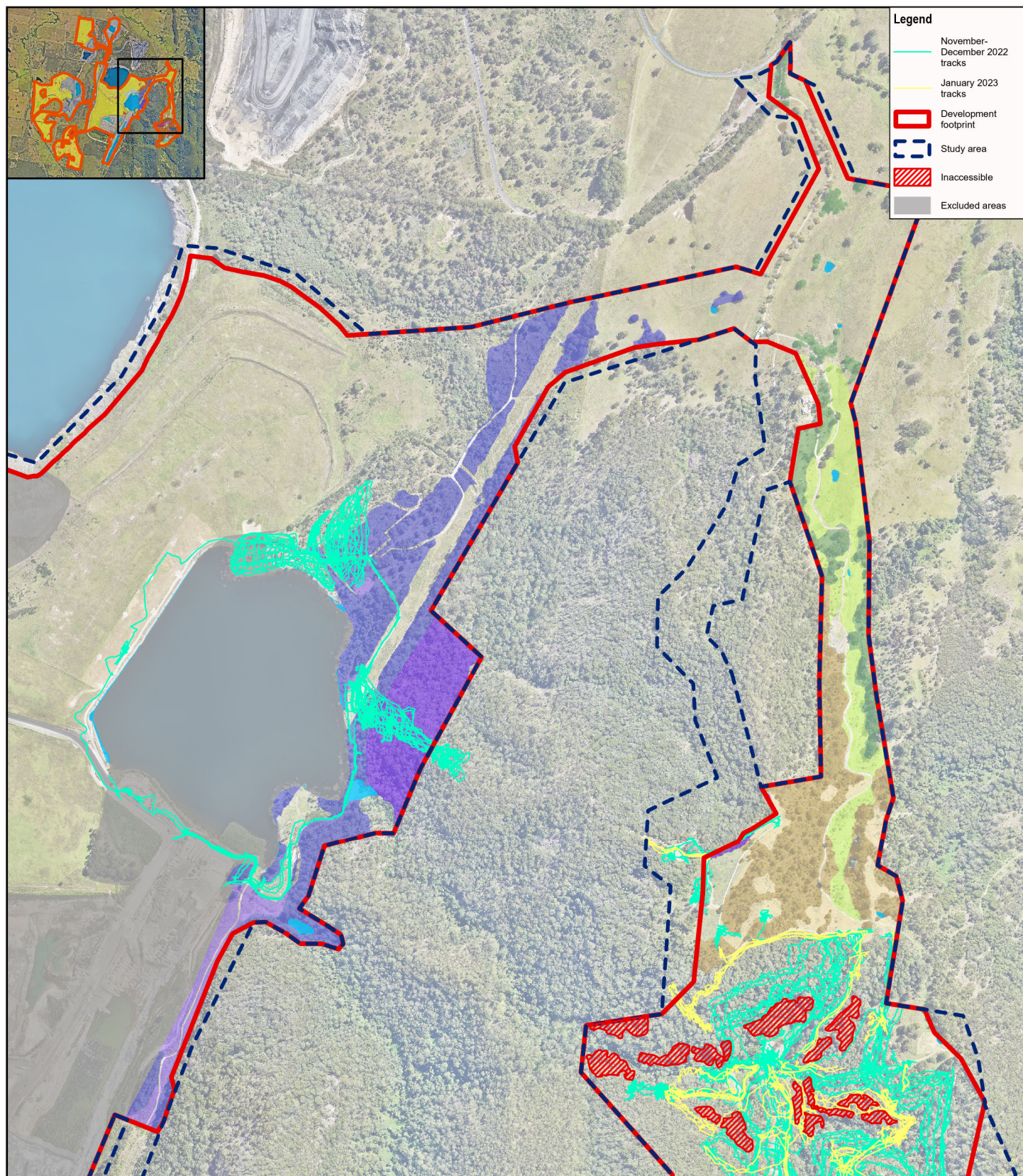


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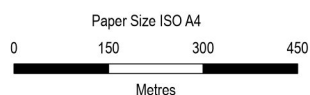
**Craven Grey Box (*Eucalyptus largeana*)
surveys and identified individuals**

Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

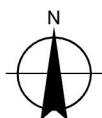
FIGURE 4-13.2b



Vegetation zones	3251,Low
3241,Mod	3254,Mod
3241,Low	3446,Mod
3251,High	3446,Low
3251,Mod	Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

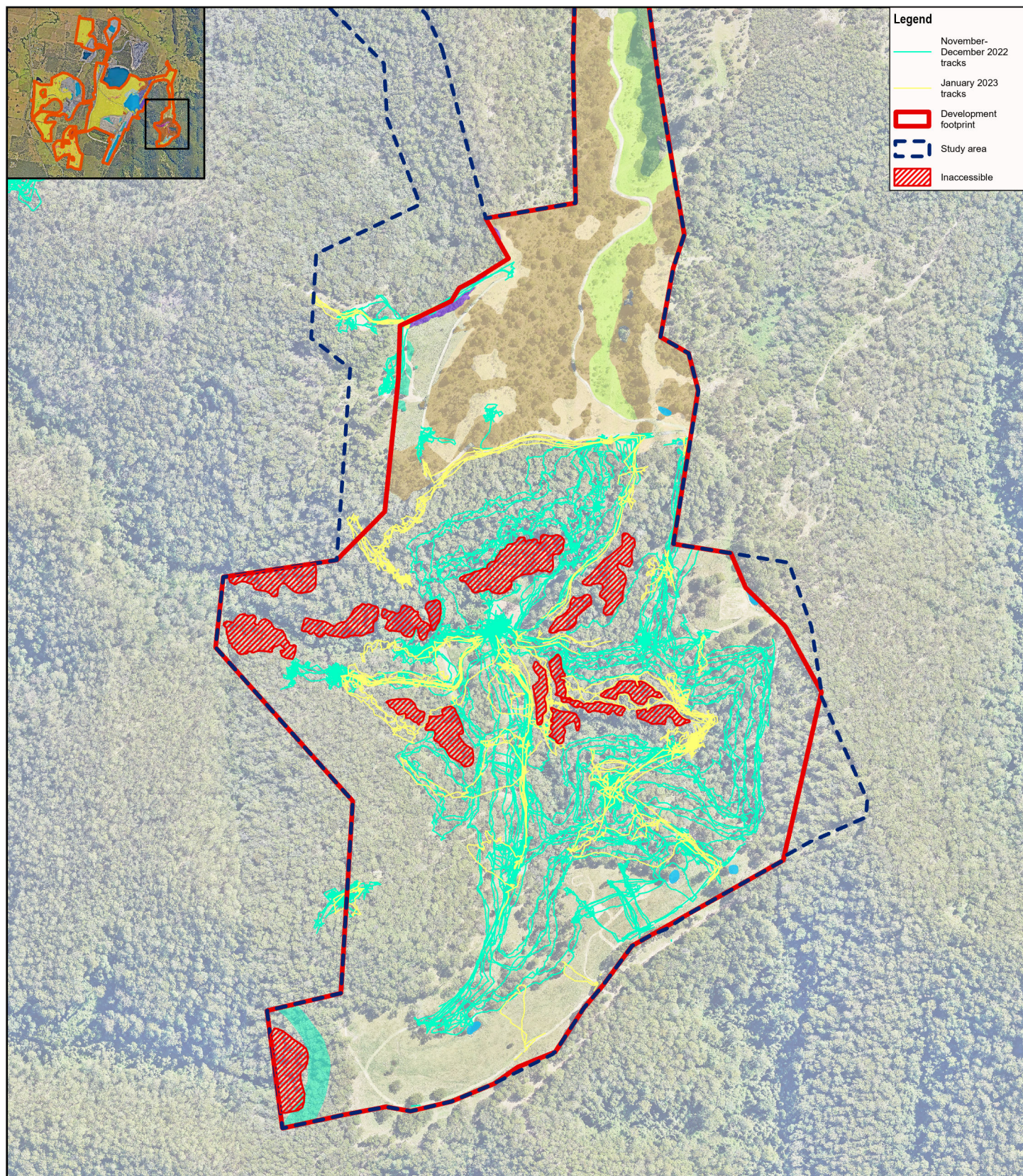


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**Slaty Red Gum (*Eucalyptus glauca*)
surveys**

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Date **11/04/2025**

FIGURE 4-13.3a

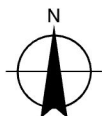


Vegetation zones

3241,Mod	3446,Mod
3241,Low	3446,Low
3251,High	Waterbody
3254,Mod	

Paper Size ISO A4
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

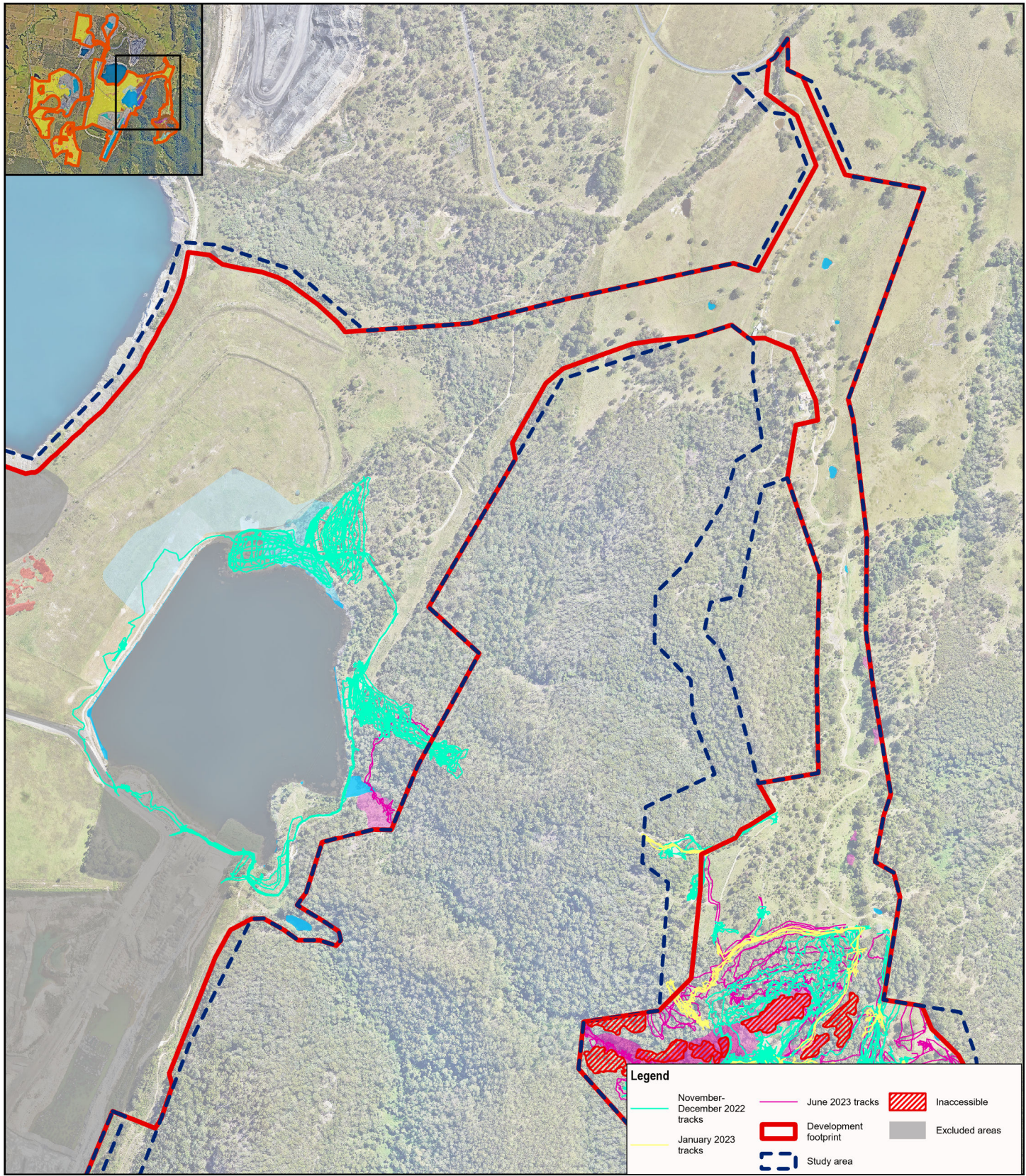


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**Slaty Red Gum (*Eucalyptus glaucina*)
surveys**

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Date **11/04/2025**

FIGURE 4-13.3b

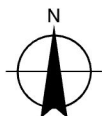


Vegetation zones

- 4042, Low
- 3086, High
- 3086, Mod
- 3252, Mod
- 3252, Low
- Waterbody

Paper Size ISO A4
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

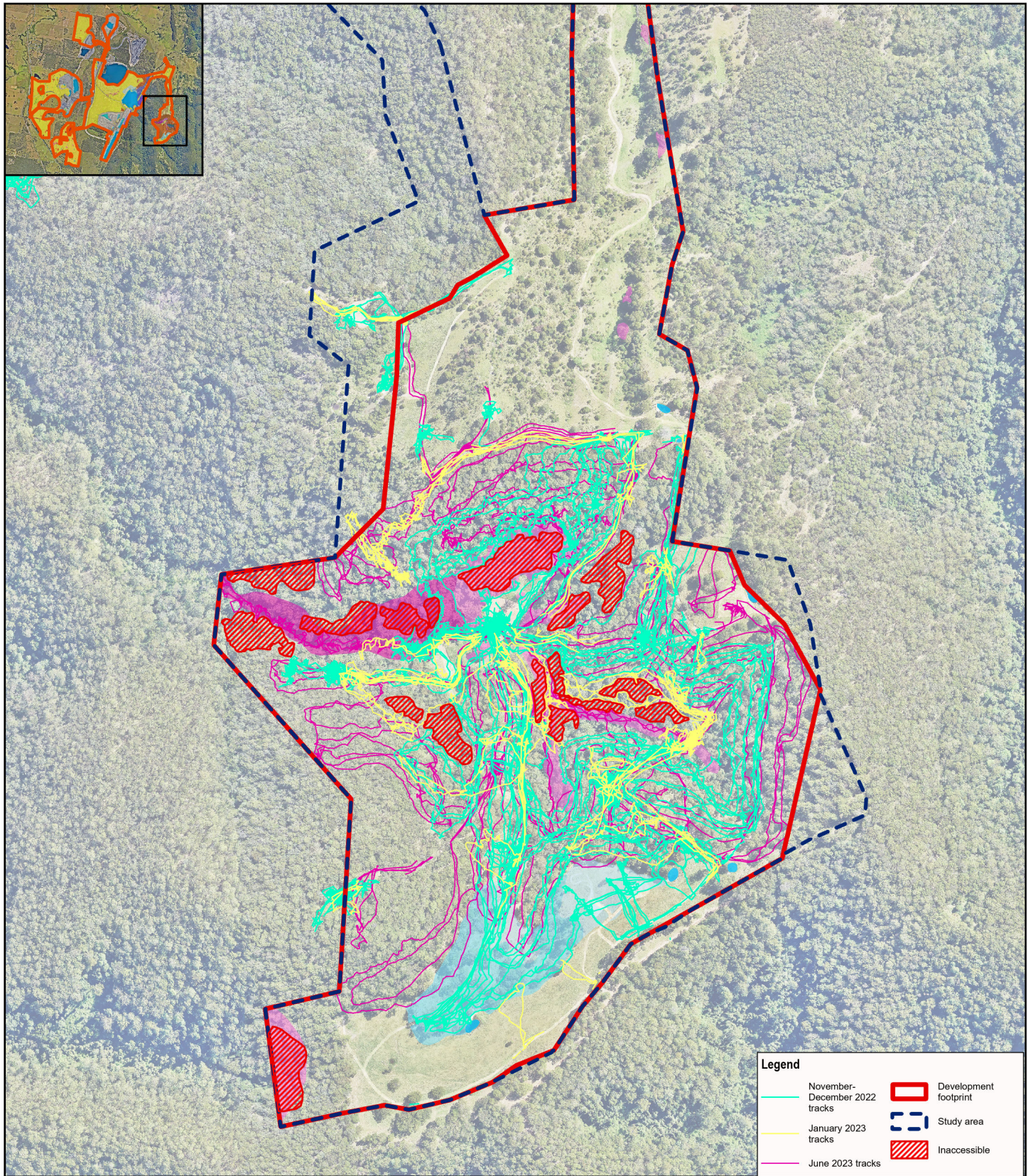


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**Native Guava (*Rhodomyrtus psidioides*)
surveys**

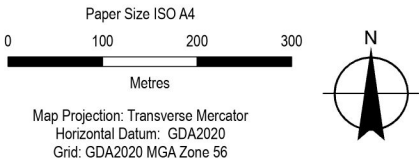
Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

FIGURE 4-13.4a



- Legend**
- November-December 2022 tracks
 - January 2023 tracks
 - June 2023 tracks
 - Development footprint
 - Study area
 - Inaccessible

- Vegetation zones**
- 3086, High
 - 3086, Mod
 - 3252, Mod
 - 3252, Low
- Waterbody

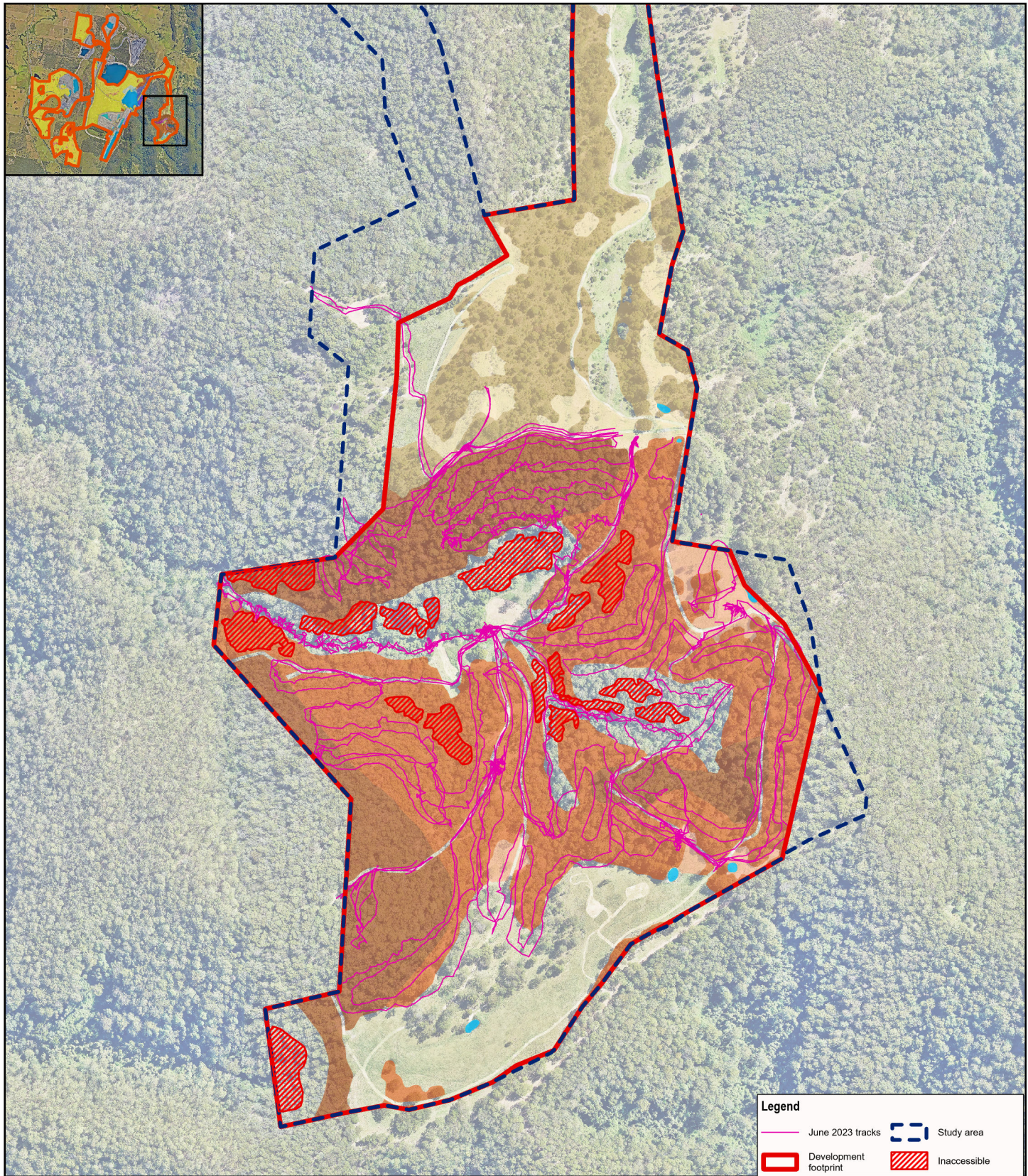


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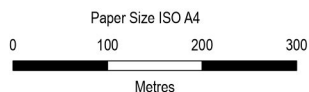
Native Guava (*Rhodomyrtus psidioides*)
surveys

FIGURE 4-13.4b

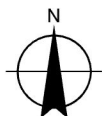


- Vegetation zones**
- 3241,Mod
 - 3241,Low
 - 3244,High
 - 3244,Mod
 - 3244,Low
 - Waterbody

- Legend**
- June 2023 tracks
 - Study area
 - Development footprint
 - Inaccessible



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

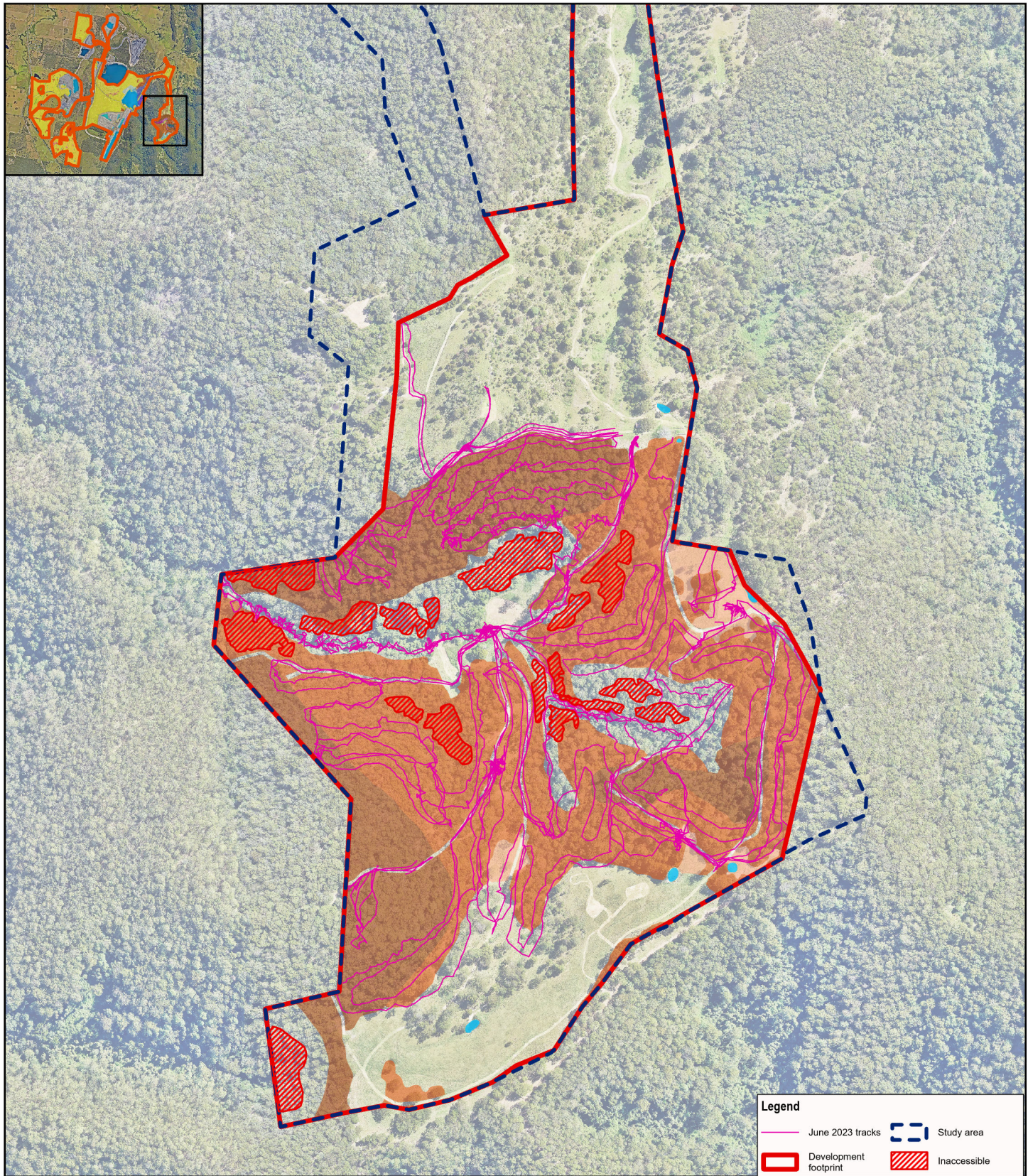


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**Magenta Lilly Pilly (*Syzygium paniculatum*)
surveys**

Project No. **12604910**
Revision No. **0**
Date **4/04/2025**

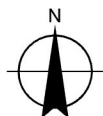
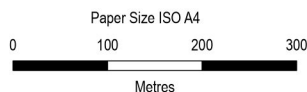
FIGURE 4-13.5



Vegetation zones

- 3244, High
- 3244, Mod
- 3244, Low
- Waterbody

Legend	
—	June 2023 tracks
	Study area
	Development footprint
	Inaccessible



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

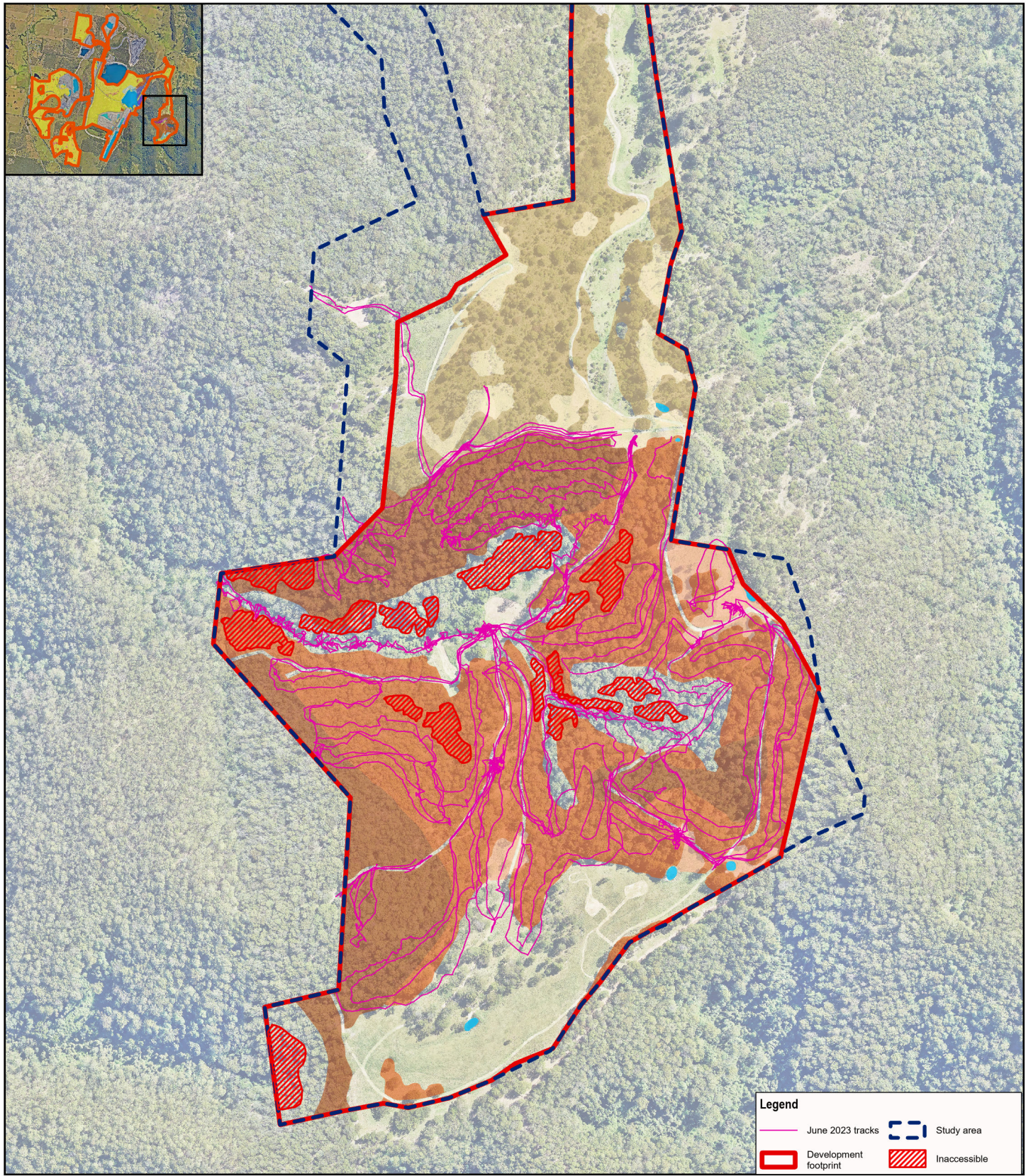


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Camfield's Stringybark (*Eucalyptus camfieldii*)
surveys

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FIGURE 4-13.6

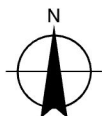


Vegetation zones

- 3244,Low
- 3241,Mod
- 3241,Low
- 3244,High
- 3244,Mod
- Waterbody

Paper Size ISO A4
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

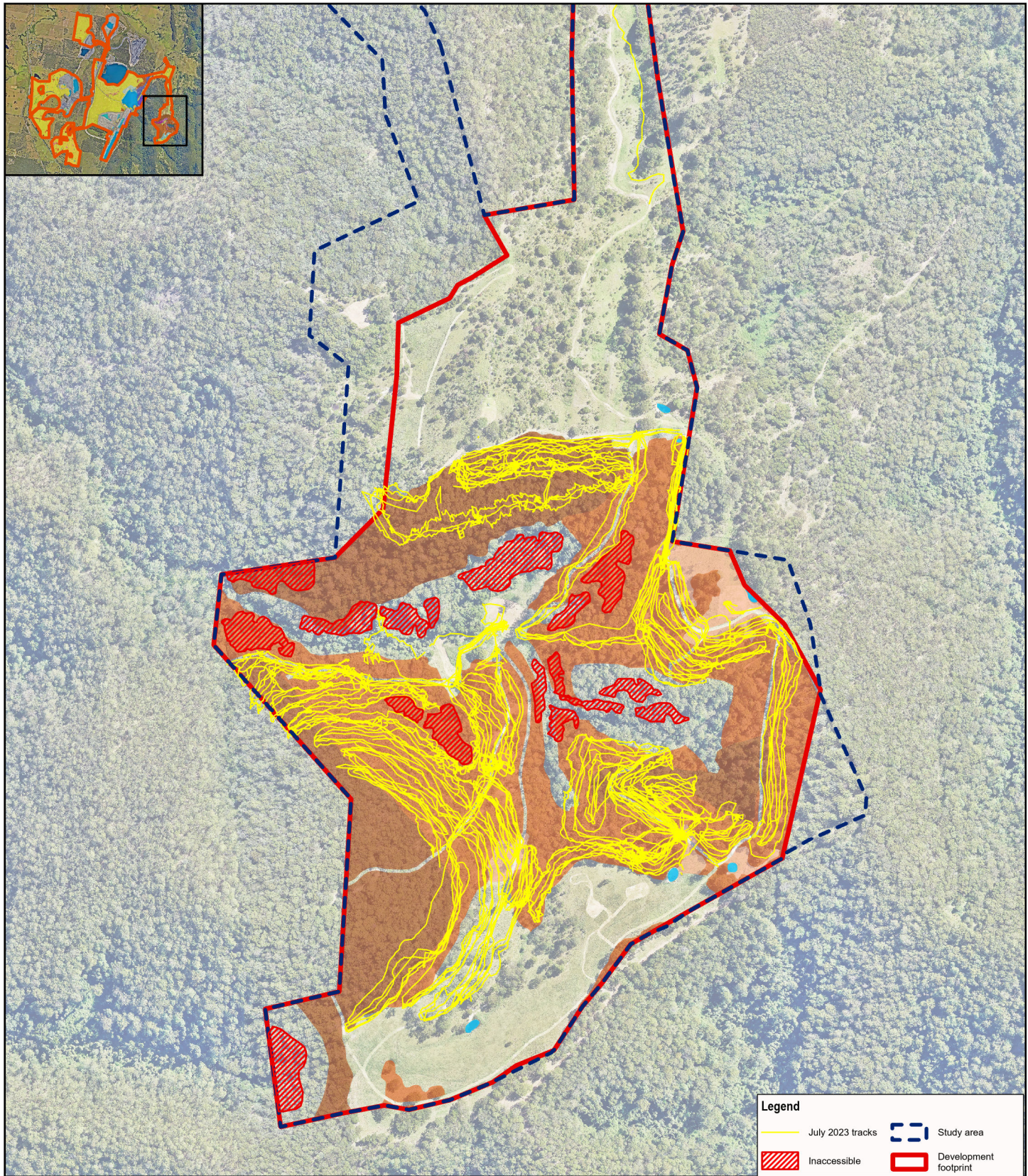


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**Biconvex Paperbark (*Melaleuca biconvexa*)
surveys**

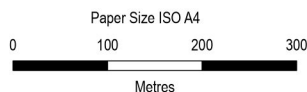
Project No. 12604910
Revision No. 0
Date 3/04/2025

FIGURE 4-13.7

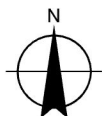


Vegetation zones

- 3244, High
- 3244, Mod
- 3244, Low
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

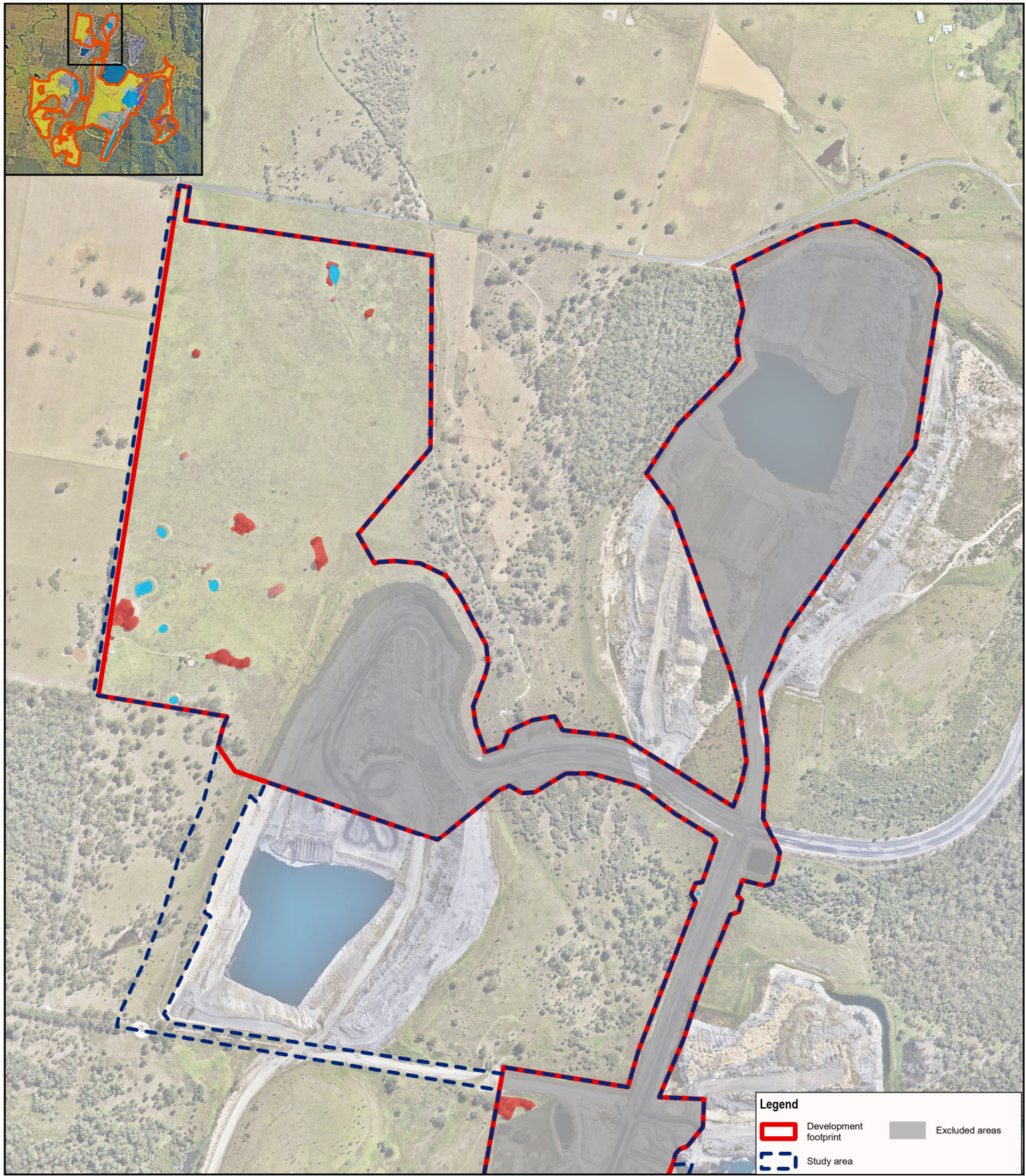


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Red Helmit Orchid (*Corybas dowlingii*)
surveys

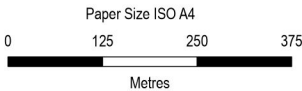
Project No. 12604910
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Date 3/04/2025

FIGURE 4-13.8

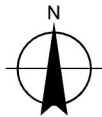


Vegetation zones

- 4042, Low
- 4042, Mod
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

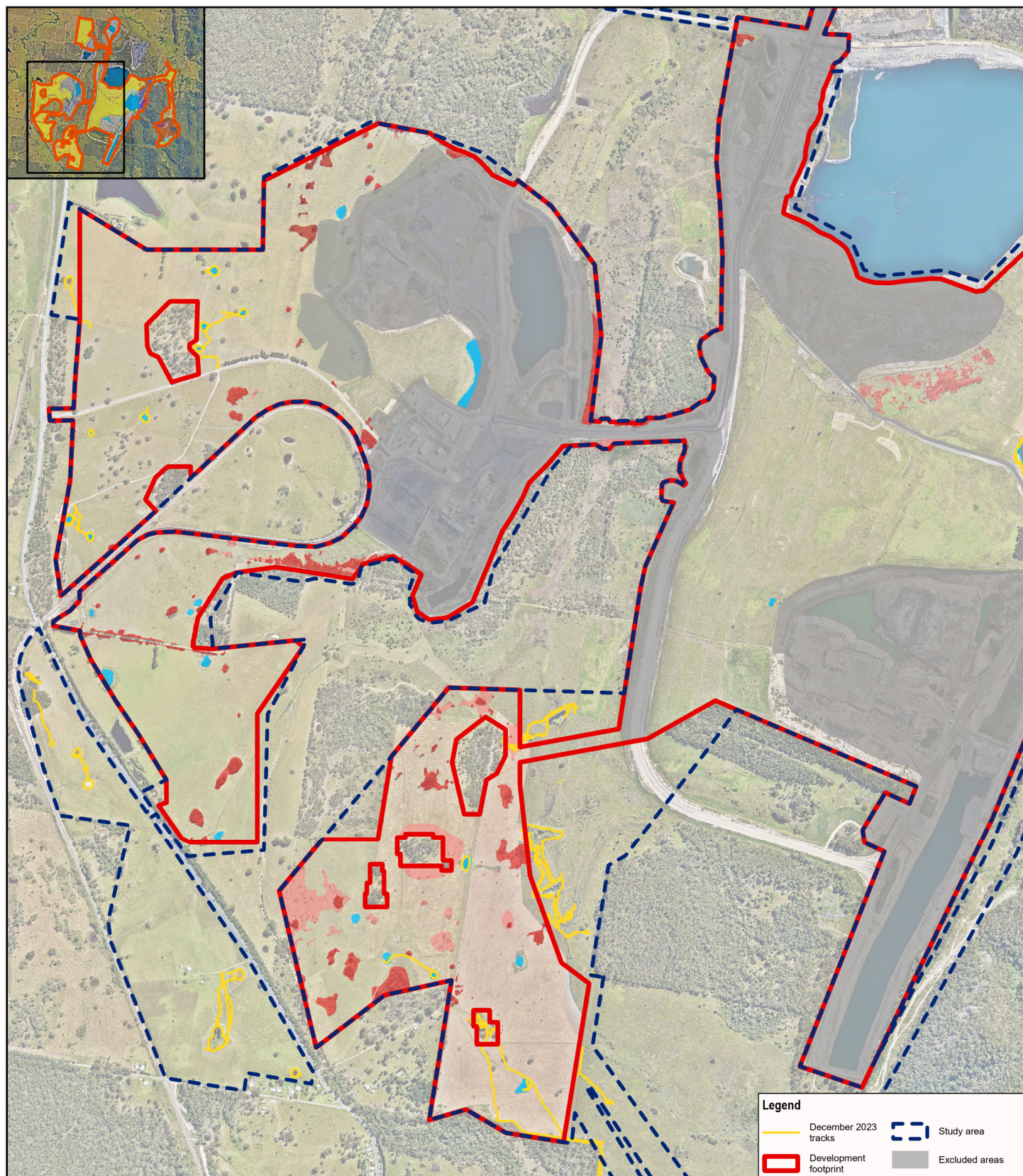


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***Maundia triglochinosides* surveys**

FIGURE 4-13.9a

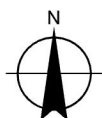


Vegetation zones

- 4042, Low
- 4042, Mod
- 4042, Planted
- Waterbody

Paper Size ISO A4
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

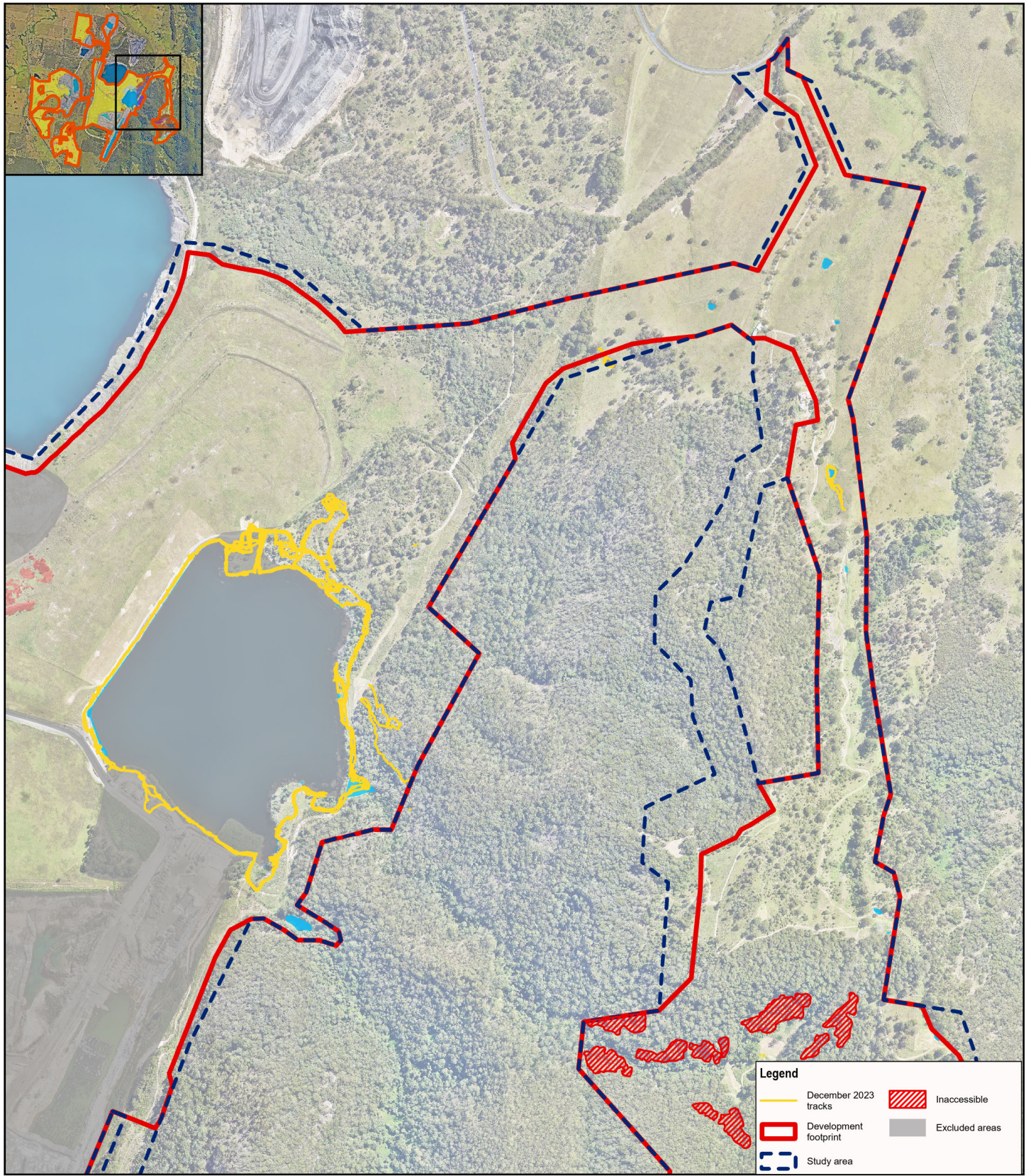


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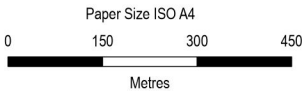
Maundia triglochinos surveys

FIGURE 4-13.9b

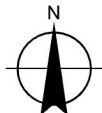


Vegetation zones

- 4042, Low
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

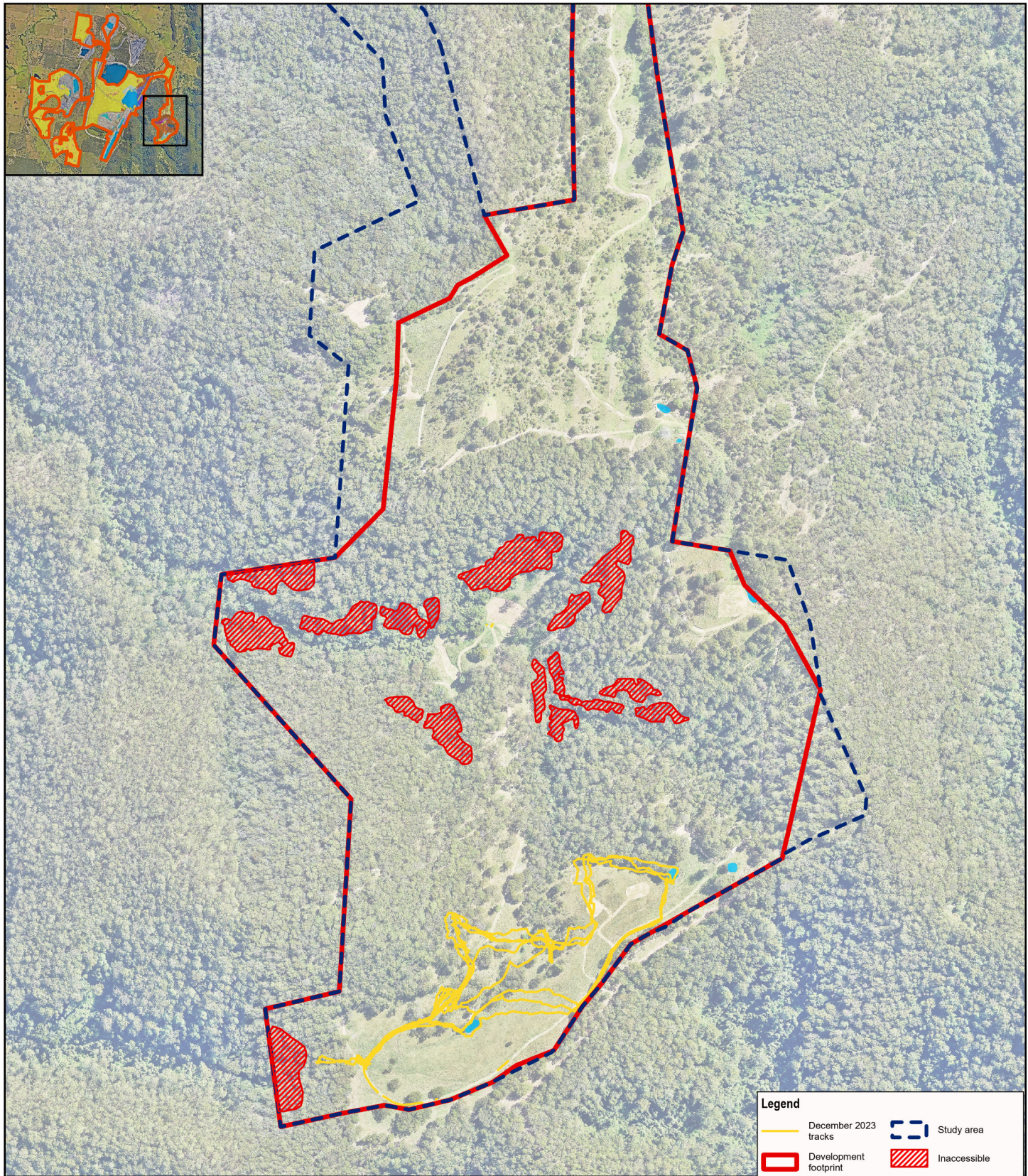


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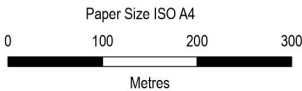
Maundia triglochinos surveys

FIGURE 4-13.9c

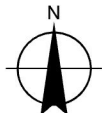


Vegetation zones

Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

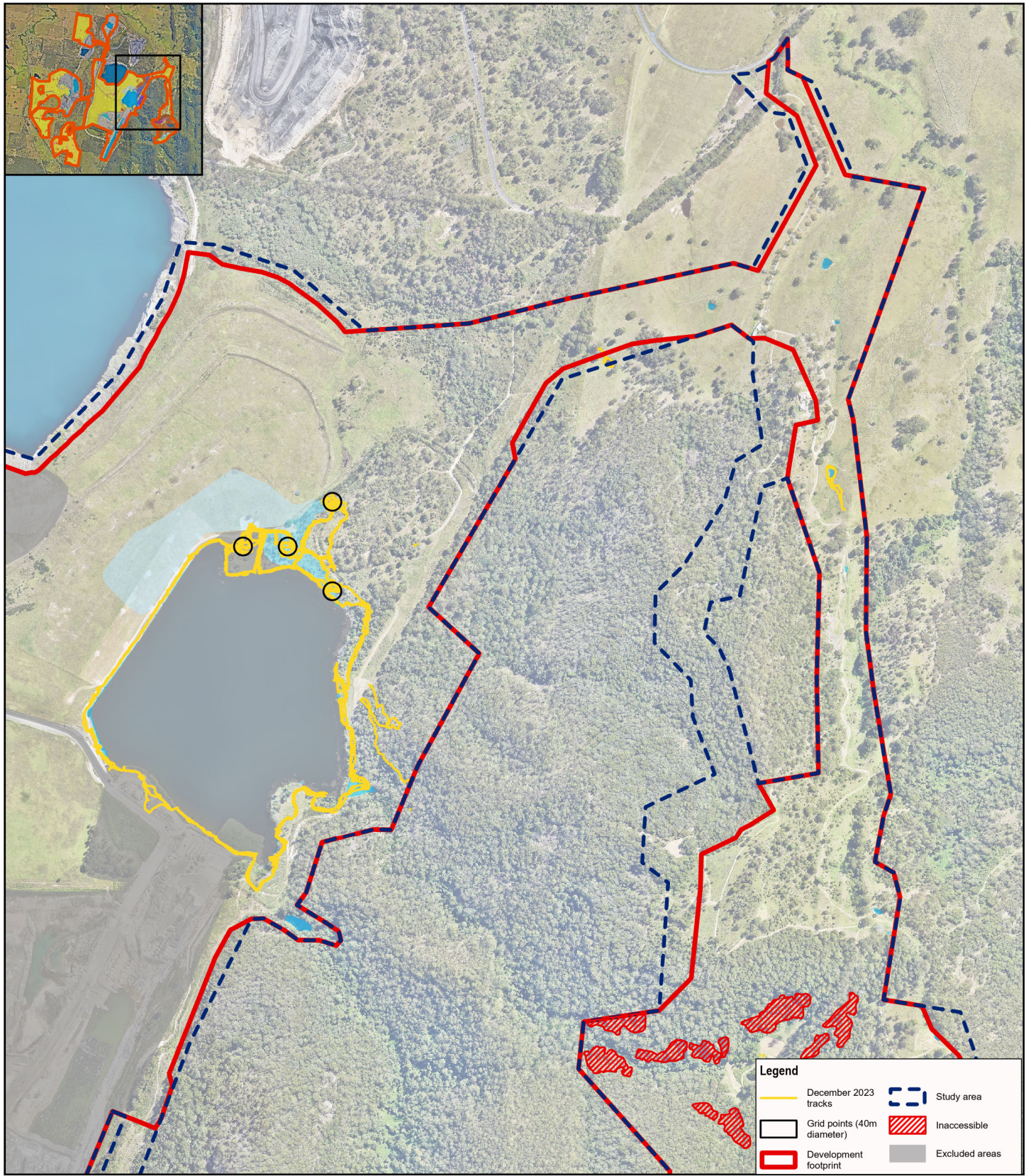


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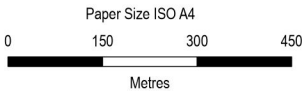
***Maundia triglochinos* surveys**

FIGURE 4-13.9d

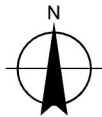


Vegetation zones

- 3252,Mod
- 3252,Low
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

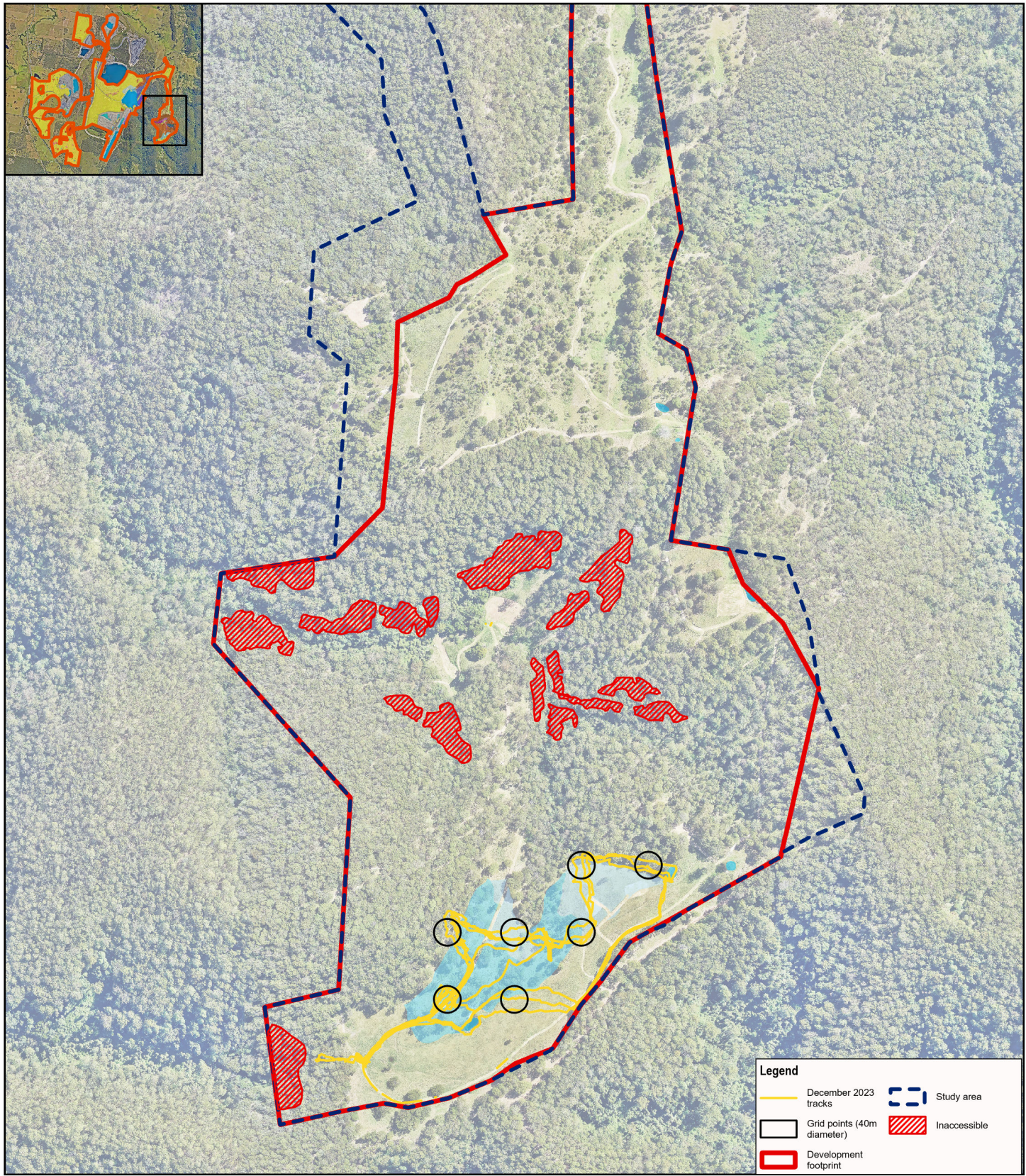


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Austral Toadflax (*Thesium australe*)
surveys

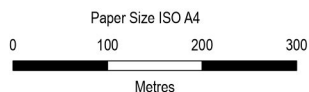
Project No. 12604910
Revision No. 0
Date 11/04/2025

FIGURE 4-13.10a

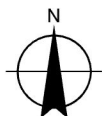


Vegetation zones

- 3252,Mod
- 3252,Low
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

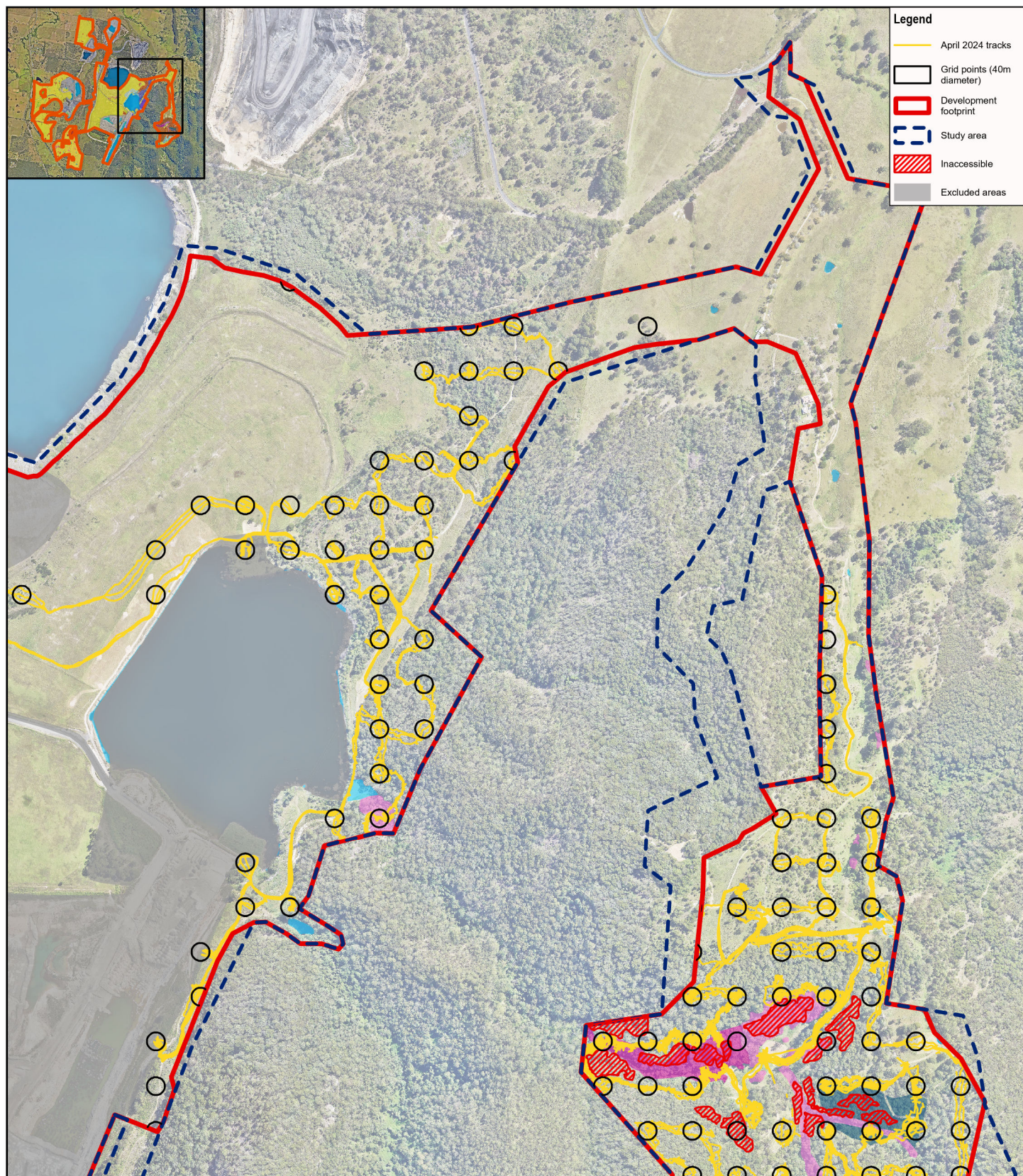


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**Austral Toadflax (*Thesium australe*)
surveys**

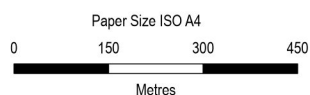
Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

FIGURE 4-13.10b

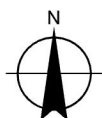


Vegetation zones

- 3086, High
- 3086, Mod
- 3170, Mod
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

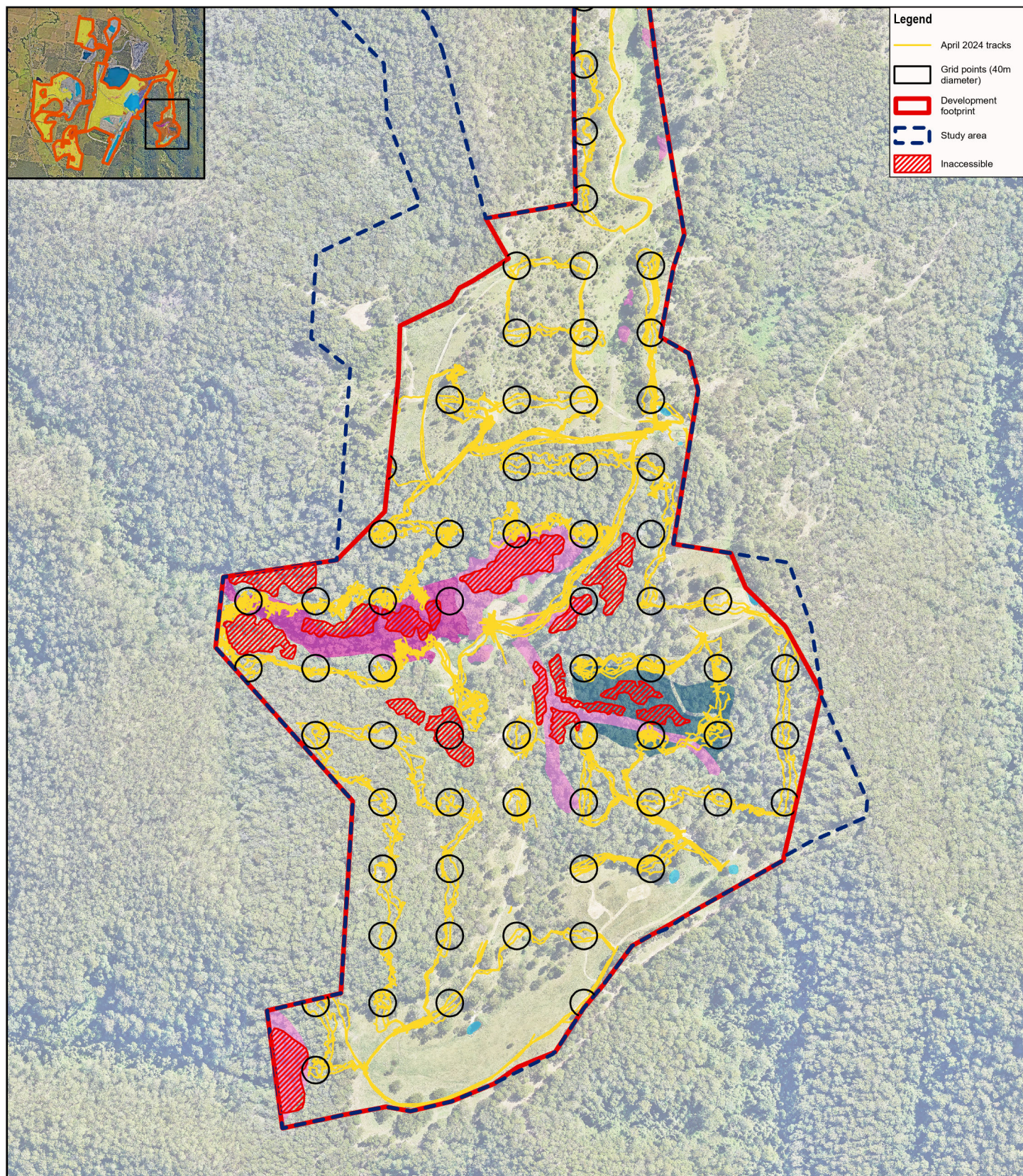


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**Rainforest Cassia (*Senna acclinis*)
surveys**

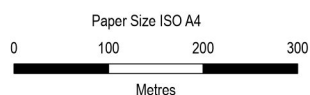
Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

FIGURE 4-13.11a

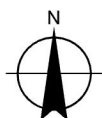


Vegetation zones

- 3086, High
- 3086, Mod
- 3170, Mod
- Waterbody



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

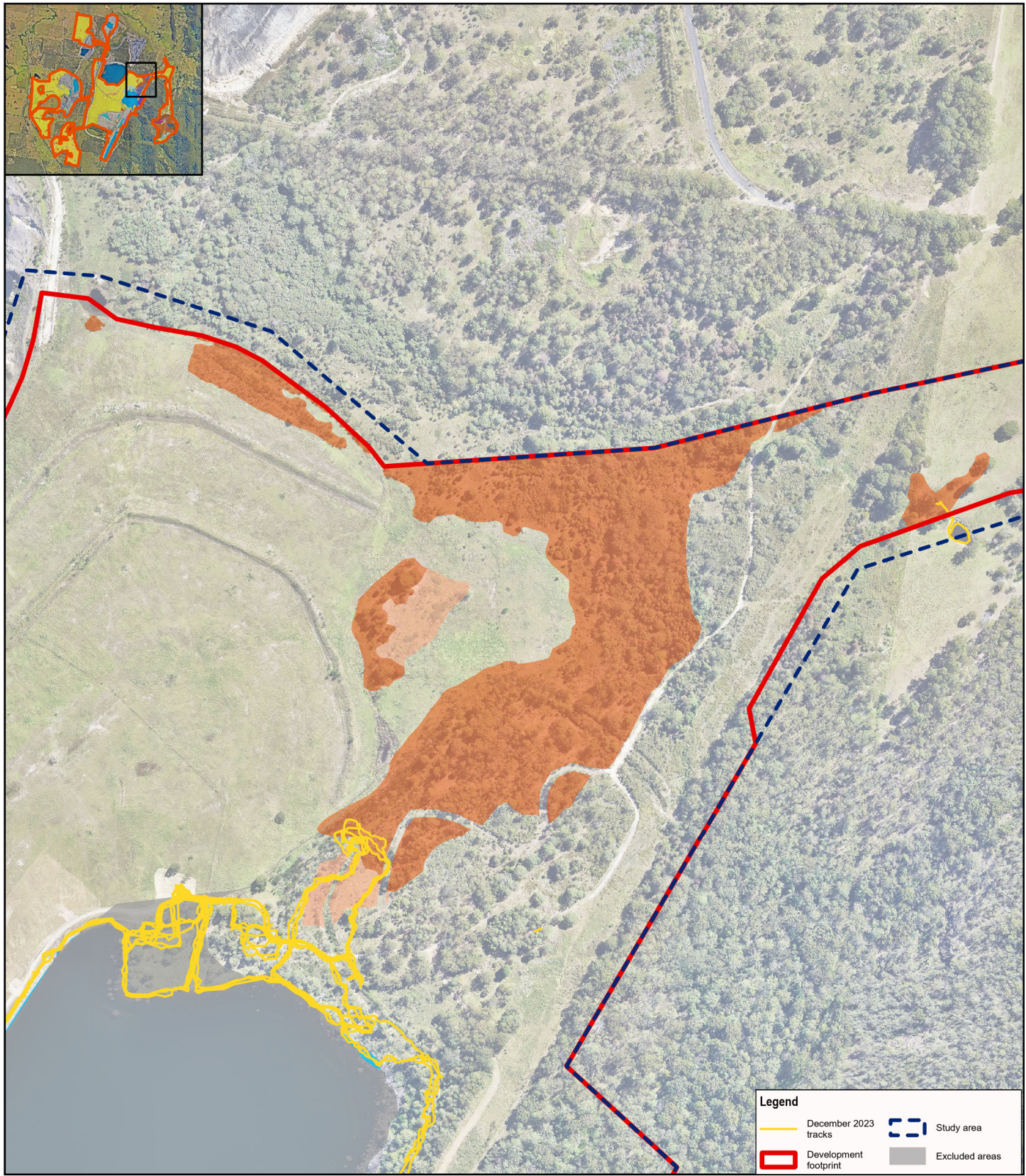


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**Rainforest Cassia (*Senna acclinis*)
surveys**

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FIGURE 4-13.11b



Legend

- December 2023 tracks
- Study area
- Development footprint
- Excluded areas

Vegetation zones

- 3244, Mod
- 3244, Low
- Waterbody

Paper Size ISO A4

0 70 140 210

Metres

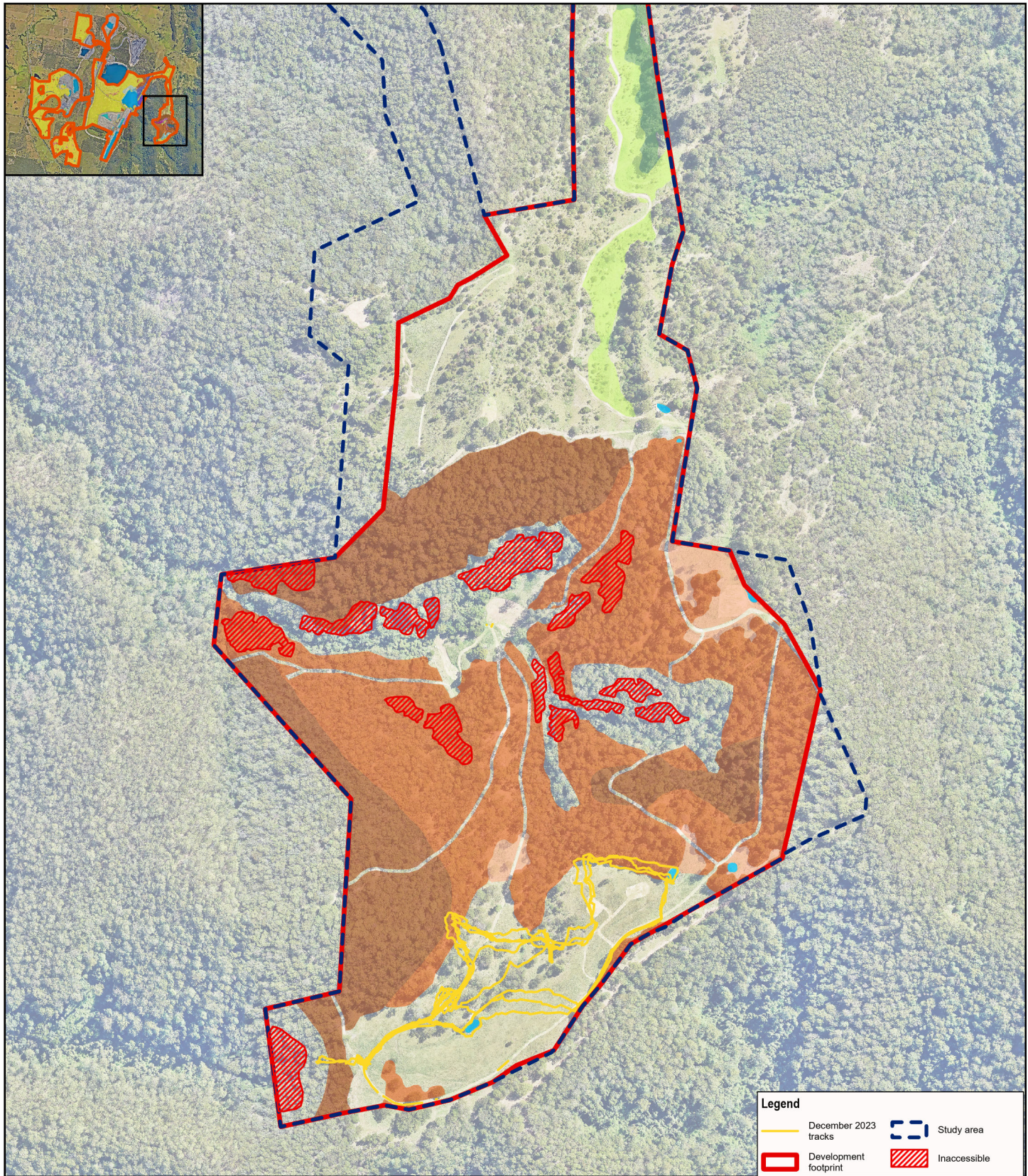
Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

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Small-flowered Grevillea
(*Grevillea parviflora* sub sp. *parviflora*) surveys

Project No. 12604910
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FIGURE 4-13.12a

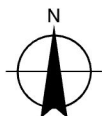


Vegetation zones

3244,High	3446,Low
3244,Mod	Waterbody
3244,Low	
3446,Mod	

Paper Size ISO A4
0 100 200 300
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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Small-flowered Grevillea
(*Grevillea parviflora* sub sp. *parviflora*) surveys

Project No. 12604910
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Date 11/04/2025

FIGURE 4-13.12b

7. Targeted surveys are required within areas identified as containing ‘exotic’ vegetation (as indicated by a VI below 15. Further information is required for BAM-C species credit species

For the areas within the Development Footprint which occur in the Stratford Mining Complex (SMC), the assessor has identified that the majority of these lands contain vegetation described as ‘exotic’. The assessor has created a separate BAM-C sub case (00046847/BAAS24006/24/00049130) to assess the VI score of the area, with the entirety being delineated into a single PCT. The calculated VI is less than 15 across the 385.1 ha.

For this BAM-C sub case, all candidate species within Tab 6 have been removed. In order to remove a candidate species from the species list, the assessor must provide adequate justification in the BDAR including discussion of microhabitat requirements of the species as per steps 1 – 6 Section 5.2.1 of the BAM.

Section 4.4.3 of BAM Operation Manual 1 states that “Describing a vegetation zone as degraded or low/poor conduction is not adequate justification to remove a candidate species credit species from a generated list.” The BDAR should include:

- a) a description of microhabitats required by the species, supported by evidence such as published literature*
- b) details of the habitat constraints listed in the TBDC for the species (where relevant).*

An assessment is required, including evidence-based justification for why targeted surveys for each threatened entity as listed within the BAM-C has not been conducted within the areas identified as ‘exotic’. The BDAR needs to include evidence which is relevant and tied to each candidate species likely to occur on the subject land, and their unique habitat requirements, as well as consideration of the species’ resilience to disturbance.

Recommended action:

Evidence-based justification is required in the BDAR for removing candidate species within BAM-C 00046847/BAAS24006/24/00049130.

Response

A large proportion of the study area has been disturbed through the management and operations of the SMC. This has facilitated the establishment of exotic vegetation (see Figure 5-1 of the BDAR [Plate 4-16]) that does not conform to a native PCT (see Plate 4-17, which shows vegetation consistent with exotic vegetation in the Project Disturbance Footprint). This vegetation was surveyed in conjunction with native vegetation communities as per the methods outlined in Section 3.3.1 of the BDAR.



Plate 4-16a: Figure 5-1 of the BDAR

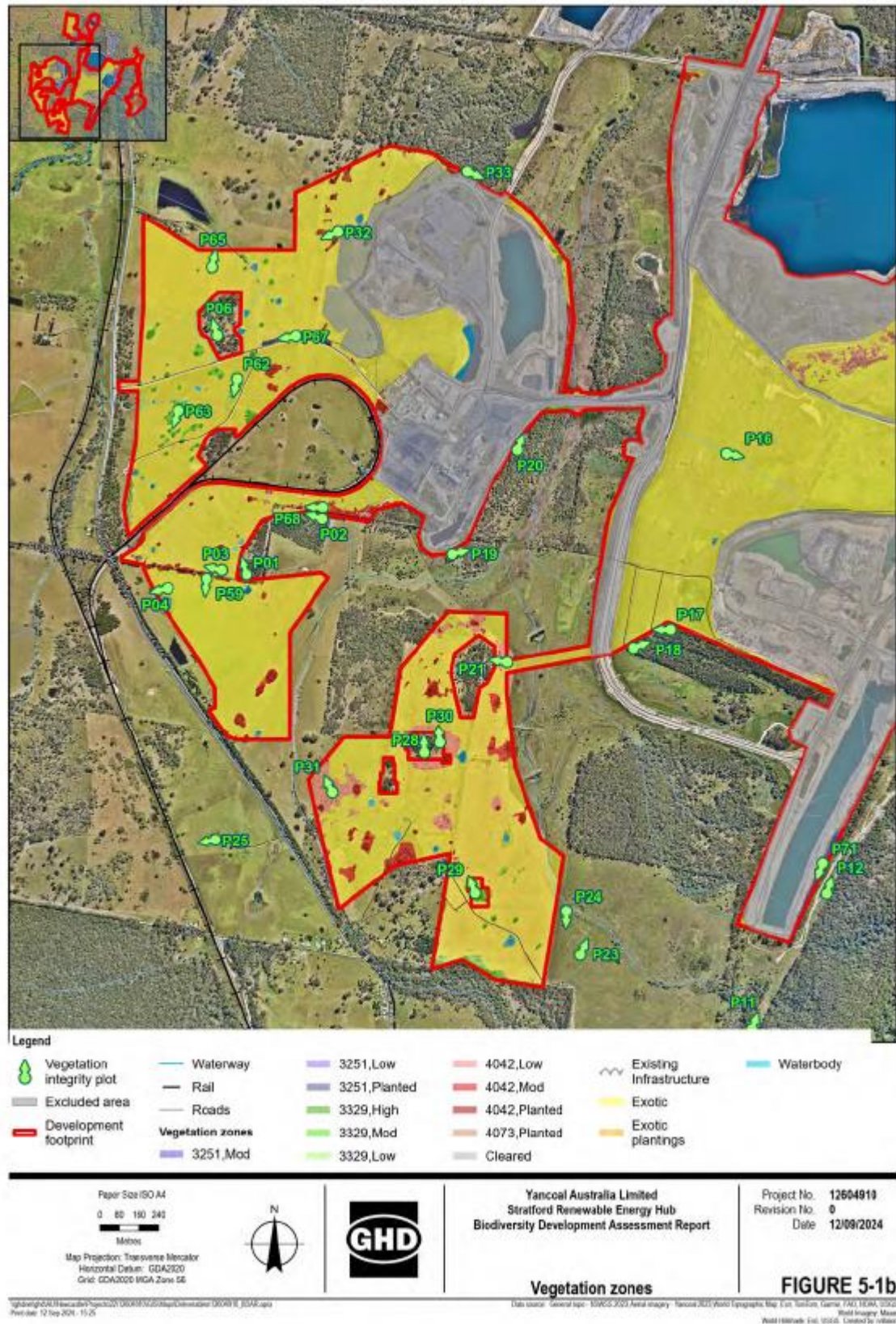


Plate 4-16b: Figure 5-1 of the BDAR

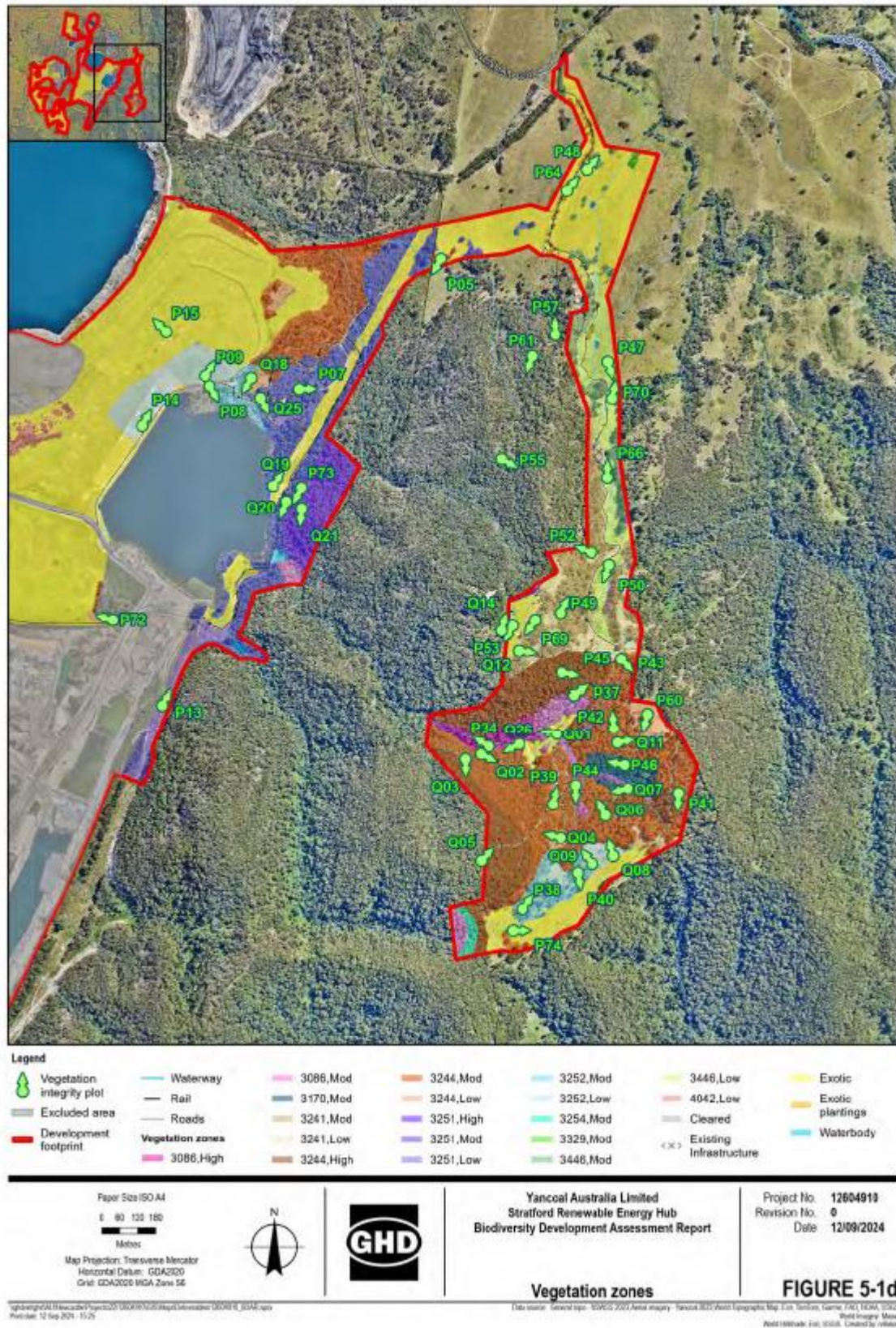


Plate 4-16d: Figure 5-1 of the BDAR



Plate 4-17: Exotic Vegetation in the Project Disturbance Footprint

VI plots were sampled in accordance with the BAM to obtain VI data for the calculation of biodiversity credits. The sampling was undertaken using 20 x 20 m plots nested within a larger 20 x 50 m plot. All efforts were made to ensure that plots avoided ecotones, tracks and their edges to the greatest extent possible. This was completed to ensure that exotic vegetation did not have a VI score greater than or equal to 15, and therefore does not require calculation of ecosystem offsets.

A separate BAM sub case (00046847/BAAS24006/24/00049130) was created to assess the VI score of exotic vegetation within the Project Disturbance Footprint. All exotic vegetation was attributed to PCT 3329 - Northern Hinterland Valleys Red Gum Grassy Forest in the BAM Calculator (BAM-C). This community is abundant in areas of low elevation in the Project Disturbance Footprint, as are most examples of exotic vegetation. As such, the sample data for exotic vegetation was compared to the benchmarks for PCT 3329.

Both exotic vegetation zones yielded VI scores less than three and therefore did not generate ecosystem credits. This degraded vegetation is unlikely to represent suitable habitat for the identified candidate species for the following reasons:

- The 'exotic' vegetation zone does not retain a native canopy or midstorey, limiting suitability for predatory birds, forest-dwelling birds and arboreal mammals. Whilst patches of 'exotic plantings' often do contain an established canopy, it is dominated by exotic species such as *Pinus radiata* (Radiata Pine), that would provide little in the way of foraging habitat for any of the candidate species. For example, the Glossy Black-Cockatoo's primary food source includes a variety of *Allocasuarina* species (shrub or tree in growth form), which is absent in the 'exotic' and 'exotic plantings' vegetation zones.
- The 'exotic plantings' vegetation zone, where forested, is often dominated by young exotic trees without hollows. This eliminates the potential of this zone to represent breeding habitat for a number of the candidate bird and mammals species that are reliant on hollows, such as the Powerful Owl, Glossy Black-Cockatoo and Squirrel Glider.

- The exotic vegetation zones lack suitable waterbodies for candidate amphibian species such as the Stuttering Frog.
- The exposed conditions provided by exotic grassland communities is unlikely to support most candidate groundcover plants given that they require sheltered, forested positions such as *Tetratheca juncea*.
- The modified soil profile and disturbance associated areas of exotic vegetation within the Project Disturbance Footprint are unlikely to support threatened shrub and tree species that were not identified on site are often readily identifiable (e.g. Camfield's Stringybark, *Pomaderris queenslandica* [Scant Pomaderris], etc.).

CPHR has requested that an evidence-based justification be provided for each candidate species that was excluded from further assessment. The surveys and conclusions outlined in the BDAR align with the observed condition of the exotic vegetation and indicate that it is unlikely to support the candidate entities.

8. Individual replicates of BAM plot data are required

When preparing a BDAR, an assessor is required perform a plot-based vegetation survey of the subject land. Table 3 of Section 4.3.4 of BAM 2020 outlines the minimum number of vegetation plots required per VZ.

Section 3.10 of the BDAR states that VI score for PCT 3241_Low condition was generated using duplicate plot data. Only one vegetation plot was conducted for the VZ though the spatial area requires two to adequately sample the area. The assessor entered a single vegetation plot into the BAM-C twice, being Q12 (Q12a and Q12b).

BCS does not consider this suitable as all VZs should be sampled as required by Table 3 of the BAM. In addition, BAM plot P74 is not included in the submitted raw plot data.

Recommended action:

All vegetation zones should be sampled adequately prior to submitting the BDAR and the BAM-C in BOAMS. All vegetation plot data must be submitted with the BDAR to enable review.

Response

86 plots were completed across the Project Disturbance Footprint, delineating PCTs and their different condition zones (see Figure 5-1 from the BDAR [Plate 4-16]). A small change in the vegetation mapping towards the submission of the BDAR changed the total area of PCT 3241 – Low condition to 2.72 ha, therefore increasing the total number of required plots from one to two plots as per Table 3 of *Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE, 2020b). Given that only a single plot had been completed, it was duplicated in order to meet the requirements of the BAM-C. The duplication of Q12 (Q12a and Q12b) within the BAM-C has allowed for the generation of an offset liability of 29 credits for this vegetation zone. PCT 3241 – Low condition represents a small part (2.72 ha) of the Project Disturbance Footprint (approximately 549.61 ha).

CPHR has requested the raw data for P74, which was provided in the data package of the BDAR. This processed data is provided in Tables 4-8 to 4-10 for reference and data sheet scans can be provided to CPHR separately to this Submissions Report. The completed plots are mapped and on Plate 4-16.

Table 4-8
Plot 74 – Composition Data (1)

			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic
Sheet version: 20170224.1531			# spp	Count	compTree	compShrub	compGrass	compForbs	compFerns	compOther	Count
BAM data import_template data			7	3	0	0	1	1	1	0	4
Species	Cover	Abundance	Sum cover	Sum	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	Sum
			99.4	2.4	0	0	0.3	0.1	2	0	97
<i>Setaria sphacelata</i>	90	1000	EX								90
<i>Plantago lanceolata</i>	3	500	EX								3
<i>Rumex conglomeratus</i>	1	50	EX								1
<i>Pteridium esculentum</i>	2	30	EG						2		
<i>Themeda triandra</i>	0.3	10	GG				0.3				
<i>Verbena bonariensis</i>	3	100	EX								3
<i>Geranium solanderi</i>	0.1	30	FG					0.1			

Table 4-9
Plot 74 – Composition Data (2)

Zon e ID	plo t	pct	area	patchsi ze	conditioncl ass	zon e	eastin g	northi ng	beari ng	compTr ee	compShr ub	compGra ss	compFor bs	compFer ns	compOth er	strucTr ee	strucShr ub
25	P7 4	999 9	384.4 3	101	Exotic	56	40023 5	644231 9	20	0	0	1	1	1	0	0	0

Table 4-10
Plot 74 – Composition Data (3)

struc Grass	strucF orbs	strucF erns	struc Other	funLarg eTrees	funHollo wtrees	funLitter Cover	funLenFall enLogs	funTreeSt em5to9	funTreeSte m10to19	funTreeSte m20to29	funTreeSte m30to49	funTreeSte m50to79	funTree Regen	funHighThr eatExotic
0.3	0.1	2	0	0	0	5	0	0	0	0	0	0	0	0

9. **Further information is required for camera trapping methods used for terrestrial mammal species**

The assessor needs to demonstrate that terrestrial camera traps were used for terrestrial fauna species such as the Rufous Bettong, Parma Wallaby, Brush-tailed Rock-wallaby and Long-nosed Potoroo.

Table 3.3 within the BDAR outlines that camera traps were deployed but provides no details. Without evidence of camera traps being deployed to target terrestrial species, and therefore set up appropriately for these species, BCS cannot determine if survey requirements have been met for these entities.

The assessor has not correctly conducted camera trapping targeting arboreal mammal species in accordance with the TBDC for the Brush-tailed Phascogale. Suitable habitat of the species within the development footprint (based on current suitable habitat mapping) is 126.9 ha, therefore the assessor should have contacted the BOS helpdesk to determine the methodology (as it is greater than 10 ha). At present the greatest number of camera traps deployed concurrently is 30 camera traps, which is unlikely to be adequate based on the effort listed in the TBDC.

The BDAR does not include any evidence of the assessor having corresponded with the BOS helpdesk. The methodology does not list the bait used, or rebaiting schedule which is stipulated by the TBDC. Though the BDAR notes that the species was detected and therefore a credit liability generated.

Recommended action:

The BDAR should be amended to demonstrate that camera traps were deployed appropriately to detect terrestrial species, being:

- *Rufous Bettong (Aepyprymnus rufescens)*
- *Parma Wallaby (Macropus parma)*
- *Brush-tailed Rock-wallaby (Petrogale penicillate)*
- *Long-nosed Potoroo (Potorous tridactylus)*

If targeted surveys were not adequately conducted, BCS recommends conducting further surveys, assuming presence for the species or seeking an expert report.

All amendments to species polygons must be reflected within the BDAR and BAM-C, with updated shapefiles submitted.

Further information is required regarding Brush-tailed Phascogale camera survey effort including evidence of correspondence with the BOS helpdesk.

Response

64 days and 61 nights of camera trapping were completed in the Project Disturbance Footprint, comprising a mix of both terrestrial and arboreal cameras. Tables 4-11 and 4-12 provide the number of cameras, target species, location in the Project Disturbance Footprint (i.e. Upper Reservoir, Lower Reservoir and Solar Farm areas), dates deployed, the number of nights deployed, whether it is a terrestrial or arboreal camera, the baiting method used and when the baits were replenished. This additional information was not previously provided in the BDAR, noting that the BDAR template did not provide a place for this information.

CPHR requested demonstration that surveys for Rufous Bettong, Parma Wallaby, Brush-tailed Rock-wallaby and Long-nosed Potoroo were sufficient. It is noted that the Rufous Bettong was ruled out of the list of candidate species given that their southernmost extent is north of Gloucester (i.e. north of the Project Disturbance Footprint). This is outlined as a geographic constraint on the BAM-C and, as such, surveys were unable to be completed for this species. Of the remaining species, a total of 680 survey nights were completed from 30 locations between November 2022 and December 2023.

It is further noted that two of the remaining three species were recorded on site, the Parma Wallaby and the Long-nosed Potoroo, and species polygons were prepared accordingly.

The Brush-tailed Rock-wallaby typically inhabits large, rugged rocky outcrops, cliffs, and escarpments, relying on adjacent grassy forests for foraging (Commonwealth Department of Agriculture, Water and the Environment [DAWE], 2021). No such habitat occurs in the Project Disturbance Footprint, with rocky outcrops being relatively small and lacking large cavities to provide refuge for the species. The rocky outcrops are considered unlikely to support a matrilineal group but may represent marginal refuge habitat (DAWE, 2021). Despite this, a generally suitable rocky outcrop is present to the southwest of the Project Disturbance Footprint.

Within the Project Disturbance Footprint, the primary area of suitable foraging habitat occurs in the Upper Reservoir footprint, approximately 600 m from the identified rocky outcrop. Given the species' estimated home range of approximately 15 ha, this area could potentially function as foraging habitat if the species were present (DAWE, 2021). However, the suitability of this rocky outcrop as utilised habitat is considered unlikely. The Brush-tailed Rock-wallaby shows a strong preference for north-facing rocky outcrops, whereas the identified rocky outcrop is east-facing (DAWE, 2021). Additionally, there are no existing records of the species in this area, further reducing the likelihood of occupancy. This assessment is reinforced by the results of targeted surveys, during which the species was not detected despite the use of appropriate survey methods. According to the TBDC (DCCEEW, 2025a), camera traps are an effective survey technique for this species and may be deployed year-round. The guidelines do not specify minimum survey durations or locations, but the absence of detections despite targeted effort further supports the conclusion that the species is unlikely to be present. As such, it is considered that the survey effort for this species has been adequate and that updates to the BAM-C and species polygon are not required.

The TBDC (DCCEEW, 2025a) profile for the Brush-tailed Phascogale states that camera traps should be deployed for a minimum of four weeks between December and May. While it is noted that the survey period completed for this species did not meet the required four weeks during the December to May survey period, the species was recorded in multiple locations across the Project Disturbance Footprint, both during spotlighting and camera trapping outside of the identified survey period (i.e. this species was detected in November on camera traps). The total survey effort for this species is 663 survey nights at 17 locations. Honeyed oat balls in canisters were used as bait, which were rebated within two weeks, as is required by the TBDC (DCCEEW, 2025a). CPHR noted that it is a requirement that the Biodiversity Offset Scheme helpdesk is contacted with regard to a suitable survey approach for sites with habitat for the species that are greater than 10 ha. The Biodiversity Offset Scheme helpdesk was not consulted given the early detection of the Brush-tailed Phascogale during surveys for other candidate species that require camera trapping. The species was recorded on 10 occasions during spotlighting and on cameras. No further camera surveys were considered necessary for the species given their extensive detection through the Project Disturbance Footprint. The species polygon and credit liability were calculated, including large areas of suitable and occupied habitat within the Project Disturbance Footprint.

Table 4-11
Terrestrial Mammal Species Requiring Camera Trapping Methods

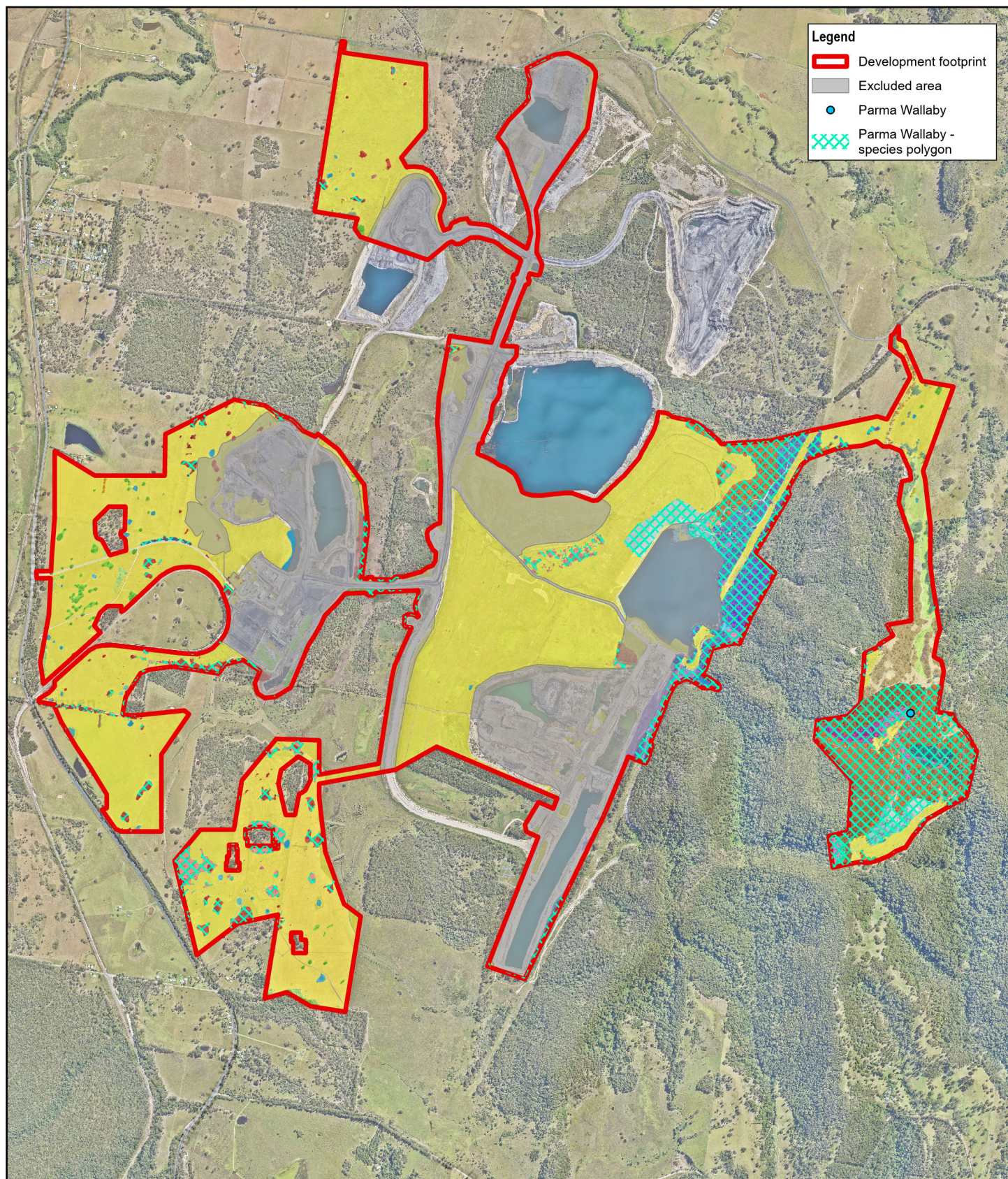
Species	Conclusion in the BDAR Regarding Species Presence	Conclusion Compared to BDAR
Rufous Bettong (<i>Aepyprymnus rufescens</i>)	Presence ruled out: Project Disturbance Footprint occurs outside of geographic range for the species, as outlined on the BAM-C.	No change.
Parma Wallaby (<i>Macropus parma</i>)	Detected. Species polygon prepared in BDAR, as is shown in Figure 4-13.13.	No change.
Brush-tailed Rock-wallaby (<i>Petrogale penicillate</i>)	Not detected. Surveys considered sufficient.	No change.
Long-nosed Potoroo (<i>Potorous tridactylus</i>)	Detected. Species polygon prepared. Species polygon prepared in BDAR and updated as outlined in Issue 16 (Figure 4-13.14).	No change.

Table 4-12
Camera Trap Survey Effort for Candidate Fauna Species

Number of Cameras	Dates Deployed	Target Species	Number of Nights Deployed	Total Survey Nights	Location	Baiting Method	Dates of Rebaiting
Arboreal cameras							
1	06/11/23–15/12/23	Threatened birds, Brush-tailed Phascogale, Squirrel Glider, Greater Glider, Pygmy Possum, Yellow-bellied Glider, Koala	39	39	Lower Reservoir	Oats, honey and peanut butter balls within cannisters - truffle oil sprayed onto tree trunk	13/11/23 & 05/12/23
11	06/11/23–15/12/23	Threatened birds, Brush-tailed Phascogale, Squirrel Glider, Greater Glider, Pygmy Possum, Yellow-bellied Glider, Koala	39	429	Upper Reservoir	Oats, honey and peanut butter balls within canister - truffle oil sprayed onto tree trunk	13/11/23 & 05/12/23
5	06/11/23–15/12/23	Threatened birds, Brush-tailed Phascogale, Squirrel Glider, Greater Glider, Pygmy Possum, Yellow-bellied Glider, Koala	39	195	Solar Farm	Oats, honey and peanut butter balls within cannisters - truffle oil sprayed onto tree trunk.	13/11/23 & 05/12/23
Terrestrial cameras							
10	14/11/22–02/12/22	Parma Wallaby, Long-nosed Potoroo, New-Holland Mouse, Brush-tailed Rock-wallaby, threatened birds	18	180	Upper Reservoir	Oats, honey and peanut butter balls	NA
8	23/01/23–27/03/23	Parma Wallaby, Long-nosed Potoroo, New-Holland Mouse, Brush-tailed Rock-wallaby, threatened birds	4	32	Upper Reservoir	Oats, honey and peanut butter balls	NA
9	06/11/23–15/12/23	Parma Wallaby, Long-nosed Potoroo, New-Holland Mouse, Brush-tailed Rock-wallaby, threatened birds	39	351	Upper Reservoir	Oats, honey and peanut butter balls within canisters or spread over the ground – truffle oil sprayed onto ground and tree trunk	13/11/23 to 16/11/23 & 05/12/23 to 07/12/23
1	06/11/23–15/12/23	Spotted-tailed Quoll	39	39	Upper Reservoir	Dog food within canister	15/11/23 & 06/12/23

Table 4-12 (continued)
Camera Trap Survey Effort for Candidate Fauna Species

Number of Cameras	Dates Deployed	Target Species	Number of Nights Deployed	Total Survey Nights	Location	Baiting Method	Dates of Rebaiting
1	06/11/23– 15/12/23	Parma Wallaby, Long-nosed Potoroo, New-Holland Mouse, Brush-tailed Rock-wallaby, threatened birds	39	39	Solar Farm	Oats, honey and peanut butter balls within canisters or spread over the ground – truffle oil sprayed onto ground.	13/11/23 & 05/12/23
2	06/11/23– 15/12/23	Parma Wallaby, Long-nosed Potoroo, New-Holland Mouse, Brush-tailed Rock-wallaby, threatened birds.	39	78	Lower Reservoir	Oats, honey and peanut butter balls within canisters or spread over the ground – truffle oil sprayed onto ground and tree trunk	13/11/23 & 05/12/23



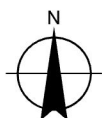
- Legend**
- Development footprint
 - Excluded area
 - Parma Wallaby
 - Parma Wallaby - species polygon

Vegetation zones

3086,High	3244,High	3251,Planted	3329,Low	4073,Planted
3086,Mod	3244,Mod	3252,Mod	3446,Mod	Exotic
3170,Mod	3244,Low	3252,Low	3446,Low	Exotic plantings
3241,Mod	3251,High	3254,Mod	4042,Low	
3241,Low	3251,Mod	3329,High	4042,Mod	
	3251,Low	3329,Mod	4042,Planted	

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Metres

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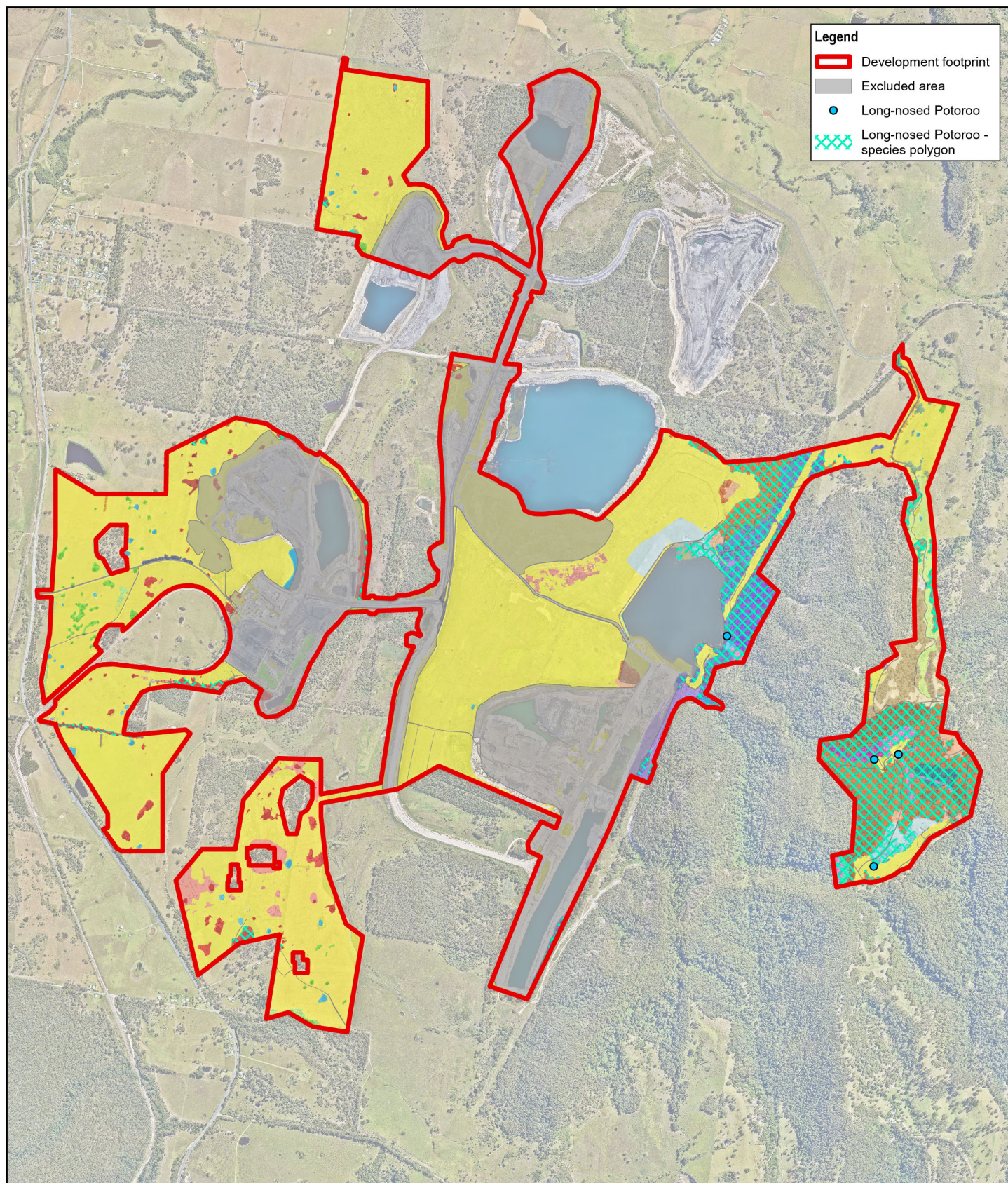


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**Parma Wallaby (*Notamacropus parma*) -
species polygon**

Project No. 12604910
Revision No. 0
Date 11/04/2025

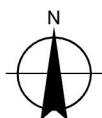
FIGURE 4-13.13



Vegetation zones	3241,Low	3251,Mod	3254,Mod	3446,Low	Exotic
3086,High	3244,High	3251,Low	3329,High	4042,Low	Exotic plantings
3086,Mod	3244,Mod	3251,Planted	3329,Mod	4042,Mod	
3170,Mod	3244,Low	3252,Mod	3329,Low	4042,Planted	
3241,Mod	3251,High	3252,Low	3446,Mod	4073,Planted	

Paper Size ISO A4
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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Environmental Investigations
Submissions Report

Long-nosed Potoroo (*Potorous tridactylus*) -
species polygon

Project No. 12604910
Revision No. 0
Date 11/04/2025

FIGURE 4-13.14

10. The fauna survey methods need to comply with the TBDC

Section 5.3 (2) of the BAM outlines that threatened species surveys should be conducted as per the TBDC and relevant guidelines. Targeted fauna surveys for the following candidate species do not meet these requirements.

Koala

As per the Koala (*Phascolarctos cinereus*): *Biodiversity Assessment Method Survey Guide*, a minimum of two standard survey methods are required to be met, for example a scat detection method should be paired with a non-scat detection method such as spotlighting.

Table 3.3 of the BDAR states that spotlighting and camera trapping were used, with no information provided regarding the spotlighting methodology used or camera trap density. Table 6.5 goes on to state that “Surveys according to TBDC not completed”.

Section 4.3.3. of the guideline details that spotlighting is required to occur in stratified transects, the length and density of which is dependent on the area of suitable habitat within the subject land. The assessor has not completed stratified spotlighting transects. Further, camera trapping is not a recognised survey method in the guideline.

Though the survey requirements for this species have not been adequately completed, BCS notes that the species has been detected.

Squirrel glider

Camera trapping and spotlighting was conducted to search for the species, as per Table 6.5.

Table 6.5 states that spotlighting was conducted over November (four nights), December (eight nights) in 2023 and in January (two nights), March (three nights), June (two nights), July (five nights), August (four nights), March (four nights), April (four nights) in 2024.

The survey tracks submitted to BCS in the data package only include survey tracks from April and March 2024. BCS requests that survey effort conducted is clarified and the spatial data of survey tracks is submitted.

Recommended action:

As per Appendix K of the BAM, evidence of targeted surveys is required to be submitted as a component of the BDAR. Evidence of spotlighting transects is required for the above listed dates targeting Squirrel Gliders.

Response

Koala

A Koala was observed incidentally along the western track, an area previously included in the Project Disturbance Footprint but ultimately avoided (Photo 6.9 of the BDAR). Further survey effort for the species was limited to spotlighting and camera trapping given the early detection of the species in vegetation that directly adjoins the proposed Upper Reservoir footprint. Additional calling individuals were heard during spotlighting surveys and their GPS position was noted.

A species polygon was generated in accordance with the Koala (*Phascolarctos cinereus*): *Biodiversity Assessment Method Survey Guide* (DPE, 2022b). All associated PCTs within the Project Disturbance Footprint were included in the polygon (Figure E-10 of the BDAR), allowing for a corresponding credit liability to be calculated. The species polygon was refined by removing low condition vegetation zones, given the species occurs in a diverse range of forested habitats but is not generally associated with grassland communities (Tucker et al., 2007). Low condition vegetation zones occasionally included a low cover of eucalypt seedlings; however, no established living trees were present.

CPHR has stated that the survey effort for the Koala was not completed as per the guidelines provided in the TBDC (DCCEE, 2025a), with camera trapping not being considered a valid survey method for the species. Despite this, no further survey effort should be required given the early detection of the species and the subsequent generation of an offset liability for all suitable vegetation within the Project Disturbance Footprint. Completing supplementary surveys to meet the requirements of the TBDC could result in significant delays to the Project with no discernible outcome/change given the credit liability would likely remain unchanged.

Squirrel Glider

The Squirrel Glider was surveyed for using camera trapping and spotlighting and was detected in many forested areas of the Project Disturbance Footprint (Table 4-13). CPHR has identified that select survey data is missing from the provided data package, which has been collated and provided in Table 4-12. Squirrel Gliders were recorded on multiple cameras and were also recorded during spotlighting surveys. Accordingly, species polygons were completed in suitable habitat, followed by the calculation of an offset liability.

As above, the completion of supplementary surveys to meet the requirements of the TBDC could result in significant delays to the Project with no discernible outcome/change given the credit liability would likely remain unchanged.

Table 4-13
Detection of Koala and Squirrel Glider

Species	Conclusion in the BDAR Regarding Species Presence	Conclusion Compared to BDAR
Koala (<i>Phascolarctos cinereus</i>)	Species detected. Species polygon (and subsequent offset liability) prepared.	No change.
Squirrel Glider (<i>Petaurus cinereus</i>)	Species detected. Species polygon (and subsequent offset liability) prepared.	No change.

11. Additional survey effort is required for microbats

BCS requires further information to determine if surveys for microbats have been completed in accordance with the TBDC relevant guidelines.

*The BDAR states that breeding habitat is absent within the site for the little bent-winged bat (*Miniopterus australis*), large bent-winged bat (*Miniopterus orianae oceanensis*), large-eared pied bat (*Chalinolobus dwyeri*) and eastern cave bat (*Vespadelus troughtoni*).*

This is not in accordance with the constraints described in TBDC and Table 2 'Features and approaches required to develop the species polygon for species that require the identification of breeding habitat' of Species credit' threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method. It is also inconsistent with findings in the BDAR which identified a range of suitable breeding habitat features including multiple rocky outcrops containing crevices, cracks and voids as well as abandoned structures, sheds, a silo and culverts both within and in proximity to the site. A rocky outcrop approximately 80 m long and 30 m high has been observed running along a ridgeline outside of the site. In addition, a site visit by BCS recorded many areas of additional suitable habitat within and outside the site.

The BDAR and shapefiles provided to BCS should present evidence that the assessor has completed adequate survey in accordance with the TBDC and relevant guidelines.

Table 3.3, 3.8 and 6.5 of the BDAR describes the survey effort for microbats within the site, however this does not meet the minimum requirements of the guideline as follows:

- The BDAR and associated figures and shapefiles do not present evidence of harp trapping or adequate searches of microbat roosts, including any caves, scarps, cliffs, rock overhangs or artificial structures onsite in accordance with the guideline.*
- Roost searches were completed outside the required survey period.*

Once the extent of impacts from blasting are understood additional survey effort of suitable habitat may be required.

Recommended action:

All potential microbat breeding habitat needs to be identified both within and outside the site with data and maps provided to demonstrate adequate survey. The BDAR should be updated, and data provided to demonstrate appropriate survey effort in accordance with the TBDC and the 'Species credit' threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method. The BDAR should be amended to address the following issues:

- Table 3.3 states that harp trapping was performed, however table 6.5 does not and so it is not clear to BCS which is correct.*
- The records for little bent-winged bat (*Miniopterus australis*), large bent-winged bat (*Miniopterus orianae oceanensis*), large-eared pied bat (*Chalinolobus dwyeri*) and eastern cave bat (*Vespadelus troughtoni*) should be included in Figure 10 – Identified SAI entities.*
- Following further survey, SAI assessment should be completed in accordance with Section 9.1 of the BAM, if required.*

Bat call analysis/ report should be appended to the BDAR.

Response

Acoustic recorders were placed in proposed areas of disturbance and other suitable areas (e.g. near hollows, waterbodies and ecotones) during the breeding season for the Large-eared Pied-bat, Large Bent-winged Bat, Little Bent-winged Bat or Eastern Cave Bat (i.e. December and January). This was completed to assess for the presence of these species within or in the vicinity of the Project Disturbance Footprint. All the above species were identified, excluding the Eastern Cave Bat. Harp trapping was unable to be completed for any microbats given overnight access limitations. As such, it was considered sufficient to utilise the acoustic recorder data as proof of the presence of these species and then rely on the results of a habitat assessment to determine if these species were potentially breeding on, or near to, the Project Disturbance Footprint.

Assessment of rocky habitat features was completed in Section 9.5.1 of the BDAR as per Chapter 6 of the BAM. Surveys included fieldwork in the Project Disturbance Footprint, and broader assessment area comprising review of aerial, LiDAR and topographical maps to identify geological features (i.e. caves, escarpments and cliffs) that may be suitable breeding habitat for these species. Excluding the rocky outcrops already identified (and assessed), no new features were identified within a 2 km radius of the Project Disturbance Footprint with the exception of a rocky outcrop approximately 250 m from the Upper Reservoir footprint (Table 4-14). Rocky outcrops within the Project Disturbance Footprint were not considered suitable breeding habitat for the Large-eared Pied-bat, Large Bent-winged Bat, Little Bent-winged Bat or Eastern Cave Bat given that no caves, escarpments or overhangs were present in the Project Disturbance Footprint. While these were considered possibly suitable for diurnal roosting for some species, they did not provide the sufficient space for breeding individuals as described in Sections 3.2 and 3.3 of *'Species credit' threatened bats and their habitats* (DPIE, 2021) and literature (e.g. Williams & Thomson, 2018; Law et al., 2005; Williams, 2020). Preferred breeding habitat is typically in larger rockfaces with overhangs or in caves, mines or tunnels, with fissures and crevices that are elevated from the ground and away from possible predators used for roosting. Comparatively, the rocky habitat that was found in the Project Disturbance Footprint is terrestrial, mostly consisting of boulder piles or rocky outcropping, that would also provide habitat for a range of other species, including predators of these bats.

All abandoned human-made structures and culverts within the Project Disturbance Footprint were assessed. This included houses, sheds and other farm-related structures such as silos and animal pens. Assessments included inspecting each structure for the presence of roosting bats and scat. Access to the structures occurred where it was safe to do so. While the assessments were completed outside of the survey period for most threatened bat species, it was considered that if any of these structures were previously utilised as maternity roosts, then evidence (such as the presence of scat) would have been observed. As no evidence of use by any bat species was observed, it was considered that these structures were not currently, or recently, utilised as maternity roosts for any of the above-mentioned cave-dwelling bats.

During surveys in August 2024 just prior to submission of the BDAR, a rocky outcrop approximately 250 m from the Upper Reservoir boundary, outside of the Project Disturbance Footprint was identified and surveyed. This outcrop contained large fissures and voids, and as such, was considered potentially suitable breeding habitat for the Large-eared Pied-bat based on potential breeding habitat discussed in *'Species credit' threatened bats and their habitats* (DPIE, 2021). A species polygon was mapped for the Large-eared Pied-bat and credits were generated to accommodate the foraging habitat for this species, as per the BAM (all suitable habitat within 2 km of potential breeding habitat). Given surveys for this species can only be completed between November to January, this was not possible given timing of submission of the BDAR; however, it is noted that this outcrop is located over 100 m from the boundary of the Project Disturbance Footprint and therefore confirmation of breeding is not considered necessary.

This habitat was considered unsuitable breeding habitat for the Little Bent-winged Bat and the Large Bent-winged Bat given that caves were not identified in this location. According to the TBDC (DCCEEW, 2025a) and '*Species credit*' *threatened bats and their habitats* (DPIE, 2021), these species require either caves, tunnels or human-made structures for breeding. Given that the BAM requires only the breeding habitat of the bent-winged bats to be identified, further survey (or species polygons) of these species was not required (DPIE, 2021).

The Eastern Cave Bat was excluded from further assessment and preparation of a species polygon, given that the species was not identified during previous surveys completed by GHD and given that there are no BioNet records within a 35 km radius of the Project Disturbance Footprint. CPHR has outlined that the Eastern Cave Bat was identified during previous assessments by AMBS Ecology & Heritage Pty Ltd (AMBS) (2012) and as such, a species polygon should be prepared. However, based on a review of AMBS (2012) it was determined that the presence of the Eastern Cave Bat was not confirmed, rather it was conservatively assumed to represent the species. That is, the species was "possibly" identified via ultrasonic recording but that it could not be confirmed due to poor quality of recordings or similarities between calls of different species. Various species of *Vespadelus* were also identified on multiple occasions by GHD; however, the species that were identified did not include the Eastern Cave Bat. The conclusion that the species is not within the study area is reasonable given the species was not definitively confirmed by AMBS, was not detected during surveys for the SREH and has not been recorded in the locality (DCCEEW, 2025a).

The survey effort to date, combined with the habitat assessment and review of the ecology of these species, is considered sufficient to identify the presence of these threatened cave-dwelling bats as well as any potential breeding habitat.

Table 4-14
Microbat Survey Effort

Species	Project Disturbance Footprint within 100 m of Potential Breeding Habitat	Project Disturbance Footprint within 2 km of Potential Breeding Habitat	Detected via Anabat	Species Polygon	SAIL Assessment Required*	Change Compared to BDAR
Little Bent-winged Bat (<i>Miniopterus australis</i>)	X	X	✓	X	X	X
Large Bent-winged Bat (<i>Miniopterus orianae oceanensis</i>)	X	X	✓	X	X	X
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	X	✓	✓	✓	X	X
Eastern Cave Bat (<i>Vespadelus troughtoni</i>).	X	X	X	X	X	X

* Impact to "breeding habitat" (relevant rocky features + 100 m).

12. Additional survey effort is required for diurnal birds

Further information is required to determine if surveys have been completed in accordance with the TBDC and relevant guidelines for the following diurnal birds.

Gang-gang Cockatoo and Glossy Black-cockatoo

The assessor has not provided information on the timing of the diurnal bird surveys completed. Survey activities should be done at the time of day or night when a target species is most vocally or behaviourally active. For instance, birds are found most readily during the first or last two hours of daylight when they are most active. The figures in the BDAR also do not include tracks for diurnal bird survey or surveys for signs of breeding. Bird surveys should not be completed as part of flora surveys.

Survey efforts as described Table 3.3, 3.5, 3.6 of the BDAR and the BAM Candidate species report do not align. Diurnal bird surveys relevant to this species only encompass 2 hours within October. BCS acknowledges that time spent in the field undertaking other surveys can provide opportunity for incidental observations of threatened species across the site, however this cannot be used in place of appropriate survey effort and best practice methodology.

The BDAR should demonstrate consistency with Section 5.2 of the BAM by describing the timing, methods and effort used for a species survey including justifying the survey method and effort (e.g. citing peer-reviewed literature) if the approach differs from the Department's taxa-specific survey guides or where no relevant guideline has been published.

Surveys for breeding habitat should be completed in accordance with the TBDC and the BDAR should be updated to demonstrate that the assessor has completed an adequate habitat assessment across the whole area of impact.

White-bellied Sea-eagle

The species has been recorded foraging in the development footprint on multiple occasions, including a breeding pair and juvenile. A total of 29 records of the species occur in the locality from 2011, with most recorded in or adjacent to the development footprint.

Table 11.5 of the BDAR states that no breeding individuals were identified while Table 7.2 states the species has been recorded foraging in the development footprint on multiple occasions, including a breeding pair and juvenile.

The BDAR also states that "No surveys for breeding individuals were conducted in suitable breeding habitat, nor any breeding trees identified opportunistically. This was due to the large area of suitable breeding habitat (36.53 ha), reduced visibility in dense vegetation and at times poor accessibility, particularly in the upper reservoir footprint."

BCS does believe this is an appropriate justification for not surveying for breeding individuals.

Habitat assessment needs to be demonstrated in all VZs across the site. Surveys for breeding habitat should be done in accordance with the TBDC and the BDAR should be updated to demonstrate that adequate habitat assessment has been completed across the whole area of impact and within 250m of the development boundary.

Square-tailed Kite, Little Eagle

The BDAR does not include information on the timing of diurnal bird surveys. Survey activities should be done at the time of day or night when a target species is most vocally or behaviourally active. For instance, birds are found most readily during the first or last two hours of daylight when they are most active.

Diurnal bird surveys relevant to this species only encompass 2 hours in October. BCS acknowledges that time spent in the field doing other surveys can provide opportunity for incidental observations of threatened species across the site, however this cannot be used in place of appropriate survey effort and best practice methodology. Figures provided in the BDAR also do not include tracks for diurnal bird survey, habitat assessment/ surveys for signs of breeding.

Habitat assessment should be completed and data provided to demonstrate that the assessor has adequately surveyed in all VZs across the site.

Eastern osprey

The assessor excluded this species as a candidate species due to the absence of habitat constraints, these being presence of stick-nests in living and dead trees (>15 m) or artificial structures within 100 m of a floodplain for nesting).

BCS does not believe this is an appropriate justification as the assessor has not completed survey effort/habitat assessment within and within 100m of the site boundary. This means the assessor cannot confidently conclude that this habitat feature and the species is absent from the site and surrounds.

Red-backed Button-quail

The assessor did not complete surveys in accordance with the TBDC as the survey was done in months outside the methodology.

Recommended action:

Tables describing surveys effort should be consistent throughout the BDAR and distinction is to be made between incidental surveys and the required survey effort completed in accordance with the TBDC and relevant guidelines.

A BDAR should demonstrate consistency with Section 5.2 of the BAM by describing the timing, methods and effort used for a species survey including justification of survey method and effort (e.g. citation of peer-reviewed literature) if the approach differs from the Department's taxa-specific survey guides or where no relevant guideline has been published.

The proponent should complete bird and habitat surveys in accordance with the TBDC and relevant guidelines, provide a report from a species expert or assume presence for relevant species.

Response

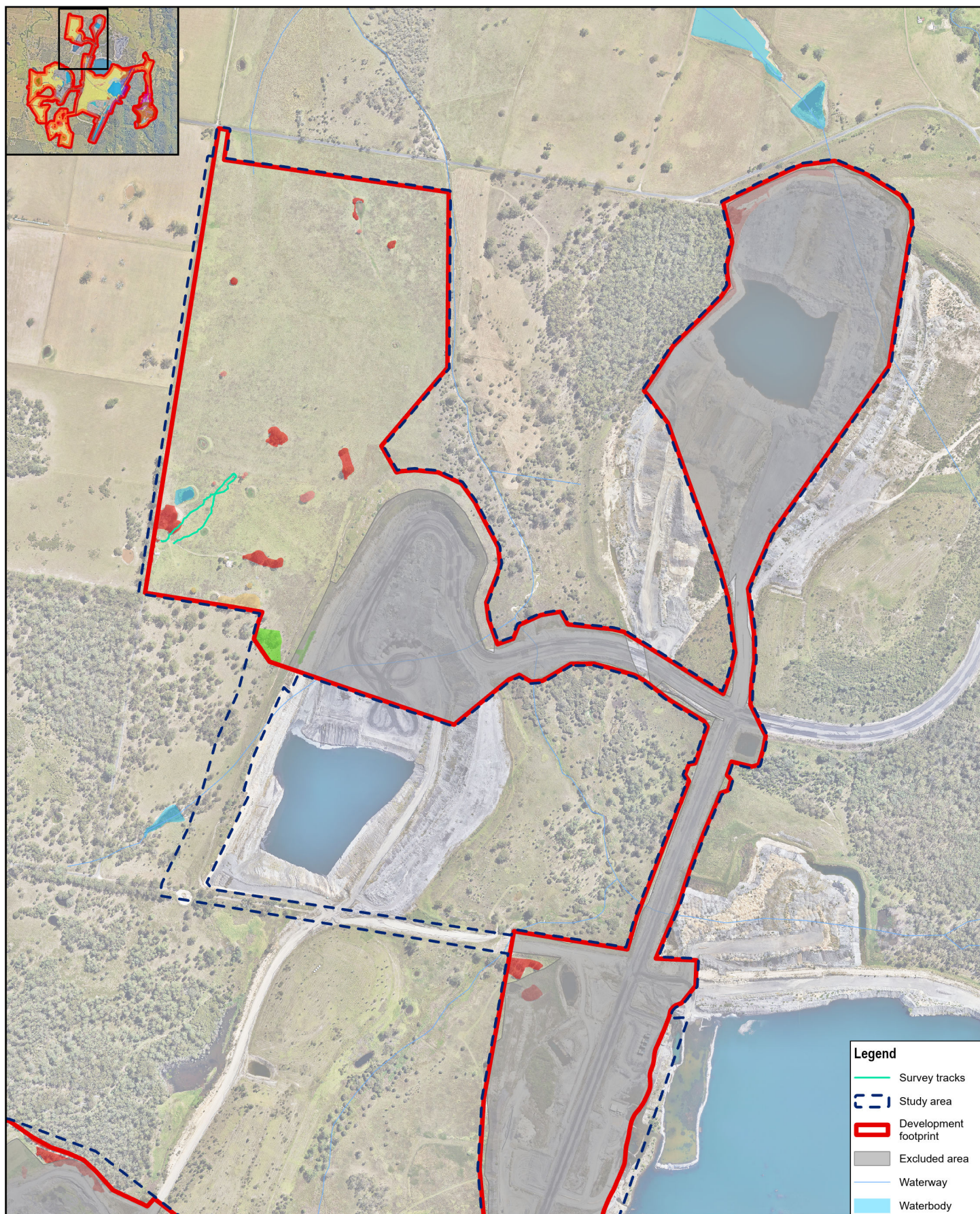
Diurnal bird surveys have been completed throughout the Project Disturbance Footprint, with reference to the TBDC (DCCEEW, 2025a), where available. Targeted surveys were completed for the Gang-gang Cockatoo, Glossy Black-Cockatoo, White-bellied Sea-Eagle, Square-tailed Kite, Little Eagle, and other relevant species. These surveys were often completed concurrently with habitat assessments or other threatened species surveys (Figure 4-13.15).

Gang-gang Cockatoo and Glossy Black-Cockatoo

Habitat surveys were completed throughout the Project Disturbance Footprint, looking for suitable hollows for the Gang-gang Cockatoo and Glossy Black-Cockatoo. All suitable tree hollows, as described in the TBDC (DCCEEW, 2025a), were mapped. Additionally, diurnal bird surveys were completed that identified the Glossy Black-Cockatoo at multiple locations. The GPS location of these observations were recorded.

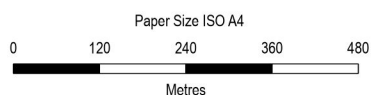
Diurnal bird and habitat surveys were conducted in November and December 2022, January, August, and October 2023, and in March and April 2024. The time of day varied due to the size of the Project Disturbance Footprint, however effort was made, where possible, to complete surveys in the early morning (i.e. directly after sunrise) and late afternoon (i.e. just before sunset). Potential nest tree surveys were considered unfeasible, particularly within the Upper Reservoir footprint, given the large number of suitable breeding hollows, large area of suitable breeding habitat (36.53 ha), reduced visibility in dense vegetation and, at times, poor accessibility (GHD, 2024c).

The Gang-gang Cockatoo was omitted from further assessment on the basis that the species was not identified opportunistically or during diurnal bird surveys over the more than two-year survey plan and has not been previously recorded in the locality (DCCEEW, 2025a).

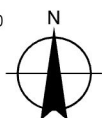


Vegetation zones

- 4042, Low
- 3329, Mod
- 3446, Mod
- 4042, Mod



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

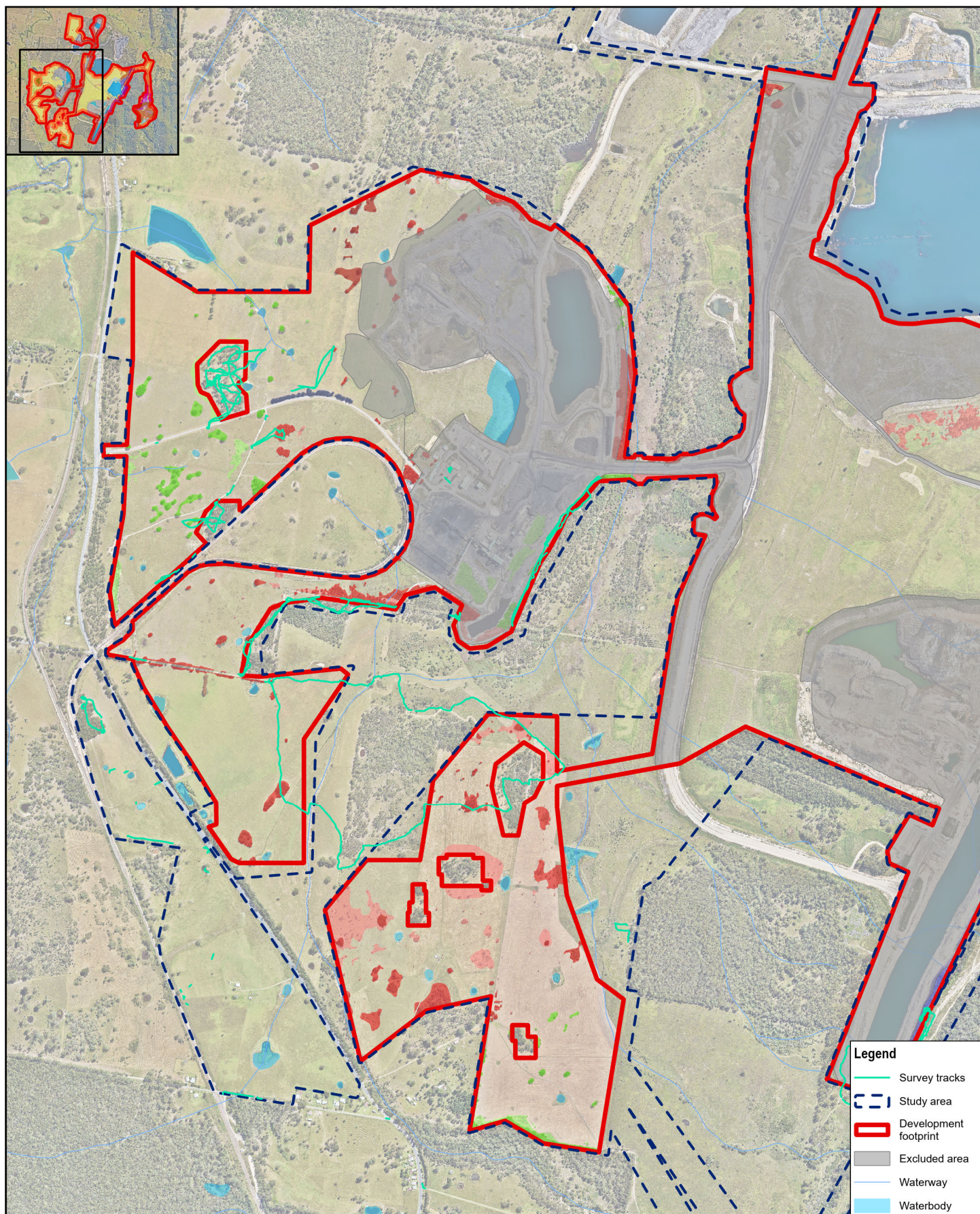


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FIGURE 4-13.15a



- Legend**
- Survey tracks
 - Study area
 - Development footprint
 - Excluded area
 - Waterway
 - Waterbody

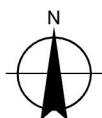
Vegetation zones

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 3251,Mod	 3329,High	 4042,Low
 3251,Low	 3329,Mod	 4073,Planted
	 4042,Mod	

Paper Size ISO A4

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Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

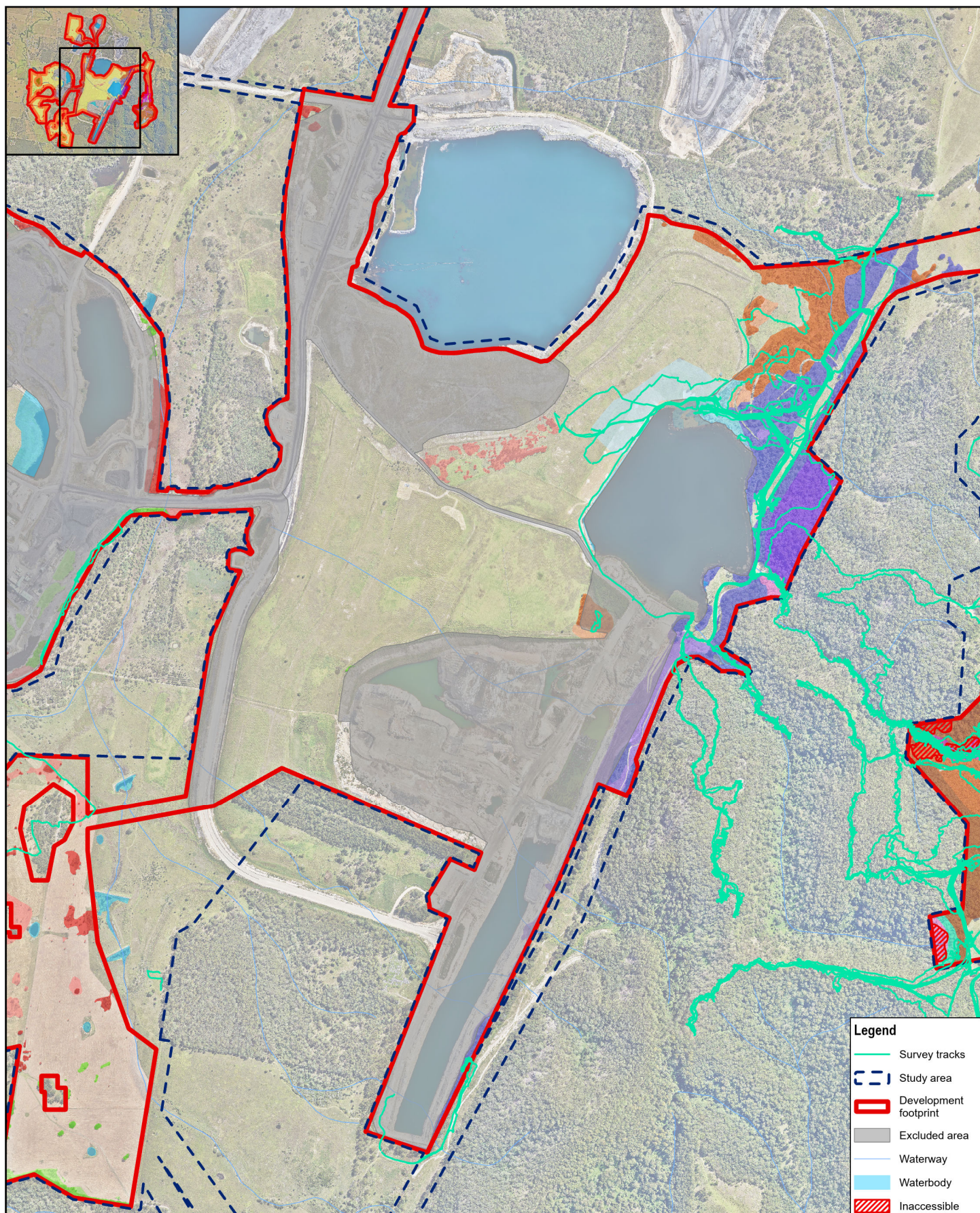


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FIGURE 4-13.15b



- Legend**
- Survey tracks
 - Study area
 - Development footprint
 - Excluded area
 - Waterway
 - Waterbody
 - Inaccessible

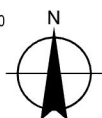
Vegetation zones

 3244, High	 3251, High	 3252, Mod	 3329, High	 4042, Low
 3086, High	 3244, Mod	 3251, Mod	 3252, Low	 3329, Mod
 3086, Mod	 3244, Low	 3251, Low	 3254, Mod	 3329, Low

Paper Size ISO A4

0 200 400 600 800

Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

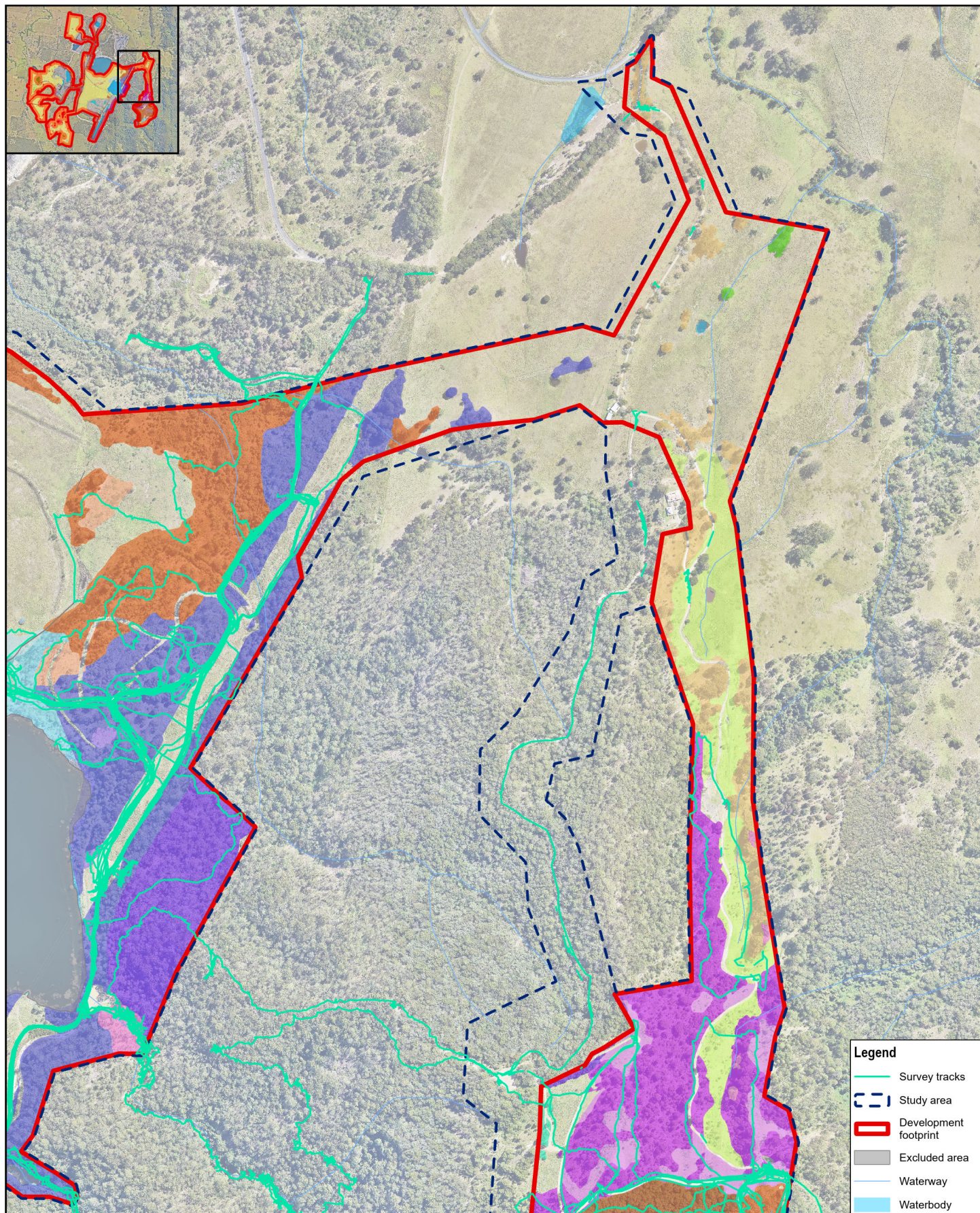


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FIGURE 4-13.15c



- Legend**
- Survey tracks
 - Study area
 - Development footprint
 - Excluded area
 - Waterway
 - Waterbody

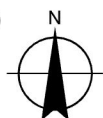
Vegetation zones

 3241,Low	 3244,Low	 3251,Low	 3254,Mod	 3446,Low
 3086,Mod	 3244,High	 3251,High	 3252,Mod	 3329,Mod
 3241,Mod	 3244,Mod	 3251,Mod	 3252,Low	 3446,Mod

Paper Size ISO A4

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Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

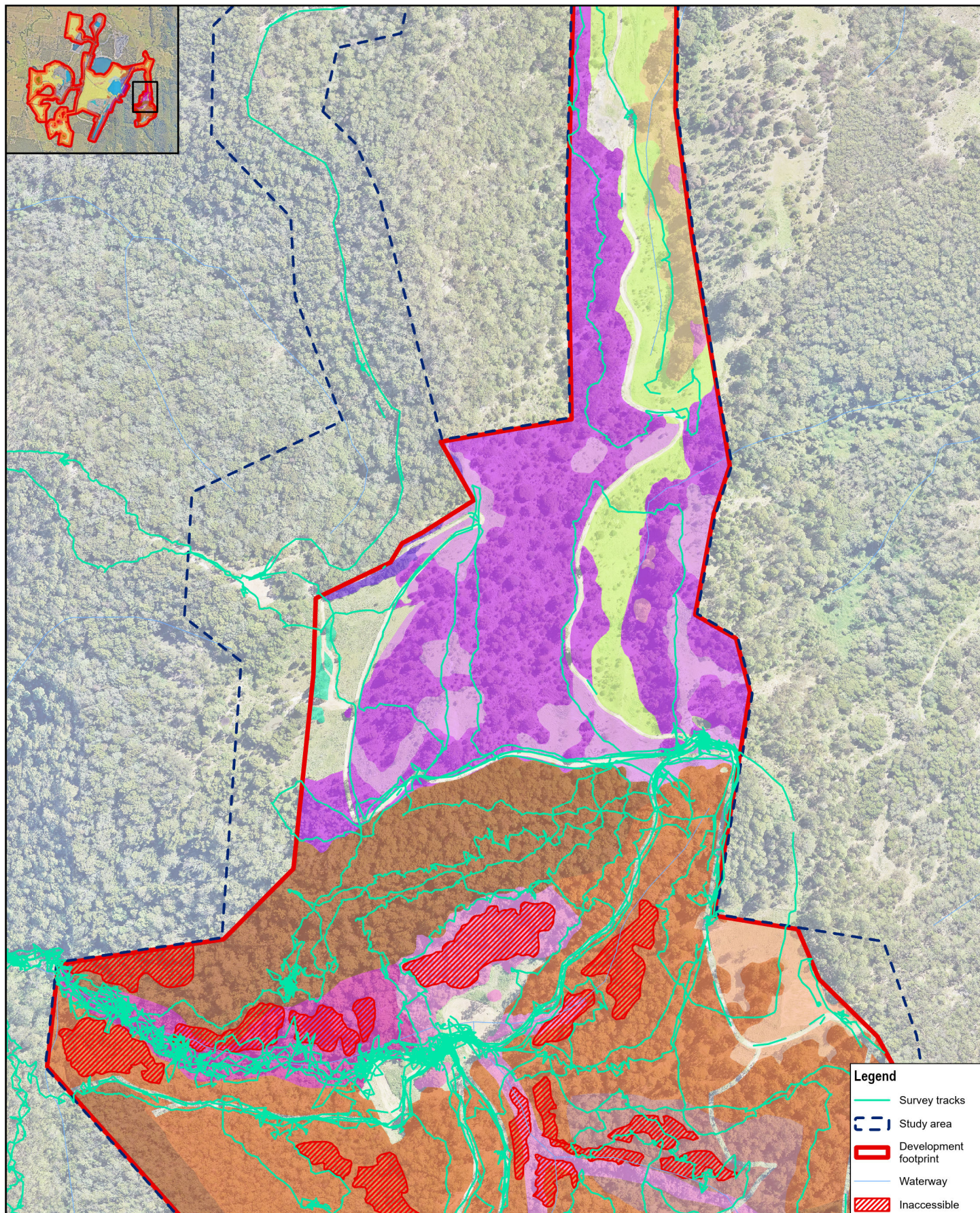


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FIGURE 4-13.15d



- Legend**
- Survey tracks
 - Study area
 - Development footprint
 - Waterway
 - ▨ Inaccessible

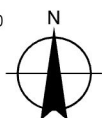
Vegetation zones

■ 3170, Mod	■ 3244, High	■ 3251, High	■ 3446, Low
■ 3086, High	■ 3241, Mod	■ 3244, Mod	■ 3254, Mod
■ 3086, Mod	■ 3241, Low	■ 3244, Low	■ 3446, Mod

Paper Size ISO A4

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Metres



Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 56

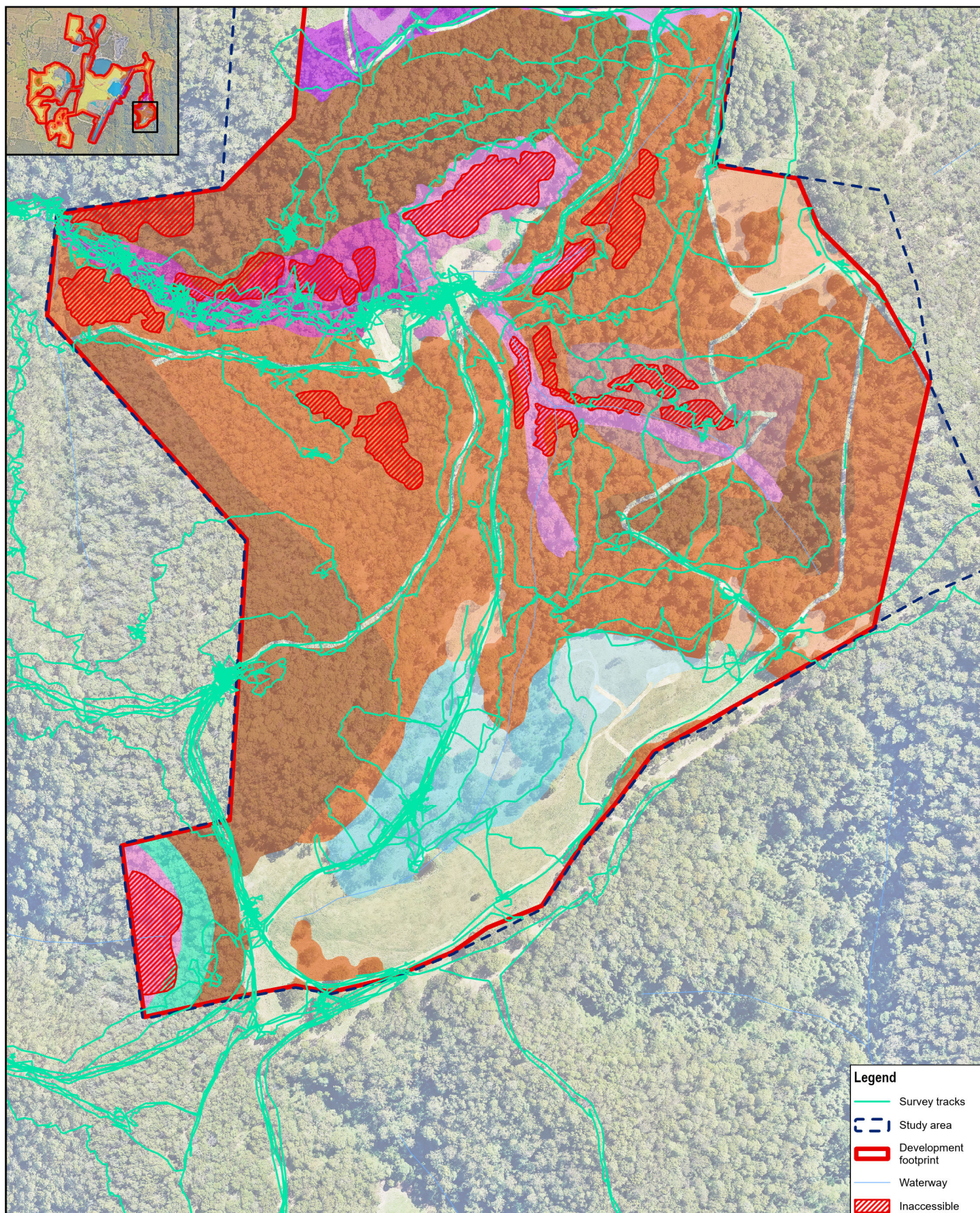


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FIGURE 4-13.15e



- Legend**
- Survey tracks
 - Study area
 - Development footprint
 - Waterway
 - ▨ Inaccessible

Vegetation zones

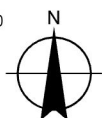
■ 3170,Mod	■ 3244,High	■ 3252,Mod
■ 3086,High	■ 3241,Mod	■ 3252,Low
■ 3086,Mod	■ 3241,Low	■ 3254,Mod
■ 3244,Mod	■ 3244,Low	

Paper Size ISO A4

0 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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FIGURE 4-13.15f

The Glossy Black-Cockatoo was identified in the Project Disturbance Footprint and a conservative offset estimate was generated through the placing of five indicative nest tree points within the Project Disturbance Footprint, given that breeding habitat surveys were not considered practical. Each indicative nest tree point correlates to a suitable hollow-bearing tree that was identified in the Project Disturbance Footprint. Offsets for the species were then generated by applying a 200 m radius buffer around each of the potential nest tree points and including all native vegetation, as per the TBDC (DCCEEW, 2025a).

CPHR requested that breeding habitat surveys be conducted within the Upper Reservoir footprint. Additionally, CPHR recommended the inclusion of supplementary diurnal surveys during the final two hours of daylight for the species, as most bird surveys completed thus far have overlapped with other survey activities. This methodology is not specified in the TBDC (DCCEEW, 2025a), nor is there an existing published survey guideline for the species. Consequently, the recommended approach is not consistent with the guidelines/TBDC and was therefore not adopted.

Whilst the TBDC (DCCEEW, 2025a) does outline that nest tree surveys should be conducted for both species, the methodology completed was conservative, generating a large credit liability for the Glossy Black-Cockatoo (See Figure E3 of the BDAR [Plate 4-18]). Additionally, the Gang-gang Cockatoo was not observed within the Project Disturbance Footprint and is considered unlikely, given the lack of records in the locality.

White-bellied Sea-Eagle

The White-bellied Sea-Eagle was observed on several occasions as individuals and pairs. Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify a suitably-sized stick nest, and as such no breeding on site has been confirmed. Further surveys have been conducted following submission of the BDAR to focus on areas outside the Project Disturbance Footprint where individuals were seen flying towards as an attempt to locate a nest; however, this has been unsuccessful to date (Figure 4-13.16). As no nest was located, a species polygon was centred around the location where individuals were seen flying to and away from the Stratford East Dam and credits were generated for the species. Searches for stick nests within a 250 m radius of the entire Project Disturbance Footprint are not considered feasible, particularly when considering land ownership and access constraints.

Given that supplementary surveys support that the White-bellied Sea-Eagle is not nesting in adjacent Yancoal-owned land (GHD, 2024b), a species polygon for this species is not required.

Little Eagle and Square-tailed Kite

Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify either species, or a suitably-sized stick nest (Figure 3.10 of the BDAR). Dedicated diurnal bird surveys occurred on 20 March 2023, 15 and 16 June 2023 and 23 and 24 October 2023. As such, no further surveys were completed. There are no approved survey guidelines for either species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the *Survey guidelines for Australia's threatened birds* (DEWHA, 2010). CPHR notes that the time of day when surveys were completed are not included in the BDAR, however this is not noted as a requirement in the TBDC profile for this species (DCCEEW, 2025a). CPHR has also recommended that additional diurnal bird surveys be completed as most completed to date have been conducted simultaneously with other surveys.

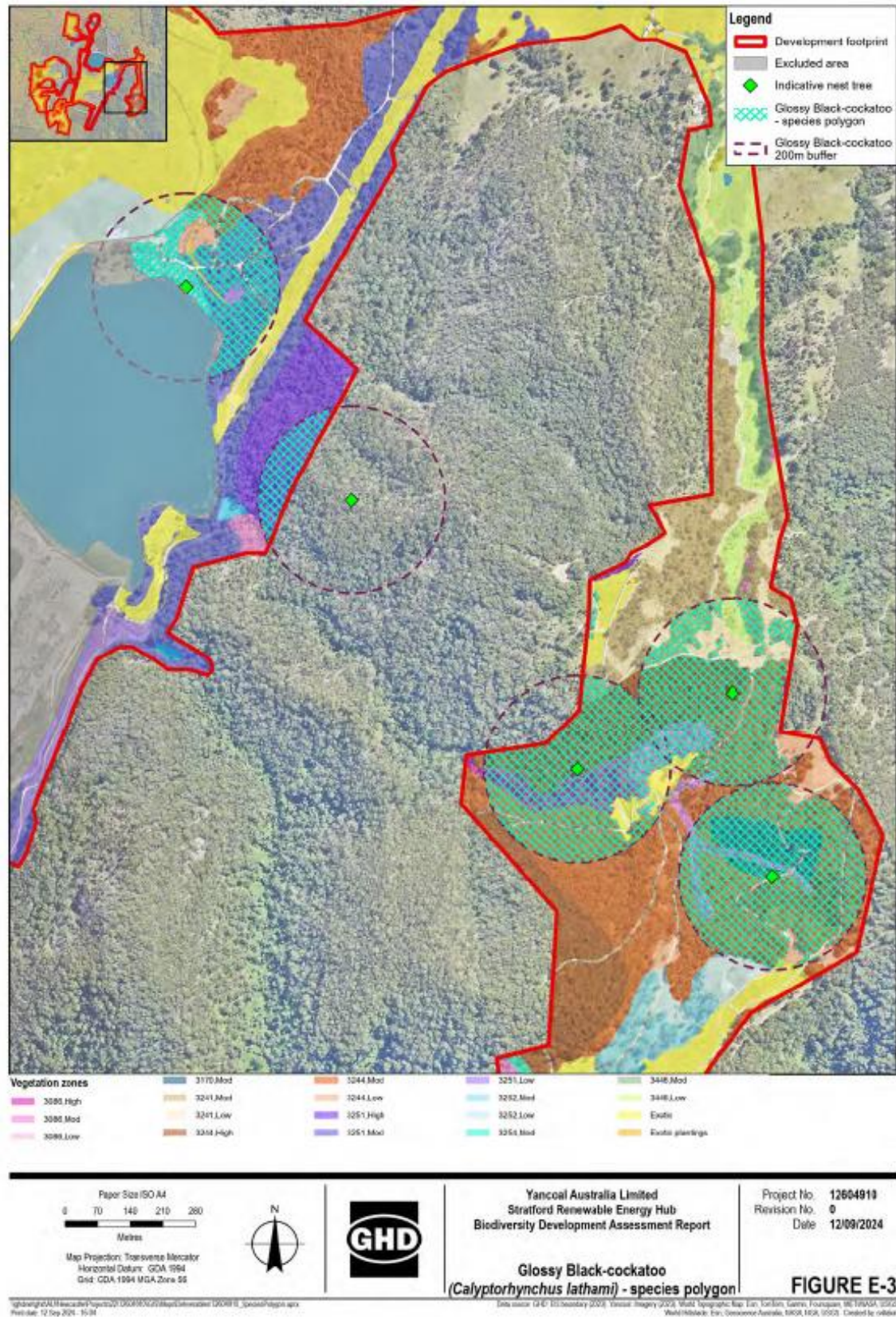
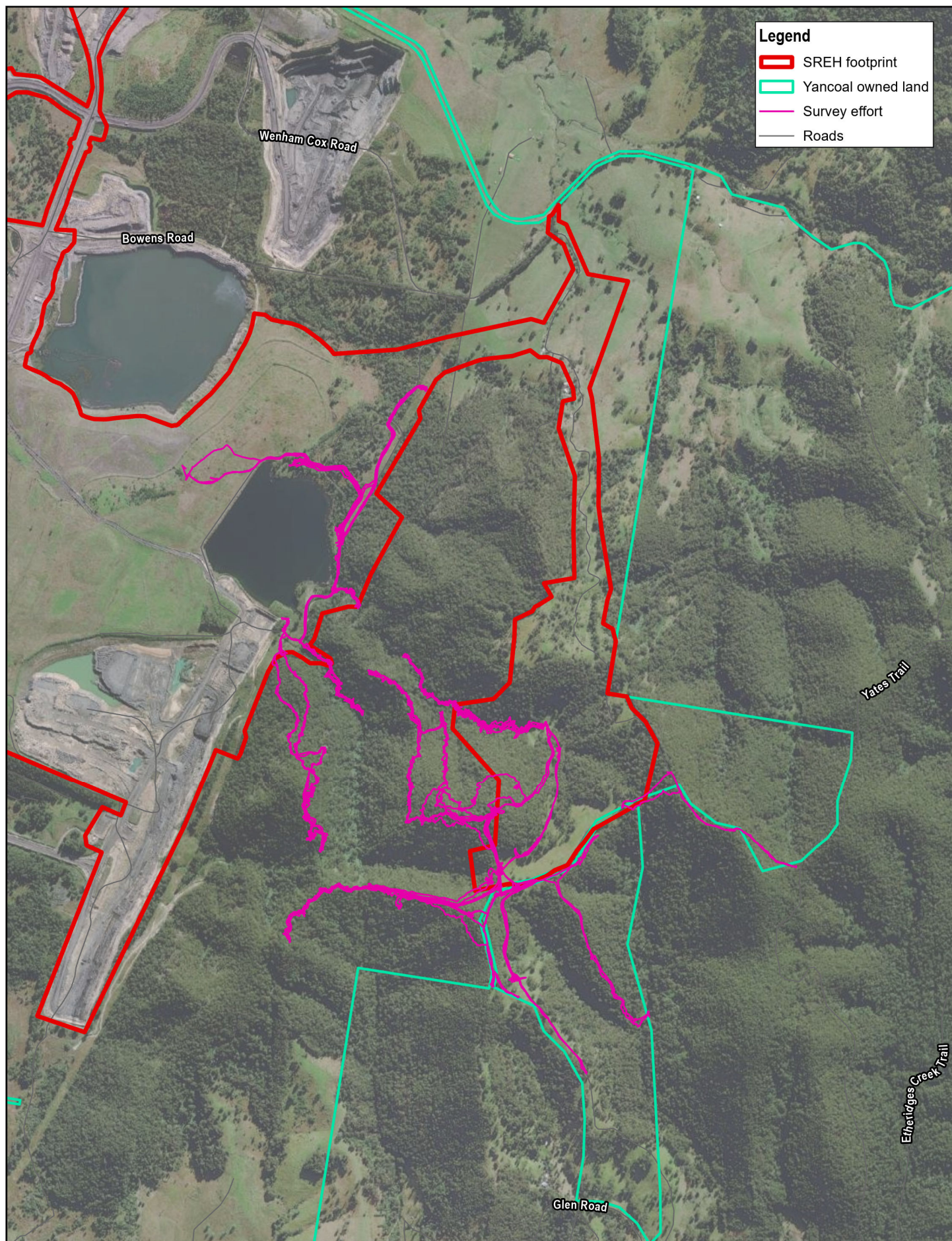
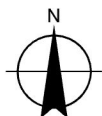


Plate 4-18: Figure E3 of the BDAR



Paper Size ISO A4
0 100 200 300 400
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



Yancoal Australia Limited
Stratford Renewable Energy Hub
Environmental Investigations
Submissions Report

Supplementary White-bellied Sea-eagle surveys
in adjacent Yancoal owned land

Project No. 12604910
Revision No. 0
Date 31/03/2025

FIGURE 4-13.16

Eastern Osprey

There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the *Survey guidelines for Australia's threatened birds* (DEWHA, 2010). Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify the species, or a suitably-sized stick nest (Figure 3.10 of the BDAR). All records for the species in the region are coastal, with none occurring near the site or in the locality (DCCEEW, 2025a). Given the absence of published guidelines for detecting this species, its predominantly coastal distribution, and its non-detection during surveys, the survey effort to date is considered sufficient.

Red-backed Button-quail

There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the *Survey guidelines for Australia's threatened birds* (DEWHA, 2010). As the species is nocturnal, spotlighting surveys were completed in November 2022 (two days), January (two days), March (two days), June (two days), July (five days), August (four days), November (two days), and December 2023 (four days), and March (two days) and April 2024 (two days). Diurnal surveys were also completed in March (one day), June (two days), August (three days) and October 2023 (two days) (see Sections 3.6.2.2 and 3.6.2.3 of the BDAR for further information about survey effort). The species was not identified, and the nearest record to the Project Disturbance Footprint is between Wards River and Stroud.

CPHR outlined that the species was surveyed outside of the correct survey period. However, it is noted that the species can be surveyed throughout the year according to the TBDC (DCCEEW, 2025a). As there are no published guidelines for the detection of this species, nor were the surveys completed outside the survey period for the species (January and December), no further action is required as the species was not identified.

Diurnal Bird Survey Effort

A summary of the survey method, tracks and conclusion of the BDAR, as well as a justification of the survey effort for each diurnal bird species is provided in Table 4-15.

Table 4-15
Diurnal Bird Survey Effort

Species	Survey Method, Tracks and Conclusion of the BDAR	Surveys with Reference to Relevant Guidelines	Justification of Survey Effort	Species Polygon (Yes/No)	Change to BDAR
Gang-gang Cockatoo (<i>Callocephalon fimbriatum</i>)	Not present in the Project Disturbance Footprint. Opportunistic and diurnal bird surveys completed in October (two days) 2023. Additional effort completed in March (one day), June (two days), August (three days) 2023.	Yes.	Habitat surveys were conducted across the Project Disturbance Footprint to assess the presence of suitable hollows for the Gang-gang Cockatoo. While suitable habitat was identified, diurnal bird surveys did not record the species. Furthermore, there are no historical records of the Gang-gang Cockatoo in the locality. The sufficiency of the surveys conducted to date is supported by the detection of the Glossy Black-Cockatoo in the Project Disturbance Footprint, during the same surveys.	No.	No change.
Glossy Black-Cockatoo (<i>Calyptrorhynchus lathami lathami</i>)	Opportunistic and diurnal bird surveys in March (one day), August (three days) and October (two days) 2023. Additional survey effort completed in March (one day), June (two days) and August (three days) 2023. Multiple individuals observed over multiple locations, including lone males in pairs or groups of three, observed during breeding season.	Yes. Additional survey completed outside of optimal period.	Habitat surveys were conducted across the Project Disturbance Footprint to assess the availability of suitable hollows for the Glossy Black-Cockatoo. Suitable hollow-bearing trees were identified within the Project Disturbance Footprint, with the highest concentration occurring in the Upper Reservoir footprint. Diurnal bird surveys confirmed the presence of the species at multiple locations within the Project Disturbance Footprint. Due to the extent of available habitat, targeted surveys to identify specific breeding sites were not considered feasible. However, as many of the forested communities were classified as high-quality habitat for the species, a conservative offset strategy was implemented through the designation of five indicative nest trees within the Project Disturbance Footprint. This approach has generated a conservative offset liability for the Project, with no further action required.	Yes.	No change.

Table 4-15 (continued)
Diurnal Bird Survey Effort

Species	Survey Method, Tracks and Conclusion of the BDAR	Surveys with Reference to Relevant Guidelines	Justification of Survey Effort	Species Polygon (Yes/No)	Change to BDAR
White-bellied Sea-Eagle (<i>Haliaeetus leucogaster</i>)	Present in the Project Disturbance Footprint, with both single and paired individuals recorded. Recorded during opportunistic and diurnal bird surveys in October (two days) 2023. Additional effort completed in March (one day), June (two days), August (three days) 2023.	N/A – No guidelines for this species. Additional survey completed outside of optimal period.	White-bellied Sea-Eagles were observed on several occasions as individuals and pairs. Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify a suitably-sized stick nest, and as such no breeding on site has been confirmed. Further surveys were conducted following submission of the BDAR to focus on areas outside the Upper Reservoir footprint, where individuals were seen flying, to attempt to locate a nest, however this has been unsuccessful to date (Figure 4-13.16). Despite a nest not having been located in the Project Disturbance Footprint, a species polygon was centred around the location where individuals were seen flying to away from the Stratford East Dam and a credit liability generated for the species (Figure E7 of the BDAR). Searches for stick nests in a 250m radius of the entire Project Disturbance Footprint are not considered feasible, particularly when considering land ownership and access constraints. Given that supplementary surveys support that the White-bellied Sea-Eagle is not nesting in adjacent Yancoal-owned land (GHD, 2024b), a species polygon for this species is not required.	Yes.	Additional survey supports that BDAR credit liability can be removed.
Little Eagle (<i>Hieraaetus morphnoides</i>)	Found not present in the Project Disturbance Footprint during opportunistic and diurnal bird surveys in August (three days) and October (two days) 2023. Additional survey effort in March (one day) and June (two days) 2023.	N/A – No guidelines for this species. Additional survey completed outside of optimal period.	Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify this species, or a suitably-sized stick nest (Figure 3.10 of the BDAR). There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEHWA, 2010). Surveys completed to date are considered sufficient to detect the species.	No.	No change.

Table 4-15 (continued)
Diurnal Bird Survey Effort

Species	Survey Method, Tracks and Conclusion of the BDAR	Surveys with Reference to Relevant Guidelines	Justification of Survey Effort	Species Polygon (Yes/No)	Change to BDAR
Square-tailed Kite (<i>Lophoictinia isura</i>)	Not present in the Project Disturbance Footprint. Opportunistic and diurnal bird surveys in October (two days) 2023. Additional effort outside of optimal period in March (one day), June (two days), August (three days) 2023.	N/A – No guidelines for this species. Additional survey completed outside of optimal period.	Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify this species, or a suitably-sized stick nest (Figure 3.10 of the BDAR). There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEWHA, 2010). Surveys completed to date are considered sufficient to detect the species.	No.	No change.
Eastern Osprey (<i>Pandion cristatus</i>)	Not present in the Project Disturbance Footprint. Opportunistic and diurnal bird surveys completed in June (two days), August (three days) and October (two days) 2023. Additional survey effort in March (one day) 2023.	N/A – No guidelines for this species. Additional survey completed outside of optimal period.	There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEEW, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEWHA, 2010). Diurnal bird surveys completed throughout the Project Disturbance Footprint did not identify the species, or a suitably-sized stick nest (Figure 3.10 of the BDAR). All records for the species in the region are coastal, with none occurring near the site or in the locality (DCCEEW, 2025a). Given the absence of published guidelines for detecting this species, its predominantly coastal distribution, and its non-detection during surveys, the survey effort to date is considered sufficient.	No.	No change.

Table 4-15 (continued)
Diurnal Bird Survey Effort

Species	Survey Method, Tracks and Conclusion of the BDAR	Surveys with Reference to Relevant Guidelines	Justification of Survey Effort	Species Polygon (Yes/No)	Change to BDAR
Red-backed Button-quail (<i>Turnix maculosus</i>)	Not present in the Project Disturbance Footprint. Diurnal bird surveys completed in March (one day), June (two days), August (three days) 2023 and October (two days) 2023. Spotlighting surveys during November, December 2022; January, March, June, July, August, November, December 2023; March and April 2024.	N/A – No guidelines for this species.	As the species is nocturnal, spotlighting surveys were completed in November 2022 (two days); January (two days), March (two days), June (two days), July (five days), August (four days), November (two days), December 2023 (four days); March (two days) and April 2024 (two days). Diurnal surveys were also completed in March (one day), June (two days), August (three days) 2023 and October (two days) 2023. The species was not identified during surveys. There are no approved survey guidelines for this species, nor survey requirements outlined in the TBDC (DCCEE, 2025a) or the <i>Survey guidelines for Australia's threatened birds</i> (DEWHA, 2010). Additionally, the nearest record is an approximately 16 km south of the Project Disturbance Footprint, between Wards River and Stroud (DCCEE, 2025a). As such, surveys completed to date are considered sufficient, despite the cryptic nature of the species.	No.	No change.

13. Additional survey effort is required for nocturnal birds

The accredited assessor did not conduct surveys for forest owls in accordance with the TBDC.

Survey tracks associated with call playback do not show that searches included a 1-hectare circular plot around each broadcast station (radius approximately 57 metres) at the end of the 15 minute repeated broadcast and listening sequence.

The new forest owls guidance outlines that if an owl is recorded onsite a 800 m buffer needs to be established around the record (as per TBDC). Next, and in accordance with the BAM, the assessor needs to apply the avoid, minimise and offset hierarchy. As such, BCS highly recommends the proponent avoid the majority of trees containing suitable hollows for forest owls. If the proposal will impact trees containing suitable hollows, these trees should be identified and mapped as should hollows within 200 m of the impact.

The Powerful Owl was recorded, and two roost trees identified within the site however a nest tree has not been identified. The assessor should complete further survey to confidently conclude there is no breeding activity within any of the identified hollows.

Recommended action:

The proponent should provide additional information to justify deviations in survey effort from the requirements of the TBDC. This information could include confirmation that BCS approved the reduced survey effort, further survey or an appropriate justification with reference to approved species experts, or peer-reviewed literature.

Further surveys should be conducted to demonstrate that stagwatching surveys were completed to target suitable hollows for powerful owl.

Response

The survey guidelines in the TBDC changed for threatened owls in March 2024, following completion of the bulk of surveys for nocturnal birds. As such, the methodology utilised varied throughout the Project. Nonetheless, nocturnal call playback surveys were conducted for large forest owls within the Project Disturbance Footprint (see Figures 3.13 and 3.14 of the BDAR). Surveys involved an initial listening period of five minutes, followed by call playback for three minutes. This was followed by a listening period of five minutes (undertaken separately for each species) and a final listening period of approximately 10 minutes. Calls were played through a portable speaker or vehicle stereo. All potential habitat in the immediate area was then scanned for at least 10 minutes using spotlights. Additional spotlighting and listening for target species were conducted for the duration of each nocturnal survey round. Spotlighting for forest owls initially occurred around where call playback was undertaken in case birds flew into the area to investigate the call but did not directly respond themselves.

CPHR requested that supplementary surveys be completed in adjacent forested habitats within 200 m of the Project Disturbance Footprint and for the Powerful Owl to confirm that breeding activity is absent. Additionally, CPHR advised that the majority of owl-suitable hollows should be omitted from impact and avoided as part of the Project design.

As the Powerful Owl has been identified within the Project Disturbance Footprint, no further surveys are required. The updated survey guidelines for the species in the TBDC do not require surveys for nest trees (DCCEEW, 2025a). The species polygon guidance requirements in the TBDC (DCCEEW, 2025a) are that the species polygon must be drawn to include all vegetation zones that are:

- within 800 m from the location of a detected owl; and
- contain a living or dead tree with a hollow greater than (>) 20 centimetres (cm) diameter that occurs > 4 m above the ground.

As such, mapping of one hollow-bearing tree is all that is required for a vegetation zone. Surveys of a 200 m buffer of the Project Disturbance Footprint is not required by the TBDC survey guidelines for owls (DCCEEW, 2025a).

The Sooty Owl was recorded on several occasions in the Upper Reservoir footprint, including an active nesting tree. The species polygon was based on an 800 m buffer generated around the various records and the offset liability calculated. It is noted that associated vegetation polygons that did not have suitable hollow-bearing trees for the species were not included in the species polygon of all identified species credit owl species. For example, there is a polygon of PCT 3244 – Moderate condition in the Upper Reservoir footprint that retains a suitable hollowing bearing tree for the Sooty Owl and is within the 800 m buffer of a Sooty Owl record. This vegetation was included in the species polygon; however, a neighbouring polygon of the same vegetation zone would have been excluded on the basis that it did not have a suitable hollow-bearing tree despite being in the 800 m buffer. To align with the TBDC (DCCEEW, 2025a), the species polygon has been amended for all threatened owl species identified or assumed to be present within the Project Disturbance Footprint, now incorporating previously excluded areas of associated PCTs. This update applies to the Powerful Owl, Sooty Owl, and Masked Owl, with the latter assumed present due to the availability of suitable habitat and previous records in the locality (Figures 4-13.17 to 4-13.19).

Surveys that were undertaken were successful in identifying two species of owl that are known to have low detection probability (Debus, 1995). Whilst this methodology differs from the current guidelines (DCCEEW, 2025a), it follows those established in literature for the targeted owls (e.g. Debus, 1995) and what was previously required prior to the update of the survey guidelines, which occurred after the completion of much of the survey effort for the relevant forest owl species.

Should further surveys be required there is the potential for significant delays in the programme of up to 12 months. As noted above, there is no longer a requirement in the TBDC to map nest trees of owl species (DCCEEW, 2025a). Instead, a vegetation zone mapped in the species polygon must contain a hollow-bearing tree of suitable size.

A summary of the conclusion reached in the BDAR, as well as further considerations for each species of threatened owl, is provided in Table 4-16.

Table 4-16
Nocturnal Birds – Conclusions

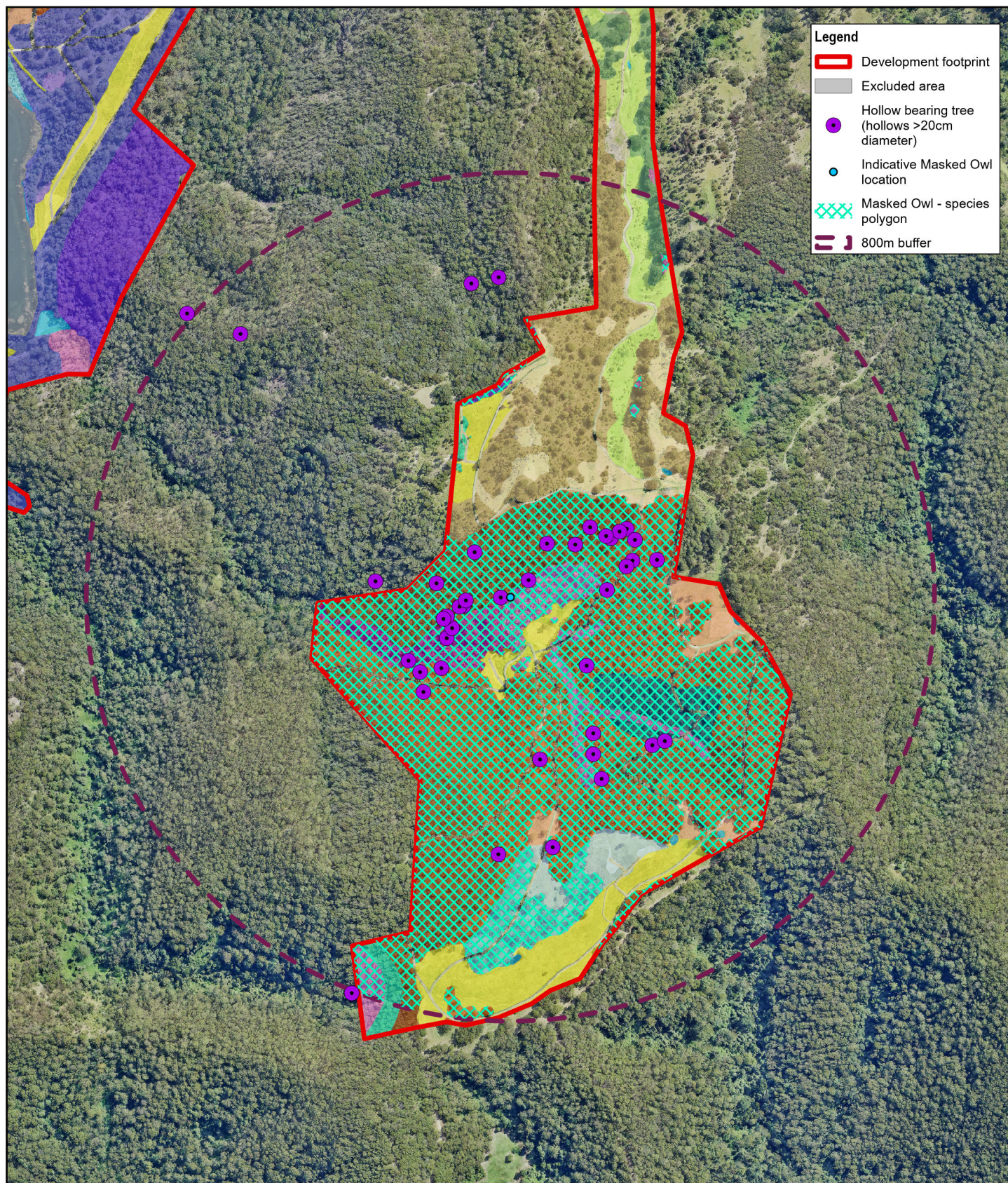
Species	Conclusions in the BDAR Regarding Species Presence	Conclusion Compared to BDAR
Barking Owl (<i>Ninox connivens</i>)	Not present. The species was not recorded in the Project Disturbance Footprint during targeted surveys, or opportunistically. Surveys completed are considered adequate to detect the species in the Project Disturbance Footprint, should it have been present. This conclusion is supported by the successful detection of two other threatened owl species, the Sooty Owl and the Powerful Owl.	As per the BDAR: • The species was not recorded in the Project Disturbance Footprint despite survey effort completed to date. • There are no records of the Barking Owl in the locality. • The species preferred habitat is west of the Great Dividing Range. • No further survey effort required.

Table 4-16 (continued)
Nocturnal Birds – Conclusions

Species	Conclusions in the BDAR Regarding Species Presence	Conclusion Compared to BDAR
Masked Owl (<i>Tyto novaehollandiae</i>)	Assumed present. The Masked Owl was not recorded in the Project Disturbance Footprint during targeted surveys or opportunistically, however the species has been previously recorded in the SMC by AMBS (2012). Subsequently, it has been assumed present within the Project Disturbance Footprint. Two indicative points were placed within generally suitable habitat of the Project Disturbance Footprint, one in the Upper Reservoir footprint and another in the Solar Farm footprint (see Figure E-4 of the BDAR for original species polygon). Each point was placed in the location of a suitable hollow-bearing tree. The TBDC states that the species polygon for forest owls must be drawn to include all vegetation zones that are within 800 m (being the approximate home range) from the location of a detected owl and contain a living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground (DCCEEW, 2025a). Upon review, it was noted that certain vegetation polygons lacking suitable hollow-bearing trees were excluded from the species polygon, despite the presence of such trees within 800 m in the same vegetation zone. As such, an updated species polygon is provided in Figure 4-13.17 below.	Increased species polygon compared to the BDAR: - The Masked Owl has been previously identified in the SMC area. As suitable foraging and breeding habitat for the species is present in the Project Disturbance Footprint, the species has been assumed present. - A species polygon was generated in accordance with the TBDC guidelines (DCCEEW, 2025a). As discussed, the species polygon did not include all required vegetation polygons and has been amended in Figure 4-13.17 below. - No further survey effort required.
Sooty Owl (<i>Tyto tenebricosa</i>)	Present. The Sooty Owl was recorded in the Upper Reservoir footprint during targeted surveys and through opportunistic sightings. The TBDC states that the species polygon for forest owls must be drawn to include all vegetation zones that are within 800 m (being the approximate home range) from the location of a detected owl and contain a living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground (DCCEEW, 2025a). The species polygon provided in the BDAR was generated with reference to the TBDC guidelines (Figure E-5 of the BDAR) (DCCEEW, 2025a). Upon review, it was noted that certain vegetation polygons lacking suitable hollow-bearing trees were excluded from the species polygon, despite the presence of such trees within 800 m in the same vegetation zone. As such, an updated species polygon is provided in Figure 4-13.18 below.	Increased species polygon compared to the BDAR: - A Sooty Owl pair, and associated nest tree were identified during targeted surveys in the Upper Reservoir footprint. - A species polygon was generated with reference to the TBDC guidelines for the species (DCCEEW, 2025a). It has been revised to include all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.18). As a result, the species polygon now spans 47.67 ha, and the revised credit liability is 2566 credits. - No further survey effort required.

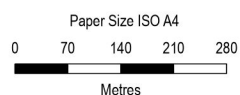
Table 4-16 (continued)
Nocturnal Birds – Conclusions

Species	Conclusions in the BDAR Regarding Species Presence	Conclusion Compared to BDAR
Powerful Owl (<i>Ninox strenua</i>)	Present. The Powerful Owl was recorded in the Solar Farm, Lower Reservoir and Upper Reservoir footprints during targeted surveys and through opportunistic sightings and from identified regurgitate. As such, a species polygon was prepared, and an offset liability generated (see Figure E-6 of the BDAR). The TBDC states that the species polygon for forest owls must be drawn to include all vegetation zones that are within 800 m (being the approximate home range) from the location of a detected owl and contain a living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground (DCCEEW, 2025a). The species polygon provided in the BDAR was generated with reference to the TBDC guidelines (DCCEEW, 2025a). Upon review, it was noted that certain vegetation polygons lacking suitable hollow-bearing trees were excluded from the species polygon, despite the presence of such trees within 800 m in the same vegetation zone. As such, an updated species polygon is provided in Figure 4-13.19.	Increased species polygon compared to the BDAR: • The Powerful Owl was detected during targeted surveys in the Project Disturbance Footprint. • A species polygon was generated with reference to the TBDC guidelines for the species (DCCEEW, 2025a). The polygon has been revised to include all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.19). As a result, the species polygon now spans 63.95 ha, and the revised credit liability is 2312 credits. • No further survey effort required.

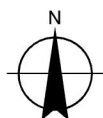


Vegetation zones

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3086,Mod	3244,High	3251,Low	3446,Low
3170,Mod	3244,Mod	3252,Mod	Exotic
3241,Mod	3244,Low	3252,Low	
	3251,High	3254,Mod	



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Grid: GDA2020 MGA Zone 56

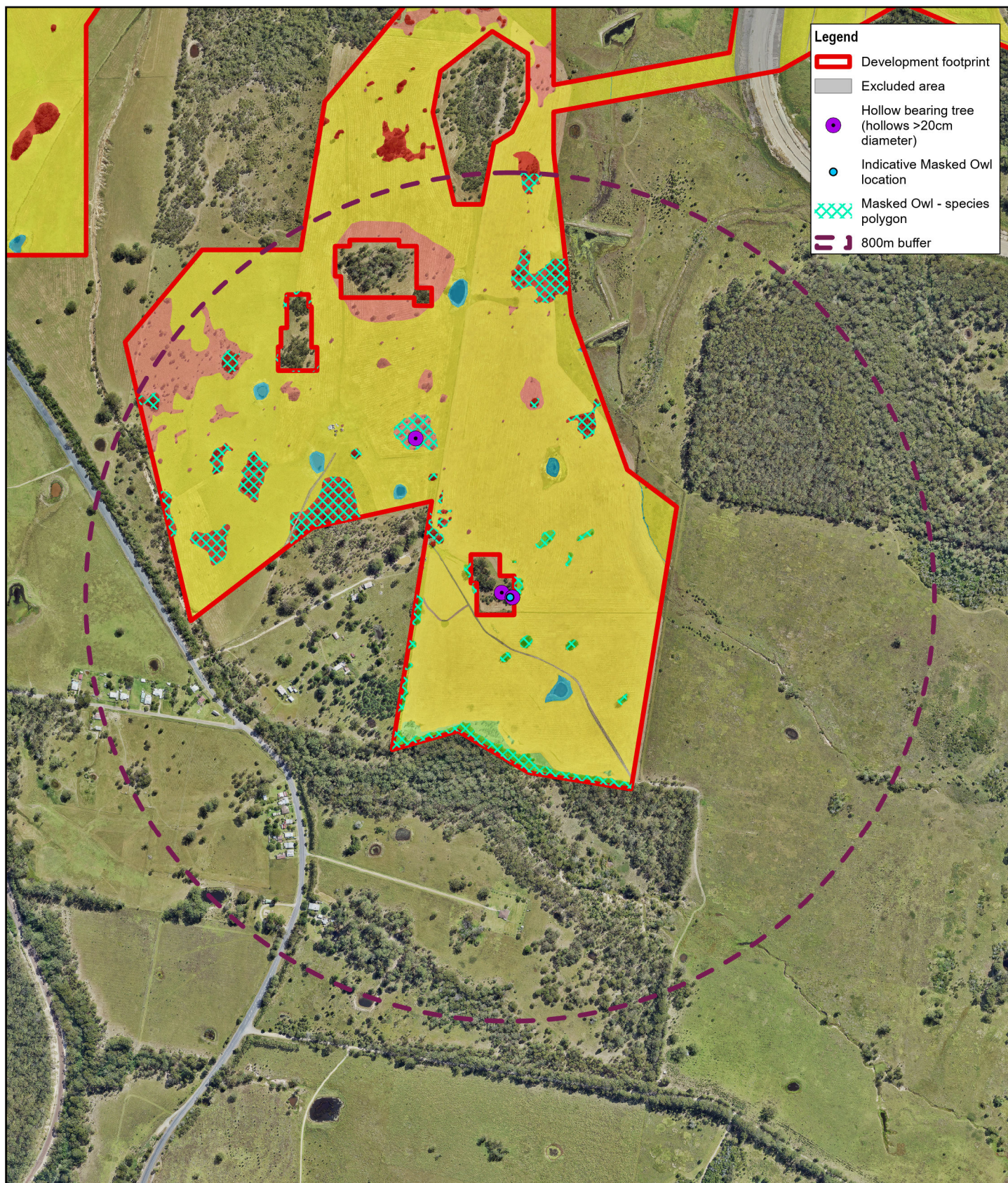


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**Masked Owl (*Tyto novaehollandiae*) -
species polygon**

Project No. 12604910
Revision No. 0
Date 11/04/2025

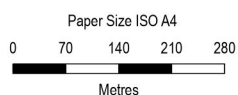
FIGURE 4-13.17a



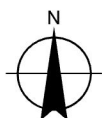
- Legend**
- Development footprint
 - Excluded area
 - Hollow bearing tree (hollows >20cm diameter)
 - Indicative Masked Owl location
 - Masked Owl - species polygon
 - 800m buffer

Vegetation zones

- 3329, Mod
- 3329, Low
- 4042, Low
- 4042, Mod
- Exotic



Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 56

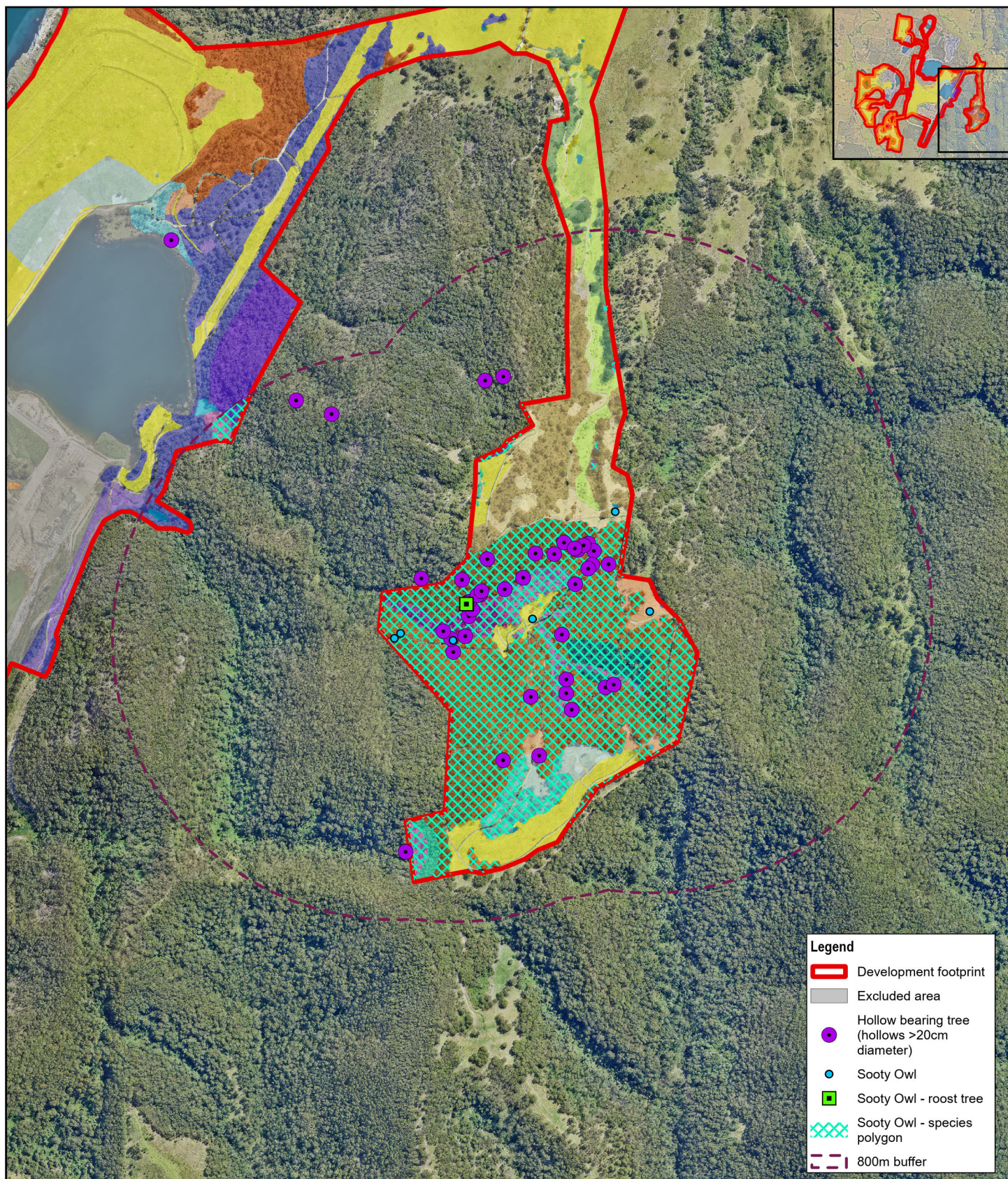


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**Masked Owl (*Tyto novaehollandiae*) -
species polygon**

Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

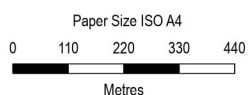
FIGURE 4-13.17b



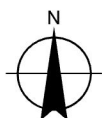
- Legend**
- Development footprint
 - Excluded area
 - Hollow bearing tree (hollows >20cm diameter)
 - Sooty Owl
 - Sooty Owl - roost tree
 - Sooty Owl - species polygon
 - 800m buffer

Vegetation zones

 3086,High 3086,Mod 3170,Mod 3241,Mod	 3241,Low 3244,High 3244,Mod 3244,Low 3251,High	 3251,Mod 3251,Low 3252,Mod 3252,Low 3254,Mod	 3446,Mod 3446,Low Exotic Exotic plantings
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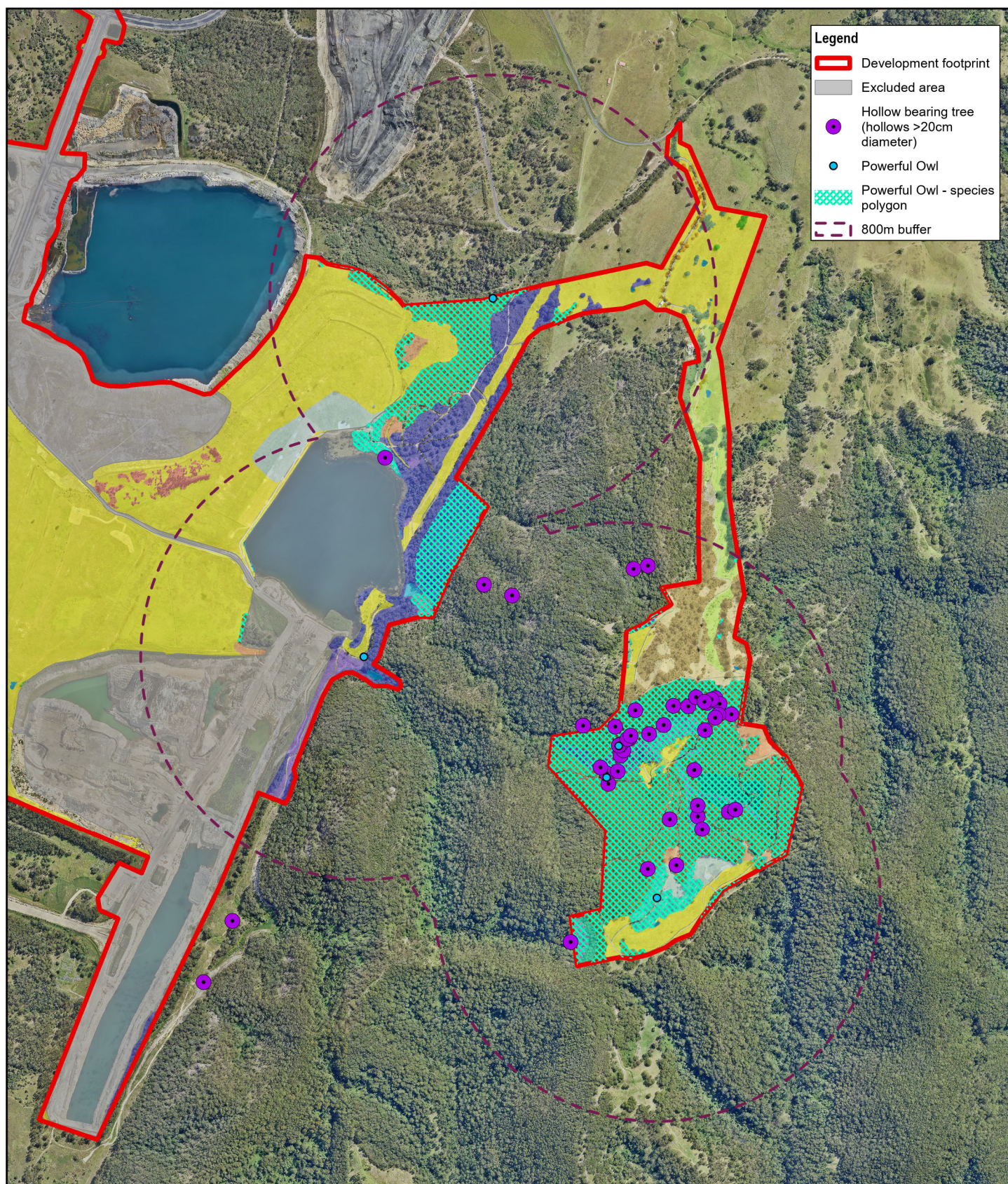


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**Sooty Owl (*Tyto tenebricosa*) -
species polygon**

Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

FIGURE 4-13.18



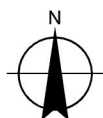
- Legend**
- Development footprint
 - Excluded area
 - Hollow bearing tree (hollows >20cm diameter)
 - Powerful Owl
 - Powerful Owl - species polygon
 - 800m buffer

Vegetation zones

 3086, High 3086, Mod 3170, Mod 3241, Mod	 3241, Low 3244, High 3244, Mod 3244, Low 3251, High 3251, Mod	 3251, Low 3252, Mod 3252, Low 3254, Mod 3329, Mod 3446, Mod	 3446, Low 4042, Low Exotic Exotic plantings
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Horizontal Datum: GDA2020
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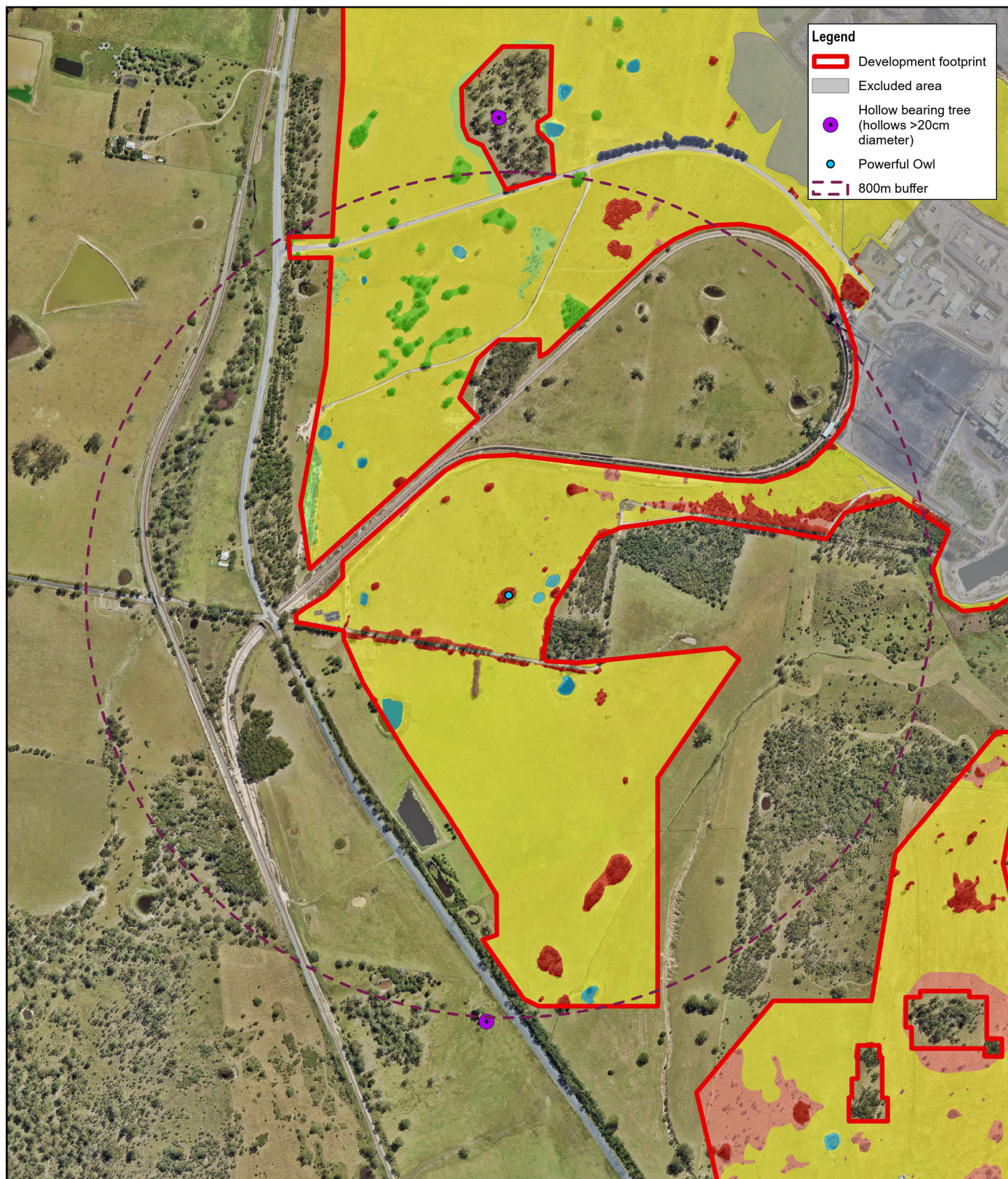


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**Powerful Owl (*Ninox strenua*) -
species polygon**

Project No. **12604910**
Revision No. **0**
Date **11/04/2025**

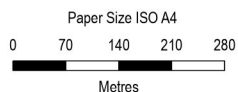
FIGURE 4-13.19a



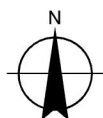
Legend

- Development footprint
- Excluded area
- Hollow bearing tree (hollows >20cm diameter)
- Powerful Owl
- 800m buffer

Vegetation zones		
3251, Planted	3329, Low	4042, Planted
3329, Mod	4042, Low	4073, Planted
	4042, Mod	Exotic



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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**Powerful Owl (*Ninox strenua*) -
species polygon**

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FIGURE 4-13.19b

14. Additional survey effort is required for reptiles

The assessor did not survey for Pale-headed Snake and Stephen's Banded Snake in accordance with Threatened reptiles – Biodiversity Assessment Method survey guide. Only one trapline was placed within upper reservoir footprint and spotlighting did not cover all areas of suitable habitat within the site.

Recommended action:

The proponent should complete additional reptile surveys in accordance with the TBDC and relevant guidelines or provide a report from a species expert or assume presence for the species.

Response

Surveys for the Pale-headed Snake and Stephen's Banded Snake were conducted with reference to the *Threatened reptiles Biodiversity Assessment Method survey guide* (DPE 2022a; Figure 4-13.20). The survey guidelines for Stephen's Banded Snake require spotlighting by foot and car (no trapping is required), and spotlighting and funnel trapping for the Pale-headed Snake.

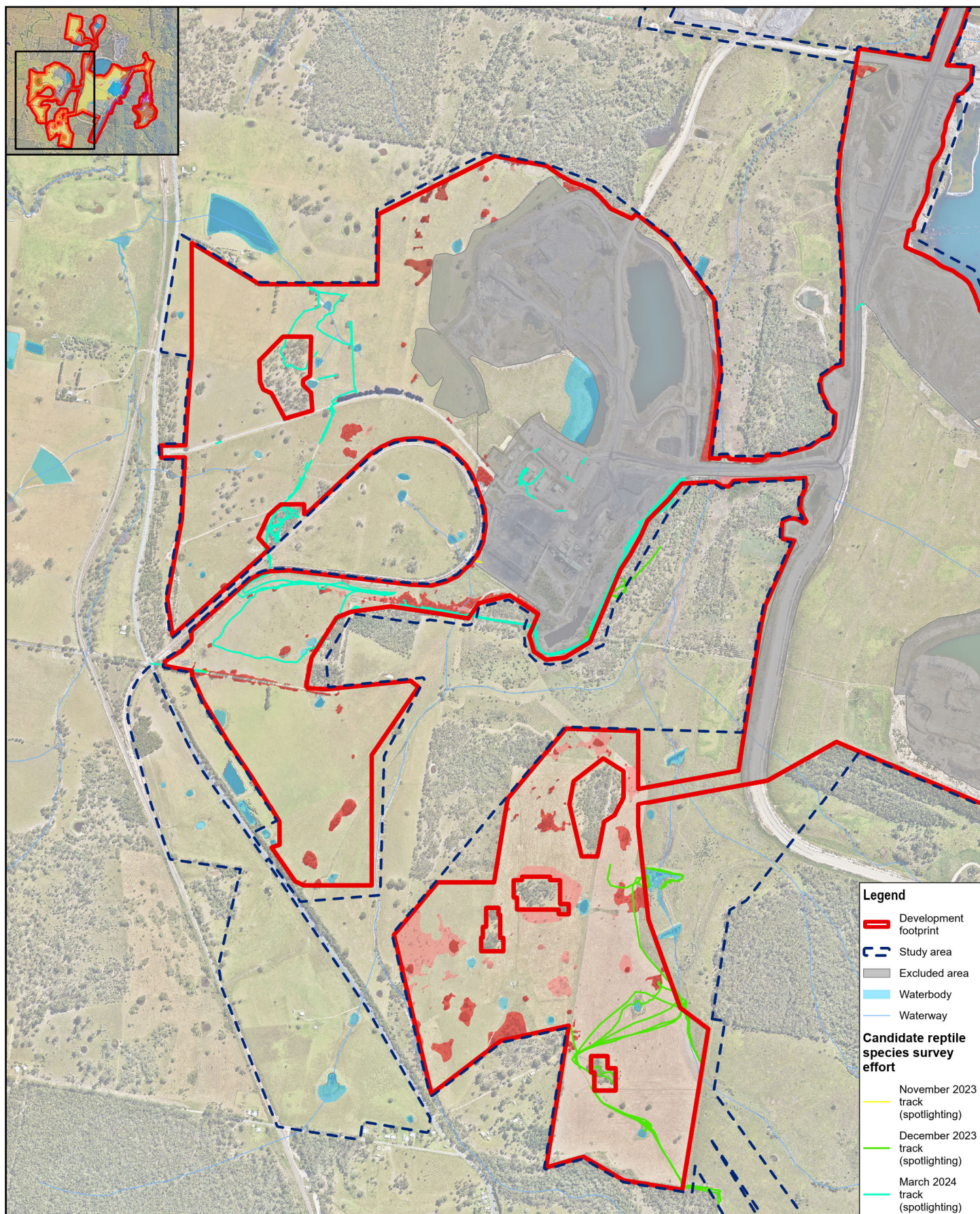
CPHR indicated that the targeted surveys for both species may not align with the guidelines. Habitat was initially inspected over three days (14 to 17 November 2022). A targeted survey for the Pale-headed Snake and Stephen's Banded Snake was conducted over 12 nights, as shown in Table 4-17. This involved spotlighting in suitable habitat and simultaneous active searches of refuge habitat, such as vine tangles, bark fissures and crevices and hollows in trees. Driving transects exclusively targeting the Stephen's Banded Snake were completed along trails within the Project Disturbance Footprint, as well as two additional rounds of surveys in November and December 2022 and January 2023 that targeted all nocturnal fauna (DPE 2022a) (Figure 4-13-20). A vehicle was driven at approximately 5 km per hour observing for snakes along the road or adjacent vegetation. Fitzgerald et al. (2010) recorded movements of radio-tracked Pale-headed Snakes ranging up to 135 m, and the species has been recorded elsewhere crossing a road in a forest. While not an approved method for the species, driving transects have the potential to record this species.

Funnel trapping was conducted at five locations targeting the Pale-headed Snake in areas of vegetation associated with the species, in accordance with DPE (2022a) (Figure 4-13.20). Funnel traps were set up over four nights between 5 and 10 February 2024.

Table 4-17
Threatened Reptile Survey Effort

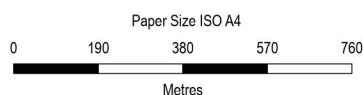
Date	Number of Ecologists	Type of Survey	Survey Effort
13 to 16 November 2023	Two	Nocturnal spotlighting/traverses	48 hours
4 to 7 and 11 to 15 December 2023	Two	Nocturnal spotlighting/traverses	96 hours
5 to 10 February 2023	Four	Funnel trapping	288 trap nights
25 to 28 March 2024	Two	Nocturnal spotlighting/traverses	48 hours

The surveys for both species were completed in accordance with the *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a), as is outlined below.

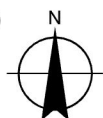


Vegetation zones

3251,Planted	4042,Planted
3251,Mod	4042,Low
3251,Low	4042,Mod



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

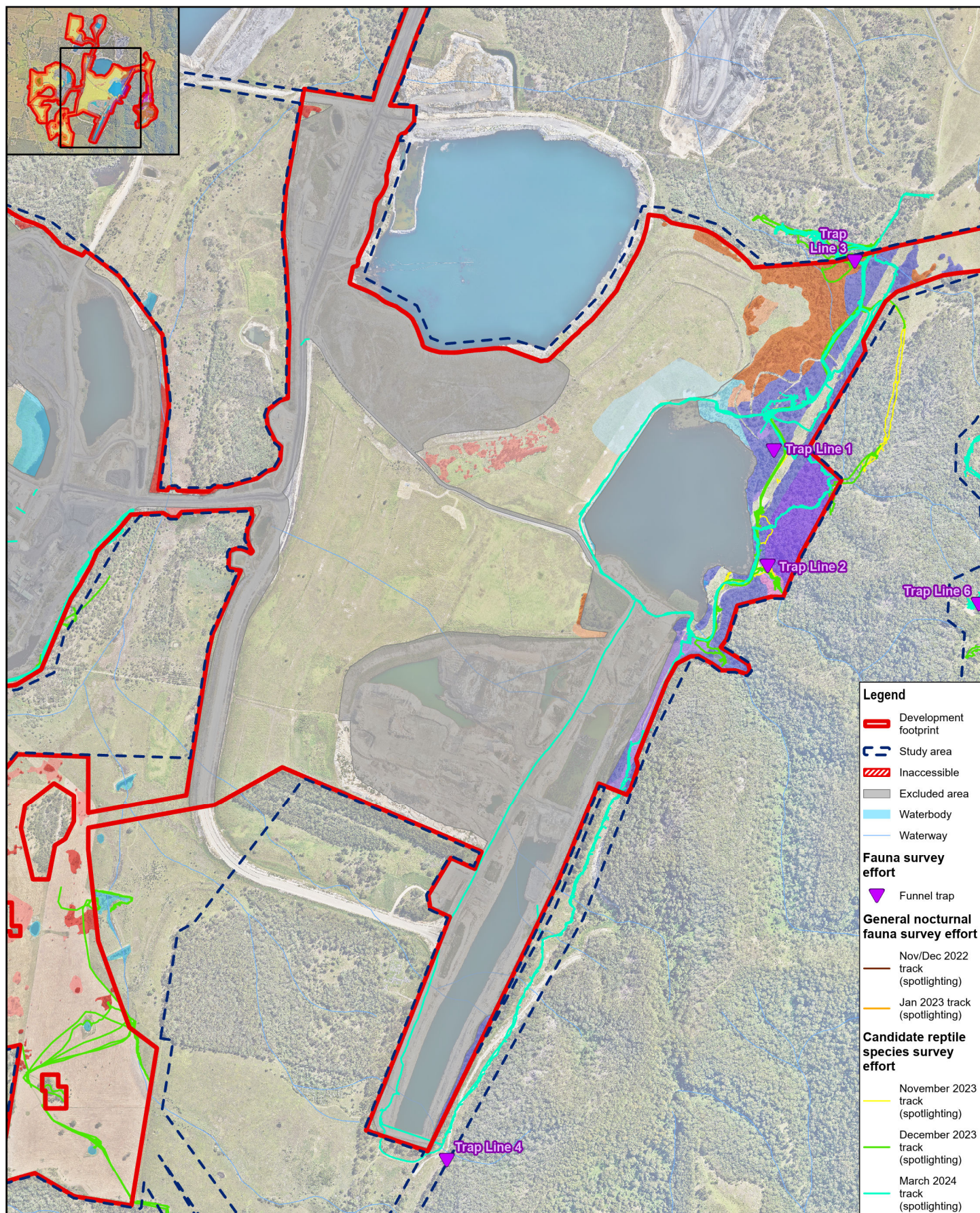


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Threatened reptile survey effort

FIGURE 4-13.20a



Vegetation zones

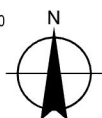
3244, High	3251, High	3252, Mod	4042, Low
3086, High	3244, Mod	3251, Mod	3252, Low
3086, Mod	3244, Low	3251, Low	3254, Mod

Paper Size ISO A4

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

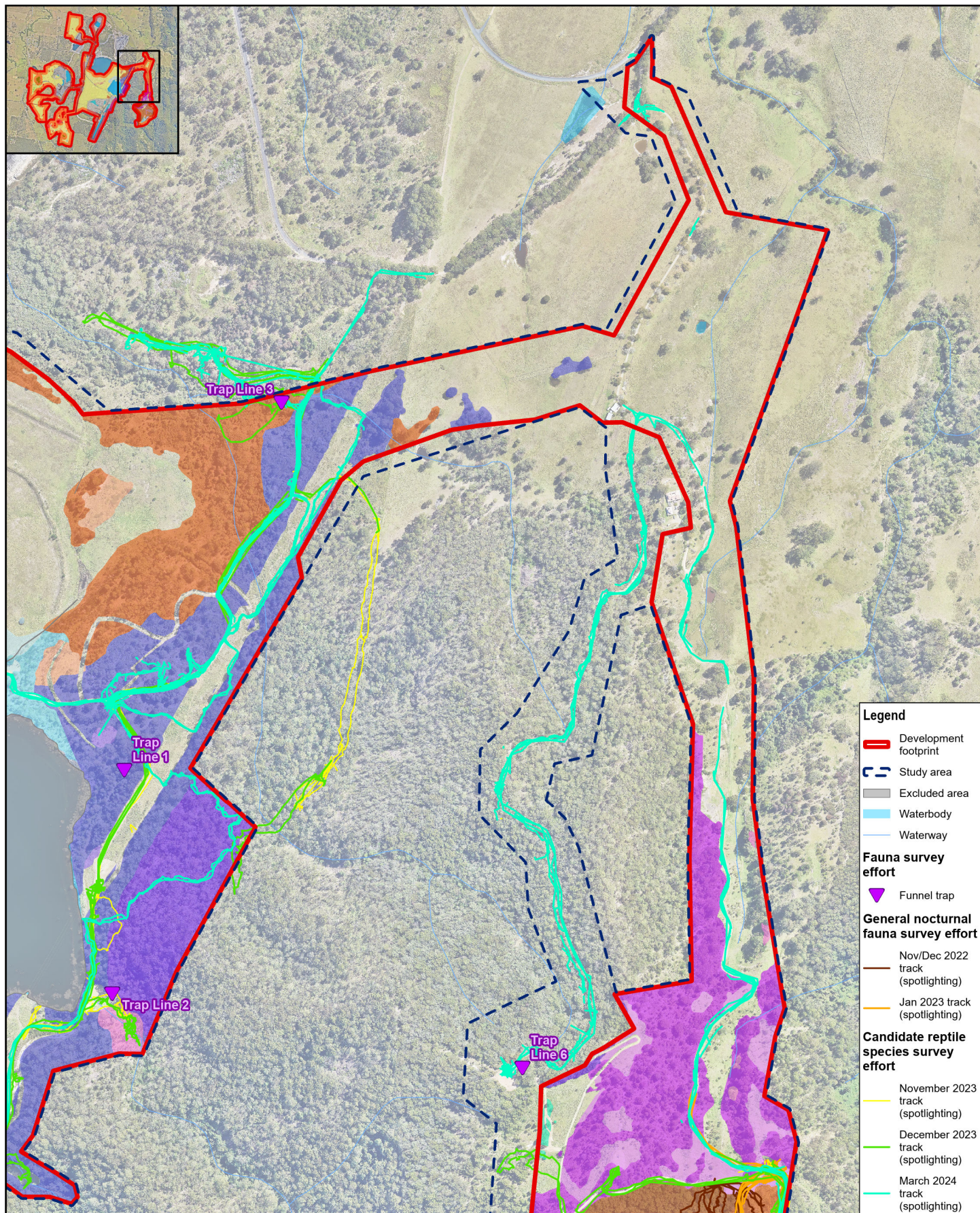


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Threatened reptile survey effort

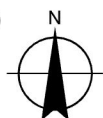
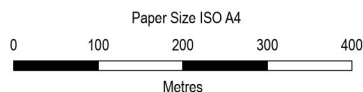
FIGURE 4-13.20b



- Legend**
- Development footprint
 - Study area
 - Excluded area
 - Waterbody
 - Waterway
- Fauna survey effort**
- Funnel trap
- General nocturnal fauna survey effort**
- Nov/Dec 2022 track (spotlighting)
 - Jan 2023 track (spotlighting)
- Candidate reptile species survey effort**
- November 2023 track (spotlighting)
 - December 2023 track (spotlighting)
 - March 2024 track (spotlighting)

Vegetation zones

3241,Low	3244,Low	3251,Low	3254,Mod
3086,Mod	3244,High	3251,High	3252,Mod
3241,Mod	3244,Mod	3251,Mod	3252,Low



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

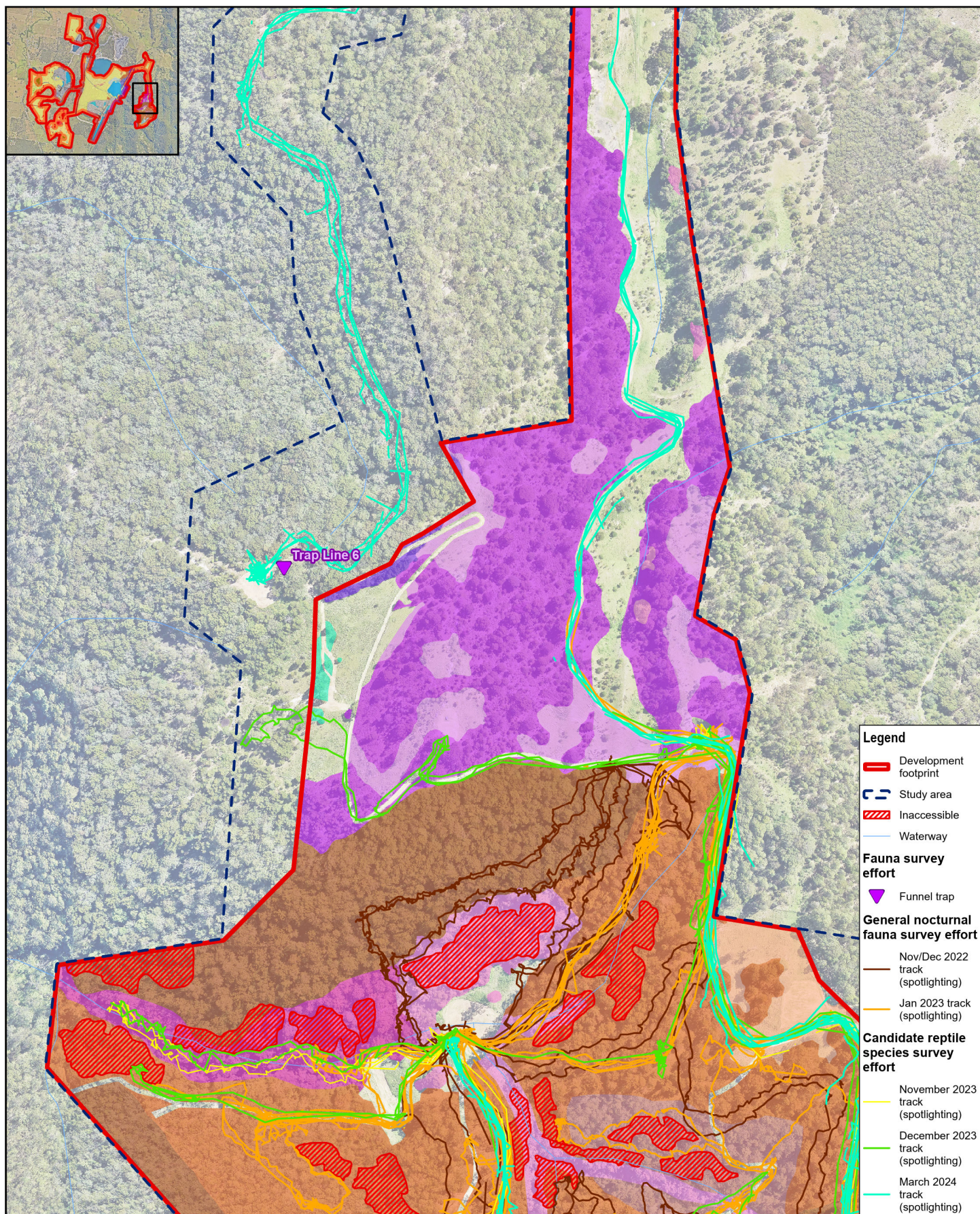


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Threatened reptile survey effort

FIGURE 4-13.20c



- Legend**
- Development footprint
 - Study area
 - /// Inaccessible
 - Waterway
- Fauna survey effort**
- ▲ Funnel trap
- General nocturnal fauna survey effort**
- Nov/Dec 2022 track (spotlighting)
 - Jan 2023 track (spotlighting)
- Candidate reptile species survey effort**
- November 2023 track (spotlighting)
 - December 2023 track (spotlighting)
 - March 2024 track (spotlighting)

Vegetation zones

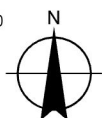
3170,Mod	3244,High	3251,High
3086,High	3241,Mod	3254,Mod
3086,Mod	3241,Low	3244,Low

Paper Size ISO A4

0 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

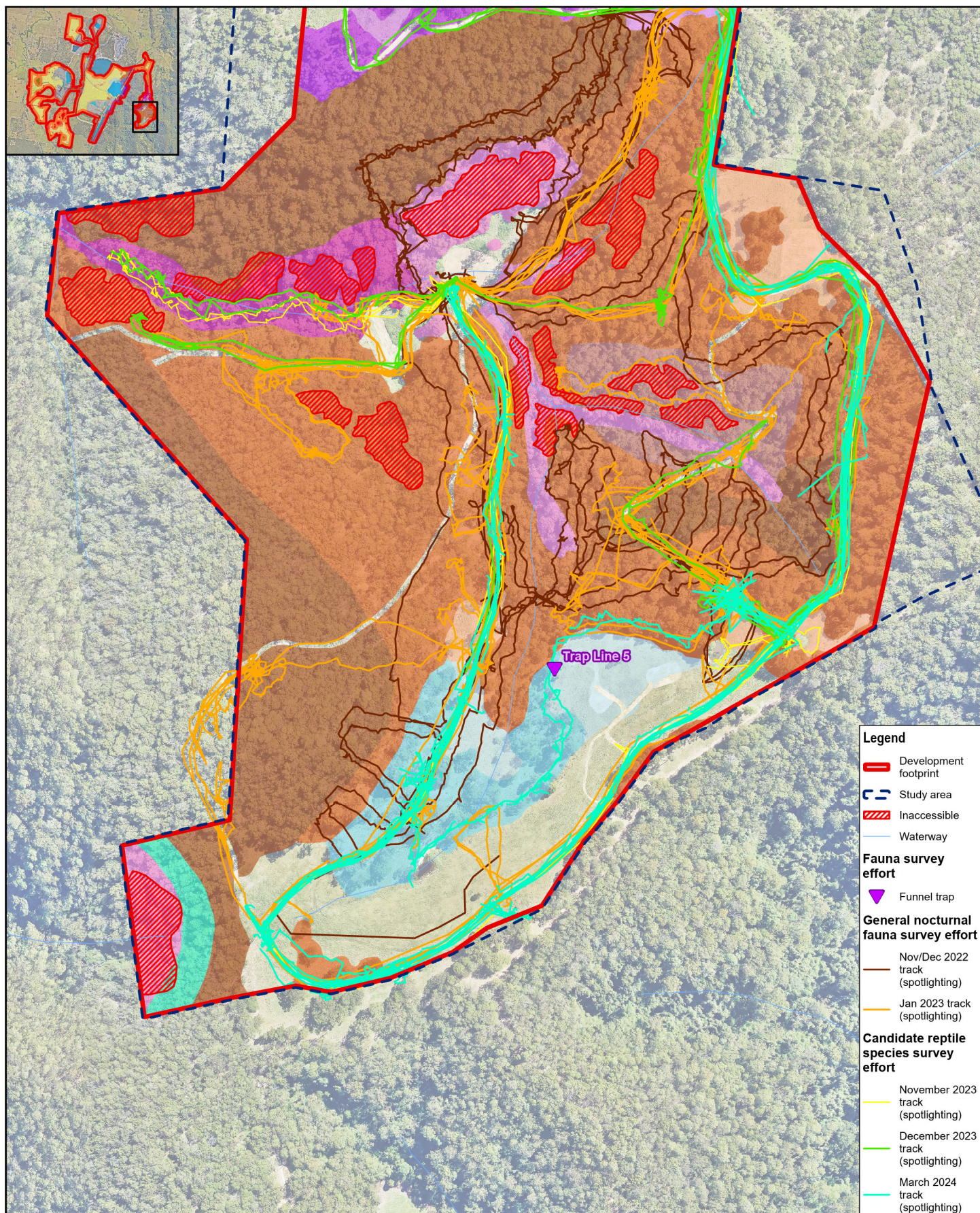


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Threatened reptile survey effort

FIGURE 4-13.20d



Vegetation zones

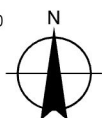
3170,Mod	3244,High	3252,Mod
3086,High	3241,Mod	3244,Mod
3086,Mod	3241,Low	3244,Low
		3254,Mod

Paper Size ISO A4

0 60 120 180 240

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



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Threatened reptile survey effort

FIGURE 4-13.20e

The *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a) provides survey requirements for the Pale-headed Snake, which requires 72 trap nights with four nights of survey per 50 ha of suitable habitat. Within the Project Disturbance Footprint, the Pale-headed Snake is associated with PCTs 3251 and 3252, which totals 26.53 ha of suitable habitat for the species that is of moderate to high condition. Low condition examples of either community were omitted on the basis that the species is predominantly arboreal and needs trees for refuge, preferably with hollows, therefore only moderate or high-quality vegetation was included from the associated PCTs (Fitzgerald et al., 2010; DCCEEW, 2025a; Shelton et al., 2020). A total of 288 trap nights were completed targeting the species. The survey approach is outlined below:

- Six traplines were set in and adjacent to the Project Disturbance Footprint, targeting a range of locations and vegetation zones. One trap line was located within the Upper Reservoir footprint and one directly adjacent to it. The location of the trap outside the Upper Reservoir footprint was originally included but was removed to allow for avoidance of biodiversity values.
- The number of funnel traps varied in each line depending on the extent of habitat; trap line 1: eight funnels, trap line 2: 14 funnels, trap line 3: 18 funnels, trap line 4: 10 funnels, trap line 5: 10 funnels, trap line 6: 12 funnels.
- All trap lines were out for four nights. Trap lines 4, 5 and 6 were open the first night. All trap lines (1 through to 6) were open for the next three nights. On the fifth night, only trap lines 1, 2 and 3 were open. This staggered approach was necessary as the surveys were limited by time on the first day, preventing the setup of all six trap lines before nightfall.

In proportion to the 50 ha of habitat specified in the survey guidelines for the Pale-headed Snake (DPE, 2022a), GHD has completed more than the required 288 trap nights given the smaller area of habitat. Additional survey effort was completed to ensure the guidelines were met, as it is not specified whether a lesser survey effort can be completed for areas less than 50 ha or if what is provided in the guidelines is the minimum requirement.

The *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a) requires eight hours of spotlighting per 50 ha of suitable habitat. Two ecologists completed four nights of survey in March 2024, with each night's survey representing 120 minutes, totalling 16 hours of spotlighting that specifically targeted the Pale-headed Snake. An additional 32 hours of spotlighting surveys was also completed for both the Stephens Banded Snake and Pale-headed Snake in March 2024.

The Stephens Banded Snake requires approximately 16 hours of spotlighting survey in suitable habitat per 50 ha of suitable habitat. Approximately 112.22 ha of suitable habitat for the species occurs in the Project Disturbance Footprint within PCTs 3086, 3170, 3241, 3244, 3251, 3252, 3254, and 4042. Any low condition examples of the above PCTs have been omitted from this total on the basis that it is unlikely to represent suitable habitat for the species (Fitzgerald et al. 2002a; Fitzgerald et al. 2005). As such, 38 hours of spotlighting is required to satisfy the survey guidelines. In total, 192 person hours of spotlighting survey effort were completed for the Stephens Banded Snake (see Table 4-17). As surveys have been completed in accordance with the *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a) and the species been assumed present within the Project Disturbance Footprint with an offset liability of 3453 credits, no further action is required.

The Stephen's Banded Snake is known to occur in the locality (four records; DCCEEW, 2025a). The species was not identified during the targeted surveys but is known to be highly cryptic and difficult to detect (DCCEEW, 2025a). In consideration of this and the presence of highly suitable habitat within the Project Disturbance Footprint, the species was assumed present despite the lack of evidence during targeted surveys and a liability of 3453 credits was generated. Suitable habitat is present in the study area, particularly within the proposed Upper Reservoir footprint, comprising vine tangles, hollows and dense vegetation, as well as numerous hollow-bearing trees (and see Fitzgerald et al., 2002b).

Targeted surveys for the Pale-headed Snake were conducted in accordance with the *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a). However, the species was not detected, and as a result, no credit liability was generated. The species was not assumed present on the basis that the habitat identified in the Project Disturbance Footprint is less suitable for the species, not being near larger riparian zones (higher order streams) (Fitzgerald et al., 2010). Additionally, there are no records or known populations of the Pale-headed Snake in the locality, with most NSW populations occurring in the central north-west (DCCEEW, 2025a).

Further surveys for either species are not required (Table 4-18).

Table 4-18
Reptile Species Presence

Species	Survey Effort and Conclusion in the BDAR Regarding Species Presence	Species Polygon (Yes/No)	Conclusion Compared to BDAR
Pale-headed Snake (<i>Hoplocephalus bitorquatus</i>)	Targeted surveys were completed for the species in accordance with <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> (Table 4-17; Figure 4-13.20). The Pale-headed Snake is associated with PCTs 3251, 3252 within the Project Disturbance Footprint which totals to 26.53 ha of suitable habitat for the species that is of moderate to high condition. A total of 288 trap nights were completed targeting the species as well as 48 hours of spotlighting surveys. In proportion to the 50 ha of habitat provided in guidelines for the Pale-headed Snake, GHD has completed more than the required 288 funnel trap nights and 16 hrs of spotlighting. The surveys did not detect the species within the Project Disturbance Footprint. Unlike the Stephen's Banded Snake, there are no records of the species in the locality. The species was not assumed present on the basis that habitat on site is not directly adjacent to water and NSW populations predominantly occur in the central north-west. Consequently, no offsets are required.	No.	As per the BDAR: • Surveys completed as per the requirements for Stephen's Banded Snake outlined in <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> (DPE, 2022a). • The species was not detected in the Project Disturbance Footprint. The Project Disturbance Footprint is not positioned near any known populations of the species. • No further survey effort is required.
Stephen's Banded Snake (<i>Hoplocephalus stephensii</i>)	Targeted surveys were completed in accordance with the requirements outlined in <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> (Table 4-12; Figure 4-13.20). Targeted surveys did not detect the species within the Project Disturbance Footprint. However, in consideration of the species' highly cryptic nature (DCCEEW, 2025a), existing records in the locality, and the presence of suitable habitat, the species was assumed present, and a species polygon was generated encompassing suitable habitat for the species. As the species been assumed present within the Project Disturbance Footprint, with an offset liability of 3453 credits, no further action is required.	Yes.	As per the BDAR: • Surveys completed as per the requirements for Stephen's Banded Snake outlined in <i>Threatened reptiles: Biodiversity Assessment Method survey guide</i> (DPE, 2022a). • Species assumed present within the Project Disturbance Footprint due to the presence of high-quality habitat and the cryptic nature of the species resulting in a low detection rate. Additionally, the species is known to occur in the locality. • A species polygon was generated incorporating suitable habitat and subsequently an offset liability. • No further survey effort is required.

15. The assessment of amphibians needs to be revised

Expert reports for Southern Stuttering Frog, Green-thighed Frog and Giant Barred Frog authored by Frank Lemckert were provided to BCS. All three reports concluded that there is no breeding habitat at the site, however; BCS does not support this finding for several reasons.

The reports states that Mr Lemckert attended a site inspection on Tuesday 17 September 2024 that allowed him to visually assess and confirm the quality of extent of both breeding and non-breeding habitats. However, the survey tracks and inspection points depicted in Figure 6 of the reports demonstrate that the author did not survey or inspect the areas of the site where potential breeding habitat is located. Mr Lemckert should adequately inspect all suitable habitats.

BCS visited the site visit on 14 November 2024 and identified a number of locations where suitable breeding habitat is present within the site for all three species. Along with this, both the BDAR and Aquatic Ecology Assessment identify areas containing suitable habitat such as permanent pools, shallow ponded pools and flowing habitat with rocky cascades. The BDAR states:

“Two steep, ephemeral tributaries, known as, unnamed tributary 1 and 2, drain from the upper reservoir footprint northwest towards SMC as shown in Figure 3.1. The headwaters of unnamed tributary 1 (see Photo 4.1) are within the proposed upper reservoir footprint and this 2nd Order stream provides, shallow ponded and flowing habitat, with rocky cascade sections and increased flow following rainfall. Site observations suggested some groundwater influence contributions to the baseflow and/or subsurface flow in unnamed tributary 1. Ponded areas were observed in the proposed upper reservoir footprint which persisted through the survey period, suggesting they are supported by groundwater (see Section 6.3.2.5 for further discussion).”

Recommended action:

The proponent should assume presence for the Southern Stuttering Frog, Green-thighed Frog and Giant Barred Frog or complete surveys in accordance with NSW Survey Guide for Threatened Frogs. The assessor will need to adequately assess the habitat in all areas proposed for direct and indirect impact both on and offsite to identify all areas of potential habitat to complete the required surveys. This also needs to include the length of tributary 1 where impacts to hydrological conditions are proposed.

BCS request shapefiles be provided from the frog expert report to compare to site visit observations.

Response

Yancoal does not agree with CPHR on the likely presence of the Stuttering Frog, Green-thighed Frog and Giant Barred Frog within the Project Disturbance Footprint and notes no justification is provided regarding the basis and qualifications on which CPHR has formed its position.

Dr Frank Lemckert is the CPHR accredited expert for these species and concluded in his expert reports that there is no habitat within the Project Disturbance Footprint for the Stuttering Frog, Green-thighed Frog (*Litoria brevipalmata*) and Giant Barred Frog (*Mixophyes iteratus*).

Attachment 6 to this Submissions Report outlines the areas surveyed by Dr Frank Lemckert, including an updated figure that demonstrates all survey tracks. The pedestrian survey areas include a section of Unnamed tributary 1, where impacts have been proposed.

Dr Frank Lemckert's expert reports addressed the requirements of the BAM with respect to the preparation of expert reports, which inherently do not include minimum site inspection requirements.

As outlined in Attachment 6, the findings of Dr Frank Lemckert's expert reports remain unchanged and no species polygon is required for the frog species assessed.

16. Credit calculations and species polygon mapping need to be revised

The BDAR references 'low condition derived grassland' as a VZ when justifying excluding areas from species polygons for arboreal and terrestrial fauna species. The description of the 'low' condition VZ is provided in Section 5.2.3 of the BDAR. It states that the VZ is a derived native grassland devoid of woody species, however, BCS notes that within the BAM-C that each 'low' condition VZ contains the 'Tree' growth form with a VI score for a VZ as high as 30.7.

The assessor needs to provide further evidence-based justification as to why species polygons for arboreal and terrestrial mammal species would not use these VZs, especially as the contain scattered trees and shrubs.

Brush-tailed Phascogale

The species polygon for the Brush-tailed Phascogale should be extended to include all areas of scattered paddock trees and areas of associated PCTs, as per the TBDC specifications for generating the species polygon, which stipulates that during breeding season, males may seek temporal refuge points in paddock trees with hollows. In addition, the TBDC states that a habitat patch for the species is one which is separated by less than 50 m, therefore all patches of suitable wooded vegetation within 50 m should be included. This includes consideration of connectivity provided by contiguous vegetation which occurs outside of the subject land footprint.

Table 11.5 of the BDAR states that the associated PCTs (PCT 3170, 3244, 3251, 3252, 3254, 3329, 3446 and 4042) have been included in the species polygon, which have been refined to remove low condition derived grassland vegetation, however some patches of associated PCTs assigned a moderate condition class are excluded from the species polygon.

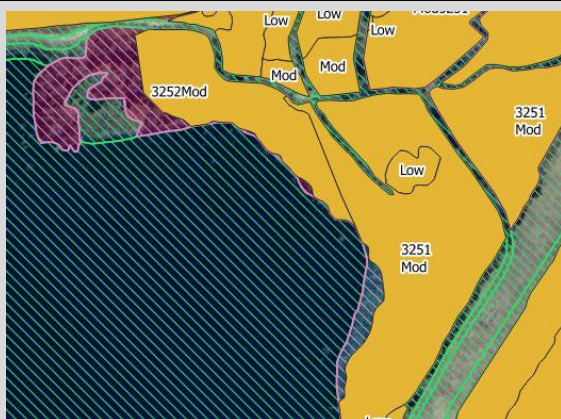
The insert below shows the species polygon indicated in pink, and the PCT mapping and condition class indicated in thatching, with PCT 4042 Moderate excluded from the polygon.



Common Planigale

The assessor has assumed presence for the Common Planigale within select patches of associated PCTs, with Table 11.5 of the BDAR stating that "polygons have been refined through the removal of small, isolated patches as the species is considered unlikely to traverse the expenses of exotic vegetation to reach them." BCS does not understand how the assessor came to this view as the species occupies both wooded and grassland habitat, and the TBDC states that the species habitat includes hollow logs, under bark, rocks, cracks in soil, grass tussocks or building debris. The species polygon needs to be extended to include all areas of associated PCTs, noting that the species polygon should match the VZ mapping, unless justified otherwise due to habitat constraints.

The insert below is an example of where the species polygon for the Common Planigale (yellow) does not align with the vegetation mapping polygon.

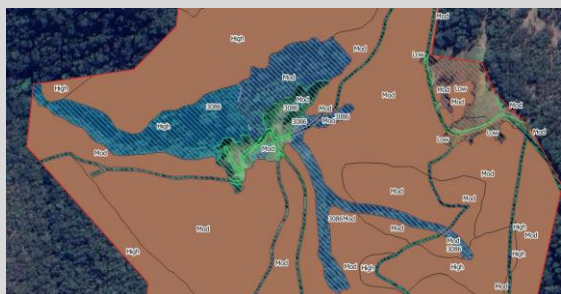


Koala

Though the assessor has not adequately completed the survey requirements for Koala, the BDAR notes that the species has been detected and species polygon applied. As the survey methodology has not been met, all areas of suitable habitat for the species should be captured within the species polygon.

Section 3.2 of the Guideline defines suitable habitat as “containing the PCT associated with the species within the TBDC and a minimum of one koala use tree present; presence of a koala use tree in any vegetation zone of a PCT associated with Koalas will determine the full extent of that PCT as suitable habitat (i.e. all vegetation zones). A vegetation zone may be excluded, based on condition, where the tree growth form is entirely absent.” As all VZs, even those classified as ‘Low’ condition contain tree growth forms within the BAM-C, the assessor needs to include all VZs of associated PCTs within the Koala species polygon or provide further evidence-based justification to exclude VZs.

The assessor has not selected PCT 3086_High and 3086_Moderate within the BAM-C for this species. The species is associated with the PCT; therefore, this Vegetation Zone should be included within the species polygon for this species. See insert below of the excluded PCT 3086 from the Koala species polygon (brown).



Species polygons should match the VZ mapping polygons unless justified otherwise due to habitat constraints. There are a number of incidences within the subject land where mapping does not align.

Squirrel glider

Table 11.5 of the BDAR states that all PCTs within the subject land are associated with this species, however Table 6.5 does not list PCT 3170 as an associated PCT. The assessor has excluded areas of PCT 3170 from the species polygon, even when listed in a moderate condition.

Species polygons should match the VZ mapping polygons, unless justified otherwise due to habitat constraints. There are a number of incidences within the subject land where mapping does not align, as per the previously listed arboreal species polygons.

Long-nosed Potoroo

All areas of suitable habitat need to be included within the species polygon. There is inconsistency within the BDAR regarding the PCTs that the species is associated with. For example:

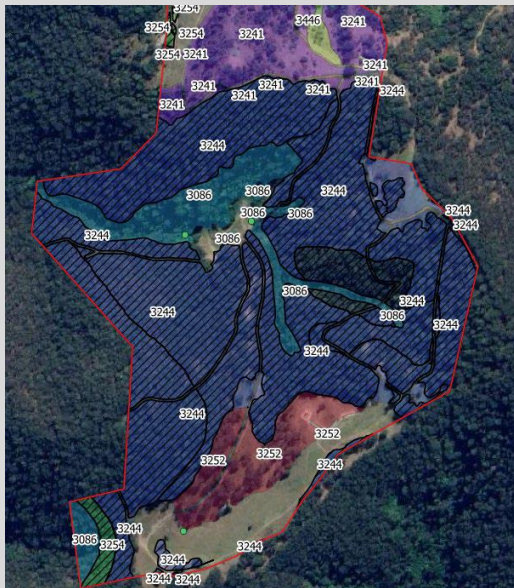
- *Table 6.5 lists that the species is associated with PCTs 3086, 3170, 3241, 3244, 3251, 3252, 3254, 3329, 3446, 4042, and 4073.*

- Tables 6.3 and 11.5 and the BAM-C only list the species as retained within PCT 3170, 3244, 3251, 3254, 3446, 4042.

The assessor has not provided any justification for removing five associated PCTs from the species polygon within Table 11.5 or elsewhere within the BDAR. If an assessor removes PCTs with which a candidate species is associated, they need to justify this, in line with Section 5.2.3.4 of the BAM which outlines that the assessor should provide reasons for determining a candidate species credit species is unlikely to have suitable habitat on the subject land (or specific vegetation zones) in a BDAR.

BCS notes that the Long-nosed Potoroo was detected in two PCTs that area not included within the species polygon, being PCT 3086 and 3252. As per BAM Operational Manual – Stage 1, Section 4.4.5 the species polygon must contain the habitat constraints or other suitable microhabitat associated with the species on the subject land. This includes PCTs where the species is identified.

The insert below shows waypoints of the species detection occurring outside of the species polygon as indicated by the black thatching.



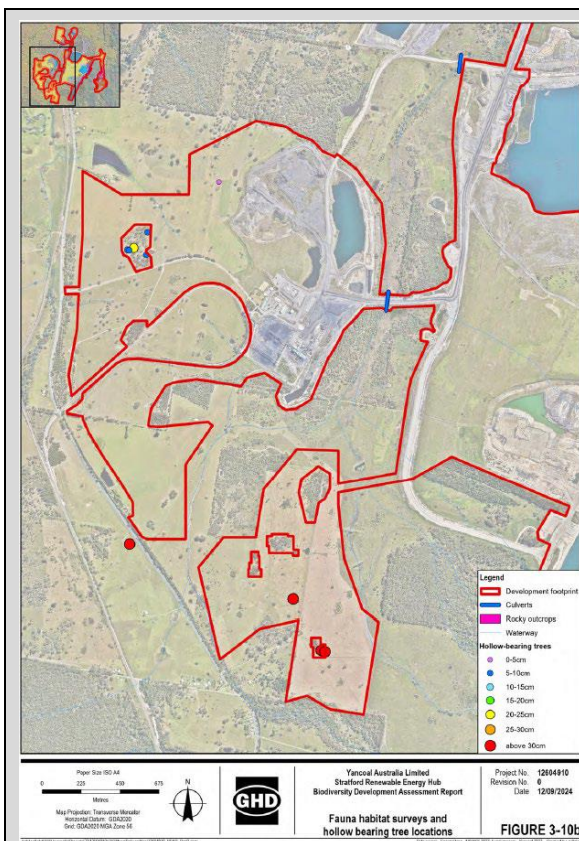
The assessor should extend species polygons for arboreal and terrestrial mammals identified to occur within the subject land so that they include patches of wooded vegetation that will become isolated as a result of the proposal. This is relevant to the following species:

- Squirrel Glider (*Petaurus norfolcensis*)
- Koala (*Phascolarctos cinereus*)
- Brush-tailed Phascogale (*Phascogale tapoatafa*)
- Parma Wallaby (*Macropus parma*)
- Common Planigale (*Planigale maculata*)
- Long-nosed Potoroo (*Potorous tridactylus*)

In addition, the assessor should extend species polygons for the following entities where vegetation patches fall within suitable habitat:

- Stephen's Banded Snake (*Hoplocephalus stephensii*)
- Green and Golden Bell frog (*Litoria aurea*)
- Green-thighed frog (*Litoria brevipalmata*)

The assessor should consider species polygon for arboreal mammal species which use scattered paddock trees as a prescribed impact, as connectivity to isolated patches retained within the footprint will no longer be accessible (see insert).



South-eastern Glossy Black-cockatoo

The assessor did not conduct surveys for breeding individuals in suitable breeding habitat and as such the assessor has assumed breeding for this species. However, selecting indicative locations of nest trees is not an accepted way of assuming presence and associated credit generation.

All trees meeting the following criteria should be identified as nest trees and should generate credits in accordance with the TBDC.

- i. at least 8 m above the ground; and
- ii. in stems with a diameter of at least 30 cm; and
- iii. hollow diameter is at least 15 cm; and
- iv. stem angle is at least 45 degrees and may be near-vertical or vertical.

The species polygons should be circular in shape and should include a buffer radius of 200 m around any actual nest tree.

Forest Owls

The polygon the assessor created for each Forest Owl has not correctly captured all areas of VZs containing suitable hollows within a 800 m buffer. In addition, the assessor has not completed surveys in accordance with the TBDC to allow for accurate credit generation. Further survey is required as detailed under Issue No. 14 (above).

White-bellied Sea-eagle

Selecting indicative locations of nest trees is not an accepted way of assuming presence and associated credit generation. Further survey effort is required as detailed under Issue No. 14 (above).

Other species requiring further survey

Along with Forest Owls and the White-bellied Sea, additional surveys are required to meet the requirement of the BAM for the following species and as such the assess will need to revise the credit calculation based on the outcomes of these surveys for:

- Craven Grey Box (*Eucalyptus largeana*)

- *Scrub Turpentine* (*Rhodamnia rubescens*)
- *Stuttering Frog* (*Mixophyes balbus*)
- *Giant-barred Frog* (*Mixophyes iteratus*)
- *Green-thighed Frog* (*Litoria brevipalmata*)
- *Large-eared Pied Bat* (*Chalinolobus dwyeri*)
- *Eastern Cave Bat* (*Vespadelus troughtoni*)

Recommended action:

BCS recommends that the species polygons for the following candidate species are amended to address the issues outlined above:

- *Brush-tailed Phascogale* (*Phascogale tapoatafa*)
- *Common Planigale* (*Planigale maculata*)
- *Koala* (*Phascolarctos cinereus*)
- *Squirrel glider* (*Petaurus norfolcensis*)
- *Long-nosed Potoroo* (*Potorous tridactylus*)

All amendments to species polygons must be reflected within the BDAR and BAM-C, with updated shapefiles submitted.

Response

Vegetation Zone Classification and Species Polygons

Vegetation zone mapping and classification was undertaken as per Section 3.3.2 of the BAM, and descriptions of vegetation zones for the PCTs recorded are provided in Table 5.14 of the BDAR. Lower condition zones were excluded from select species polygons where the species credit species would not utilise such vegetation based on their biology or the ecology of the areas in question. Descriptions are provided in Table 11.5 of the BDAR.

CPHR requests further clarification about how vegetation zone classifications were decided, particularly with reference to zones that are considered 'low' condition PCTs but have the 'tree' growth form included in the BAM-C. From this, CPHR seeks additional information around about why certain species, namely arboreal and terrestrial mammalian fauna, would not use these zones and why they were omitted from relevant species polygons.

'Low' condition vegetation zones are those without a living canopy and with a reduced or absent midstory stratum. Examples exhibited characteristics of native vegetation due to the presence of a native plant-dominated understorey. This is described further in Section 5.2.3 of the BDAR. Some of these zones included species that belong to the 'tree' growth form as per the BAM. However, where this was the case, tree species recorded were young seedlings, likely re-establishing from the soil seedbank or nearby moderate or high condition vegetation where the midstory and canopy are intact. However, these plants were young and too immature to provide the complexity and structure of more intact examples of the vegetation present in the Project Disturbance Footprint. Most of the patches of low condition vegetation where tree seedlings are present are regularly subject to cattle grazing and/or mowing preventing them from reaching maturity. Accordingly, polygons generated for threatened fauna species, particularly those that are arboreal and reliant on structured vegetation for habitat (but also others with biology unsuited to survival in these degraded habitats) had such vegetation zones excluded when defining polygons.

As such, no further refinements to vegetation zone classifications in species polygons should be required given that they follow the guidance outlined in Section 3 of the BAM.

Brush-tailed Phascogale

The Brush-tailed Phascogale was recorded on multiple occasions during surveys in various locations of the Project Disturbance Footprint. Accordingly, polygons were generated for the species within associated PCTs that had a condition class of 'moderate' or 'high', as it preferentially utilises wooded vegetation for foraging and refuge (van der Ree et al., 2001). The species was not recorded in areas of 'low' condition vegetation (see Figure 6-2 of the BDAR and the response to Issue 9 for more information on the surveys completed to date). Small patches of isolated habitat more than 50 m from larger patches of contiguous vegetation, predominantly in the Solar Farm footprint, were also excluded from the species polygon on the basis that the species has a preference for forested communities that retain structural and functional connectivity (Lawton et al., 2021).

The Solar Farm footprint has a high level of existing disturbance associated with the operations of the SMC and subsequently has large expanses of exotic vegetation (i.e. not commensurate with a PCT) accompanied by a scattered mosaic of low and moderate condition native vegetation. Exotic vegetation was delineated from native PCTs through vegetation mapping surveys and completion of BAM plots. A single record of the Brush-tailed Phascogale was recorded via a camera trap in a patch of moderate condition PCT 4042, on the margins of the Solar Farm footprint. This patch directly adjoins to a much larger patch of vegetation outside the Project Disturbance Footprint. The exotic grassland in between patches of isolated native vegetation has limited habitat value for the Brush-tailed Phascogale, particularly as it does not retain mature trees for the species to forage or navigate. This vegetation is likely to represent a barrier to movement for the species, preventing access to small, isolated patches. Instead, the species is more likely to utilise larger patches that retain connectivity to vegetation outside of the Project Disturbance Footprint, such as the patch where the species was recorded in the Solar Farm footprint. The species polygon was further refined through the omission of PCT patches that occur in the 'excluded area' as they have been assessed/offset as part of a previous project (SSD-4966, see Figure 1.3 of the BDAR).

CPHR seeks to amend the polygons generated for this species and extend these to cover all associated PCTs including those of any vegetation zone, particularly vegetation zones containing scattered paddock trees and isolated habitat patches. Furthermore, CPHR has requested that select moderate condition polygons be included in the species polygon. However, these were omitted on the basis that they fall in the 'excluded area' subject to separate approvals associated with SSD-4966.

Mapped polygons for the species include areas of habitat that are disconnected but within 50 m of other patches, in accordance with the TBDC (DCCEEW, 2025a). As noted above, isolated habitat fragments that occurred more than 50 m from adjacent patches are considered unlikely to provide potential habitat due to the risk for the species dispersing over larger open areas. While the species persists in degraded landscapes, it requires higher levels of groundcover (Lawton et al., 2021) and, preferably, linear vegetated corridors for connectivity (van der Ree, 2001). Within the subject land, exotic grasslands are not likely to provide the necessary cover for terrestrial movements for this and other species, hence why isolated patches of habitat surrounded by such grasslands were excluded where distances were greater than 50 m to other native vegetation. Additionally, areas of associated PCTs that have not been included in the species polygon, but exist in a 'moderate' to 'high vegetation zone, are areas that have been previously assessed under SSD-4966 and should not be included on this basis (see Figure 1.3 of the BDAR).

No further changes to the species polygon for the Brush-tailed Phascogale are required, given it has been completed in accordance with the TBDC (DCCEEW, 2025a) and the biology of the species, following the guidance specified in Section 5.2.5 of the BAM.

Common Planigale

Polygons were generated for the Common Planigale within associated PCTs of a 'high' to 'moderate' condition class, but were filtered to remove small and isolated patches of vegetation considered unlikely for the species to traverse. These patches are separated by expanses of exotic vegetation without canopy cover, of which the species is not likely to utilise due to exposure to unfavourable conditions and predation risk (Fisher & Dickman, 1993). Associated PCTs that occur in the 'excluded area' are subject to approvals of a previous project and were not included in the species polygon nor offset estimate for the species (SSD-4966, see Figure 1.3 in the BDAR).

CPHR seeks to amend the polygons generated for this species and extend these to cover all associated PCTs, including those of any vegetation zone unless habitat constraints exist. This includes isolated patches of PCTs associated with the species. Furthermore, CPHR has suggested that polygons are amended to encompass the full extent of associated PCTs where they have been excluded.

As CPHR indicated, the species occurs across both wooded and grassland habitat types, as is also outlined in the TBDC (DCCEE 2025a). However, the exotic grasslands that surround isolated patches of associated PCTs, which have been excluded from the species polygon, are unlikely to retain high enough condition/habitat values to support species dispersal. Grasslands used by the species require dense cover (Fisher & Dickman, 1993), whilst much of the exotic grassland has been grazed or mown and has little cover, subjecting this small mammal to predation risk. Nonetheless, small patches of isolated vegetation have been included within the polygon even where habitat for refuge and dispersal may be marginal (see Figure E-13 for species polygon mapping in relation to extent of exotic vegetation).

Note that areas of associated PCTs that have not been included in the species polygon but exist in a 'moderate' to 'high' condition vegetation zone, such as the area identified in the response from CPHR, are areas subject to existing approvals for SSD-4966 (see Figure 1.3 of the BDAR).

The species polygon for the Common Planigale does not require any further refinements as it has been completed in accordance with the TBDC (DCCEE, 2025a) and the biology of the species, following the guidance specified in Section 5.2.5 of the BAM.

Koala

Polygons were generated for the Koala within associated PCTs of 'high' to 'moderate' condition class, with reference to Section 3.2 of the *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide* (DPE, 2022b). The polygon was restricted to vegetation zones of 'high' to 'moderate' condition, in line with the guidelines (DPE, 2022b). CPHR seeks to amend the polygons generated for this species and extend these to cover all associated PCTs, including those of any vegetation zone where there are plants assigned to the tree growth form. Additionally, areas of PCT 3086 that are 'moderate' or 'high' condition have been requested to be added to the polygon on the basis that they are associated with the Koala.

Whilst 'low' condition vegetation of associated PCTs contains plant species of the 'tree' growth form, these individuals were seedlings that have likely established from soil seedbanks or neighbouring vegetation. None of these plants were mature enough to have formed vegetative structural complexity, hence these zones were at a very early stage of ecological succession that would have been unfavourable for Koalas. Additionally, these seedlings are often subject to mowing and grazing pressure that would prevent them reaching maturity in the future. Example figures in the *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide* (DPE, 2022b) include woodland or forest vegetation zones in the species polygon, but not the adjacent grassland vegetation zones. In addition, the guidelines define a tree as "a live woody stem of any plant species (excepting palms, cycads, tree ferns and grass trees) which has a diameter at breast height (dbh) of 100 mm or greater". Considering this, such zones were excluded from the polygon as Koalas need larger trees for foraging and shelter from predators, particularly in these areas that had been cleared previously and are often prevented from maturing by grazing/and or mowing (Rus et al., 2021).

PCT 3086 was not included in the species polygon, as the Koala is not associated with it according to *BioNet Threatened Species to Plant Community Types Association* data (DPE, 2022c) and the TBDC (DCCEEW, 2025a). Additional areas of 'moderate' to 'high' condition vegetation that is associated with the species was omitted if it occurred in the 'excluded area' (subject to SSD-4966; see Figure 1.3 of the BDAR).

No further changes to the species polygon for Koala are required as it has been completed with reference to *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide* (DPE, 2022b). Further reference to the biology of the species has been utilised to further refine the polygon.

Squirrel Glider

Polygons for this species were generated within associated PCTs of 'high' to 'moderate' condition, with reference to the TBDC (DCCEEW, 2025a). Given the species relies upon woodland and forest habitat types (Smith & Murray, 2003), 'low' condition vegetation was excluded. CPHR seeks amendment of the Squirrel Glider species polygon to include PCT 3170 in 'moderate' condition. As per the TBDC (DCCEEW, 2025a), vegetation of 'high' to 'moderate' condition that may provide habitat for this species should be included in the species polygon. However, PCT 3170 is not associated with the species according to *BioNet Threatened Species to Plant Community Types Association* data (DPE, 2022c) nor the TBDC (DCCEEW, 2025a), hence why this PCT was excluded from the polygon.

As such, the species polygon for Squirrel Glider should not require further refinement. Table 11.5 of the BDAR should be updated for consistency with Table 6.5 of the BDAR.

Long-nosed Potoroo

Polygons for this species were generated within associated PCTs of 'high' to 'moderate' condition, with reference to the TBDC (DCCEEW, 2025a). As the species relies upon woodland and forest habitat types that are structurally diverse (Norton et al., 2011), 'low' condition vegetation was excluded. CPHR has noted that the Long-nosed Potoroo was recorded in PCTs that are not associated with the species, namely PCTs 3086 and 3252. As such, CPHR has requested these PCTs to be added to the species polygon, despite not being associated with the Long-nosed Potoroo (DCCEEW, 2025a).

It is noted that the correct associated PCTs have been included in the species polygon. This includes vegetation of 'high' to 'moderate' condition, which may provide habitat for this species. However, PCTs 3086, 3241, 3252, 3329 and 4073 are all not associated with the species according to *BioNet Threatened Species to Plant Community Types Association data* (DPE, 2022c), hence why they were originally excluded from the polygon. Table 6.5 of the BDAR erroneously lists them as associated PCTs. It is reasonable that 'moderate' and 'high' condition examples of PCTs 3086 and 3252, where the species were recorded, should be included in the species polygon despite not being associated with the Long-nosed Potoroo. This is in accordance with Section 5.2.3.4 of the BAM.

As such, the species polygon has been extended to include 'moderate' to 'high' patches of PCTs 3086 and 3252, resulting in a revised credit liability of 2993 credits (Figure 4-13.14; Table 4-19).

Species polygon extensions for patches that will become isolated or fall in suitable habitat and for prescribed impacts

Polygons for the following species were generated with reference to Section 5.2.5 of the BAM and the TBDC (DCCEEW, 2025a): Squirrel Glider, Koala, Brush-tailed Phascogale, Parma Wallaby, Common Planigale, Long-nosed Potoroo. In addition, the species polygon for Stephen's Banded Snake was generated with reference to the *Threatened reptiles: Biodiversity Assessment Method survey guide* (DPE, 2022a) and the species polygon for the Green and Golden Bell Frog and Green-thighed Frog were generated with reference to the *NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method* (DPIE, 2020c). Prescribed impacts are assessed in Section 4.2.4 of the BDAR.

CPHR requests that polygons for the species should be extended to include patches of vegetation that will become isolated as a result of the Project, as well as vegetation patches in suitable habitat. Additionally, CPHR asks for consideration of prescribed impacts where the Project results in isolation of patches of vegetation. As species polygons have been generated with reference to Section 5.2.5 of the BAM, the TBDC (DCCEEW, 2025a), and other relevant guidelines (as noted above), no additional refinements should be required.

An assessor may propose compensatory measures such as additional biodiversity credits or conservation measures to compensate for any residual prescribed impacts. The Project is not anticipated to result in major losses in connectivity within the proposed Solar Farm footprint, as these patches are already isolated from prior clearing. Additionally, forested habitat surrounding the Upper Reservoir footprint would retain connectivity to intact vegetation outside the Project Disturbance Footprint, despite potential impacts to overall connectivity for select species.

Further information is provided in Table 11.5 of the BDAR, which describes how species polygons were created, and in Table 8.1 of the BDAR, which identifies prescribed impacts.

Forest Owls

As detailed in Issue 13, vegetation polygons that lacked suitable hollow-bearing trees for the species were excluded from the species polygons for all owl species identified or assumed present in the Project Disturbance Footprint. For example, there is a polygon of PCT 3244 – Moderate condition in the Upper Reservoir footprint that retains a suitable hollowing bearing tree for the Sooty Owl and is within the 800 m buffer of a Sooty Owl record. This vegetation polygon was included in the species polygon; however, another polygon of the same vegetation zone may have been excluded on the basis that it did not have a suitable hollow-bearing tree despite being within the 800 m buffer. As such, the species polygon for the Sooty Owl, Masked Owl and Powerful Owl have been updated and a revised credit liability has been generated (see discussion in Table 4-19 below).

Table 4-19
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Brush-tailed Phascogale (<i>Phascogale tapoatafa</i>)	85.1 ha.	The Brush-tailed Phascogale was recorded at 10 locations within the Project Disturbance Footprint, within the Upper and Lower Reservoir footprints and in the Solar Farm footprint. The associated PCTs (PCT 3170, 3244, 3251, 3252, 3254, 3329, 3446 and 4042) have been included in the species polygon. The polygons were refined by removing low condition derived grassland vegetation (i.e. vegetation with no canopy and little to no midstorey) and exotic vegetation. Furthermore, small isolated patches (i.e. more than 50 m from an adjacent patch), predominantly associated with the Solar Farm footprint, have been excluded. This is justified as: • The species has a preference for forested communities that retain structural and functional connectivity (Lawton et al., 2021). • Is almost entirely arboreal in nature (Lawton et al., 2021). The low condition examples of native vegetation do not retain a living mature canopy and isolated patches are likely to be too distant from other patches with greater connectivity. • While the species can persist in degraded landscapes, it needs higher levels of vegetative cover (Lawton et al., 2021) and, preferably, linear vegetated corridors for connectivity (van der Ree, 2001). Within the subject land, exotic or native grasslands are unlikely to provide the necessary cover for terrestrial movement.	Nil.	As per the BDAR: • Species polygon generated for species. • The removal low condition and/or isolated patches of vegetation is justified due to the restrictions in species movement in degraded landscapes and preference for forested habitats. • Polygons identified by CPHR that do not meet the above been previously assessed as part of SSD-4966. As such, they have been deliberately excluded from the assessment.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Common Planigale (<i>Planigale maculata</i>)	130.4 ha.	Surveys targeting the Common Planigale were not completed in the Project Disturbance Footprint. The species is associated with most PCTs in the Project Disturbance Footprint including PCT 3086, 3170, 3244, 3251, 3252, 3254, 3329, 3446, 4042 and 4073. Combined, this represents 132.67 ha of suitable habitat for the species. Completing pitfall traps in accordance with the survey requirements outlined on the TBDC (DCCEEW, 2025a) was considered unfeasible over an area the size of the Project Disturbance Footprint. Furthermore, attaining an expert report was considered however there are no approved experts for the Common Planigale for the Hunter/Central Coast region or broader NSW. Accordingly, the presence of the species is assumed within the Project Disturbance Footprint. The species polygon has been refined by removing small, isolated patches of associated PCTs, as the species is unlikely to traverse extensive areas of exotic vegetation to access these patches. Additionally, areas dominated by exotic vegetation have been excluded. This exclusion is justified, as exotic and native-derived grasslands are unlikely to provide sufficient habitat value or conditions to support species dispersal. The species requires dense vegetation cover for movement and shelter (Fisher & Dickman, 1993). However, much of the exotic and native grasslands within the study area have been subjected to grazing or mowing, resulting in minimal cover and increased predation risk for this small mammal. Areas of associated PCTs that have not been included in the species polygon but exist in a 'moderate' to 'high' condition vegetation zone, such as the area identified in the response from CPHR, are subject to the existing approvals for SSD-4966 (see Figure 1-3 of the BDAR).	Nil.	As per the BDAR: - Species polygon includes associated PCTs of moderate and high condition. - The removal low condition and/or isolated patches of vegetation from the polygon is justified due to the resulting restriction of species movement in degraded landscapes and preference for densely vegetated communities. - Polygons identified by CPHR that do not meet the above criteria all fall within the excluded area and have therefore been previously assessed as part of SSD-4966. As such, they have been deliberately excluded from the assessment.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Koala (<i>Phascolarctos cinereus</i>)	106.7 ha.	The Koala was recorded on four occasions in the Lower Reservoir footprint and study area adjacent to the Upper Reservoir footprint. The Koala is associated with all PCTs on site. In accordance with the guideline, <i>Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide</i>, all associated PCTs in the Project Disturbance Footprint have been included in the species polygon (Figure E-10 of the BDAR). The species polygon has been refined with reference to Section 3.2 of the guideline. This is detailed below: - Whilst 'low' condition examples of associated PCTs can contain plant species of the 'tree' growth form, these individuals were seedlings that have likely established from soil seedbanks or neighbouring vegetation. Mature trees were exclusively dead stags. No living plants were mature enough to have formed any vegetative structural complexity, hence these zones were at a very early stage of ecological succession and are considered unsuitable for Koalas outside of marginal transitional habitat. Furthermore, this area is subject to mowing and/or grazing, meaning that saplings are unlikely to grow into mature trees. - Example figures in the <i>Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide</i> (DPE, 2022b) include woodland or forest vegetation zones in the species polygon, but not the adjacent grassland vegetation zones. In addition, the guidelines define a tree as "a live woody stem of any plant species (excepting palms, cycads, tree ferns and grass trees) which has a dbh of 100 mm or greater". Considering this, grassland vegetation was excluded from the polygon.	Nil.	As per the BDAR: - Species polygon includes associated PCTs of moderate and high condition. - The removal low condition derived native grassland and exotic vegetation from the polygon is justified due to the arboreal nature of the species. - Polygons identified by CPHR that do not meet the above criteria all fall within the excluded area and have therefore been previously assessed as part of SSD-4966. As such, they have been deliberately excluded from the assessment.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Koala (<i>Phascolarctos cinereus</i>) (continued)	As above.	- Additional areas of moderate to high condition vegetation that is associated with the species was omitted if it occurred in the 'excluded area' (subject to SSD 4966; see Figure 1.3 of the BDAR). - CPHR have noted that PCT 3086 was not included in the species polygon. This was correctly omitted as the Koala is not associated with it according to <i>BioNet Threatened Species to Plant Community Types Association data</i> and the TBDC (DCCEEW, 2025a). No further edits to the species polygon for Koala are required as it has been completed with reference to <i>Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide</i>.		
Squirrel Glider (<i>Petaurus norfolcensis</i>)	110.3 ha.	The Squirrel Glider was recorded during field surveys in at least 10 locations across the Upper Reservoir and Lower Reservoir footprints. All PCTs identified in the Project Disturbance Footprint, excluding PCT 3170, are associated with the species and have been included in the species polygon (see Figure E-8 of the BDAR). The species polygon was refined by excluding low condition vegetation that lacks a canopy stratum and small, isolated patches (patches more than 70 m from other native vegetation) that the species is unlikely to be able to access. This is justified as: - The maximum known gliding range for the Squirrel Glider is 70 m (Strahan, 1995). Furthermore, the Squirrel Glider has a mean glide distance in a horizontal plane of 21.5 +/- 0.9 m (Goldingay & Taylor, 2009), making this a conservative calculation of habitat area. - The species relies upon woodland and forest habitat types rather than grassland vegetation (Smith & Murray, 2003).	Nil.	As per the BDAR: - Species polygon includes associated PCTs of moderate and high condition. - The removal low condition derived native grassland and exotic vegetation from the polygon is justified due to the arboreal nature of the species. - PCT 3170 is not associated with the species according to <i>BioNet Threatened Species to Plant Community Types Association data</i> nor the TBDC (DCCEEW, 2025a), hence why this PCT was excluded from the polygon.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Squirrel Glider (<i>Petaurus norfolcensis</i>) (continued)	As above.	The TBDC (DCCEEW, 2025a) outlines that vegetation of 'high' to 'moderate' condition may provide habitat for this species and should be included in the species polygon. PCT 3170 is not associated with the species according to <i>BioNet Threatened Species to Plant Community Types Association data</i> nor the TBDC (DCCEEW, 2025a), hence why this PCT was excluded from the polygon. As such, the species polygon for Squirrel Glider does not require further refinement.		
Long-nosed Potoroo (<i>Potorous tridactylus</i>)	80.79 ha in BDAR. 84.12 ha in amended polygon.	The Long-nosed Potoroo was recorded in the Upper Reservoir footprint in March and December 2023 by GHD and in the Lower Reservoir footprint in 2012 by AMBS (AMBS, 2012). The species is associated with several of the PCTs identified within the Project Disturbance Footprint including PCTs 3170, 3244, 3251, 3254, 3446, 4042. As such, the species polygon includes moderate and high examples of each associated PCT (Figure E-12 of the BDAR). Low condition derived native grassland has been omitted from the polygon due to the species preference for forested habitats that are structurally diverse to avoid predation (Norton et al., 2011). Small, isolated patches have also been excluded on a similar basis as the species is unlikely to traverse open habitat to reach them. It is noted that the correct associated PCTs have been included in the species polygon. PCT 3086, 3241, 3252, 3329, 4073 are not associated with the species according to <i>BioNet Threatened Species to Plant Community Types Association data</i> (DPE, 2022c), which is why they were originally excluded from the polygon.	Species polygon has been amended to include moderate and high condition examples of PCT 3086 and 3252.	The Long-nosed Potoroo species polygon has been amended to include 'moderate' to 'high' quality patches of PCTs 3086 and 3252 (see Figure 4-13.14). As a result, the species polygon now covers 84.12 ha, and the credit liability has been revised from 2592 to 2993 credits.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Long-nosed Potoroo (<i>Potorous tridactylus</i>) (continued)	As above.	CPHR has noted that the Long-nosed Potoroo was recorded in PCTs that are not associated with the species, namely PCT 3086 and PCT 3252. In response the species polygon has been revised to include moderate and high condition examples of PCT 3086 and 3252 (Figure 4-13.14).		
South-eastern Glossy Black-Cockatoo (<i>Calyptorhynchus lathamii</i>)	36.5 ha.	The Glossy Black-Cockatoo was recorded during field surveys in at several locations across the upper and lower reservoir footprints. All PCTs identified in the Project Disturbance Footprint are associated with the species and have been included in the species polygon (see Figure E-3 of the BDAR). No surveys for breeding individuals were conducted in suitable breeding habitat, nor any breeding trees identified opportunistically. This was due to the large area of suitable breeding habitat (36.53 ha), reduced visibility in dense vegetation and at times poor accessibility, particularly in the Upper Reservoir footprint. The placing of five indicative nest trees to generate the species polygon is justified as: • Each indicative nest tree point correlates to a suitable hollow-bearing tree and the highest quality habitat within the Project Disturbance Footprint. All five hollow-bearing trees represent suitable breeding habitat for the species. • The resulting species polygon conservatively includes the majority of high-quality habitat in the Upper Reservoir footprint. The removal of low condition and exotic vegetation zones in the Project Disturbance Footprint is similarly justified as they represent grassland communities and subsequently do not retain suitable breeding or foraging habitat for the species.	Nil.	As per the BDAR: • Targeted surveys detected the species in the Project Disturbance Footprint. • A conservative species polygon has been generated that encompasses the majority of high-quality habitat in the proposed Upper Reservoir. • The removal low condition derived native grassland and exotic vegetation from the polygon is justified due to the arboreal nature of the species. • Whilst surveys of breeding habitat were not feasible in the Project Disturbance Footprint, a conservative species polygon has been generated that encompasses the majority of high-quality habitat in the proposed Upper Reservoir.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Masked Owl (<i>Tyto novaehollandiae</i>)	27.0 ha in BDAR. 51.38 ha in amended polygon.	The Masked Owl was not recorded in the Project Disturbance Footprint during targeted surveys or opportunistically, however the species has been previously recorded in the SMC by AMBS (2012). Targeted surveys did not detect the species however the site was determined to contain suitable foraging and breeding habitat. Subsequently, it has been assumed present within the Project Disturbance Footprint. Two indicative points were placed within generally suitable habitat of the Project Disturbance Footprint, one in the Upper Reservoir footprint and another in the solar farm footprint. A species polygon and subsequently, a credit liability, were generated with reference to the guidance provided on the TBDC (DCCEEW, 2025a). The species polygon was developed with reference to the guidance provided on the TBDC (DCCEEW, 2025a) but excluded vegetation polygons within the 800 m buffer that did not retain hollow-bearing trees. As such, the species polygon has been revised to encompass all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.17) Consequently, the credit liability has also been updated.	The species polygon has been amended to align with the guidance provided in the TBDC (DCCEEW, 2025a).	The Masked Owl species polygon has been revised to include all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.17). As a result, the species polygon now spans 51.38 ha, and the credit liability has been revised from 968 to 1826 credits.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
Sooty Owl (<i>Tyto tenebrosa</i>)	30.2 ha in BDAR. 47.67 ha in amended polygon.	The Sooty Owl was recorded in the Upper Reservoir footprint during targeted surveys and through opportunistic sightings. The species polygon was developed with reference to the guidance provided on the TBDC (DCCEEW, 2025a) but excluded vegetation polygons within the 800 m buffer that did not retain hollow-bearing trees. As such, the species polygon has been revised to encompass all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.18). Consequently, the credit liability has also been updated.	The species polygon has been amended to align with the guidance provided in the TBDC (DCCEEW, 2025a).	The Sooty Owl species polygon has been revised to include all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.18). As a result, the species polygon now spans 47.67 ha, and the revised credit liability has been revised from 1642 to 2566 credits.
Powerful Owl (<i>Ninox strenua</i>)	40.1 ha in BDAR. 63.95 ha in amended polygon.	The Powerful Owl was recorded in the Solar Farm, Lower Reservoir and Upper Reservoir footprints during targeted surveys and through opportunistic sightings. The species polygon was developed with reference to the guidance provided on the TBDC (DCCEEW, 2025a) but excluded vegetation polygons within the 800 m buffer that did not retain hollow-bearing trees. As such, the species polygon has been revised to encompass all vegetation zones containing at least one suitable HBT within the 800 m buffer of a recorded occurrence (see Figure 4-13.19). Consequently, the credit liability has also been updated.	The species polygon has been amended to align with the guidance provided in the TBDC (DCCEEW, 2025a).	The Powerful Owl species polygon has been revised to include all vegetation zones containing at least one suitable hollow-bearing tree within the 800 m buffer of a recorded occurrence (see Figure 4-13.19). As a result, the species polygon now spans 63.95 ha, and the credit liability has been revised from 1449 to 2312 credits.

Table 4-19 (continued)
Species Polygon Mapping Methods

Species	Area of Species Polygon	Justification for Species Polygon Mapping in BDAR	Implication to Species Polygon Area based on CPHR Comment	Conclusion – Change Compared to BDAR
White-bellied Sea-Eagle (<i>Haliaeetus leucogaster</i>)	10 ha.	The White-bellied Sea-Eagle has been recorded on at least four occasions at the Project Disturbance Footprint, in the vicinity of the Stratford East Dam. On at least one occasion, two birds, potentially a breeding pair, were observed foraging at the same time. This species is associated with all PCTs in the Project Disturbance Footprint, however a nest was not identified during surveys. A species polygon was buffered around the location of an indicative nest tree, positioned to the east of the Stratford East Dam where the individuals were often seen flying towards after leaving the dam. A polygon was then completed as per the TBDC guidelines (Figure E-7 of the BDAR) (DCCEEW, 2025a). Subsequent supplementary surveys were conducted in vegetation adjacent to the Upper Reservoir footprint, where the species was initially thought to be nesting. These surveys did not reveal a nest, which is typically large and conspicuous (see Figure 4-3.16) (GHD, 2024b). This suggests that the species is not nesting within the vicinity of the Upper Reservoir footprint.	Nil.	Additional survey supports that a species polygon for this species is not required.

Other species requiring further survey

CPHR has requested additional survey effort for the following species:

- Large-eared Pied Bat.
- Craven Grey Box.
- Green-thighed Frog.
- Stuttering Frog.
- Giant Barred Frog.
- Brush-tailed Phascogale.
- Common Planigale.
- Koala.
- Squirrel Glider.
- Long-nosed Potoroo.
- Scrub Turpentine.
- Eastern Cave Bat.

This is addressed in Issues 6, 9 and 10 within Section 4.1.11 of this Submissions Report.

17. The BDAR should be revised to address other listed matters

The BDAR should be revised to address the following matters:

- *Further surveys should be conducted for the White-bellied Sea-eagle that will aim to target the area outside development footprint (this should be informed by the outcomes of surveys for the species that are proposed for Winter 2024 to confirm the presence and location of a nest tree).*
- *Surveys were incomplete for nest trees during breeding seasons of a number of bird species (e.g. White-bellied Sea Eagle, Glossy Black Cockatoo, Little Eagle) and were ongoing at the time the BDAR was prepared. The outcomes of these surveys should be included in a revised BDAR.*
- *Confirm if the Eastern Bristlebird was the species identified on site by eDNA testing, noting that EnviroDNA is doing further DNA testing of the species at the time BCS prepared this advice.*
- *Further assessment of rocky outcrops within and near the study area should be conducted during microbat breeding season to confirm whether or not this potential habitat is being utilised by the species as a maternity roost.*

Additional areas of similar rocky habitat are present in the development footprint that have not yet been mapped. Further survey effort is required to determine the full extent of suitable breeding habitat within the site.

Recommended action:

The BDAR should be amended to address the issues outlined above.

Response

White-bellied Sea-Eagle

The White-bellied Sea-Eagle was observed foraging within the Project Disturbance Footprint on several occasions, although no nest was located. Limited surveys were completed in adjacent bushland outside the Project Disturbance Footprint prior to submission of the BDAR. As a result, a conservative approach was adopted by placing an indicative nest point outside the Project Disturbance Footprint in the area the species was observed flying toward after foraging over the dam. A polygon was then delineated in accordance with the TBDC guidelines (see Figure E-7 of the BDAR) (DCCEEW, 2025a).

CPHR has requested further surveys be completed for the species outside the Project Disturbance Footprint. The BDAR outlines that “further surveys for the White-bellied Sea-Eagle are proposed for Winter 2024 to confirm the presence and location of a nest tree”.

Following the submission of the BDAR, supplementary surveys were conducted from 19 to 23 August and 21 to 25 October 2024, in areas adjacent to the proposed Upper Reservoir footprint where two individuals of the species were previously observed in flight (Figure 4-13.16). Surveys were limited to Yancoal-owned land surrounding the Upper Reservoir footprint. Over four days, two ecologists conducted thorough searches, particularly near Unnamed Tributary 1; however, no nest was identified. These supplementary surveys suggest that the observed individuals are likely nesting further from the Upper Reservoir footprint.

Given that supplementary surveys support that the White-bellied Sea-Eagle is not nesting in adjacent Yancoal-owned land (GHD, 2024b), a species polygon for this species is not required.

Eastern Bristlebird

As discussed in Section 3.6.2.7 of the BDAR, environmental DNA (eDNA) testing was completed on several watercourses and ponds on and adjacent to the Project Disturbance Footprint (see Figure 3.15 of the BDAR). Of the 33 bird taxa detections and the 89 overall detections during eDNA testing, there was one detection for the bird genus *Dasyornis* at one location (site S3). The relative abundance (defined as the percentage of reads assigned to the taxon) was less than 25% for *Dasyornis*. Other taxon identified at site S3 with a greater relative abundance than *Dasyornis* include Lewin’s Honeyeater (*Meliphaga lewinii*), *Pachycephala*, *Sericornis*, and White-browed Scrubwren (*Sericornis frontalis*). Yellow-throated Scrubwren (*Neosericornis citreogularis*) and *Passeriformes* were also identified at S3 but had a similar or smaller relative abundance compared to *Dasyornis*. Notably, this sample site is outside the Project Disturbance Footprint and the drainage line it is located on is not anticipated to be directly impacted by the Project.

The only species of *Dasyornis* associated with the east coast of Australia is the Eastern Bristlebird (*Dasyornis brachypterus*), listed as Endangered under the BC Act and EPBC Act. This species is not identified as a potential candidate species in the BAM-C and was not identified in desktop searches for the locality, nor opportunistically identified during field surveys. It was considered possible by GHD that the Eastern Bristlebird utilised the waterbodies or other foraging habitat in the vicinity of the SMC. However, the nearest known populations are located north of the Project Disturbance Footprint, at the border of NSW and Queensland, and south of Sydney. The northern population previously extended south as far as at least Dorrig (DCCEEW, 2025a). The Project Disturbance Footprint is located outside of the known range of the species.

A second analysis was completed by EnviroDNA, aiming to confirm if the sample DNA was derived from the Eastern Bristlebird. This was completed through the collection of a DNA sample from the Eastern Bristlebird that was then sequenced at the mitochondrial 12S gene region. The additional analysis performed indicates that the eDNA detection in the water sample is unlikely to be of Eastern Bristlebird origin and may be one of several common and local species listed in Table 1 of the EnviroDNA report (2024) that have a closer percentage match to the eDNA sample detection, such as:

- Rufous Bristlebird (*Dasyornis broadbenti*) (not in Project Disturbance Footprint).
- Eastern Spinebill (*Acanthorhynchus tenuirostris*).
- Little Wattlebird (*Anthochaera chrysoptera*).
- Western Wattlebird (*Anthochaera lunulata*).
- Blue-faced Honeyeater (*Entomyzon cyanotis*).
- Chestnut-crowned Babbler (*Pomatostomus ruficeps*).

Table 4-20 provides a summary of the above responses to the recommended action provided by CPHR.

Table 4-20
Summary of Response to CPHR Recommended Actions to Address Other Listed Matters

Issue Raised by CPHR	Summary in BDAR	Conclusion Compared to BDAR
Further surveys should be conducted for the White-bellied Sea-Eagle that will aim to target the area outside Project Disturbance Footprint (this should be informed by the outcomes of surveys for the species that are proposed for Winter 2024 to confirm the presence and location of a nest tree).	The White-bellied Sea-Eagle was observed foraging within the Project Disturbance Footprint on several occasions, although no nest was located. Limited surveys were completed in adjacent bushland outside the Project Disturbance Footprint prior to submission of the BDAR. As such, a conservative approach was taken through the placing of an indicative nest point outside the Project Disturbance Footprint, in the area the species was seen flying towards following foraging near the Stratford East Dam. A polygon was then completed as per the TBDC guidelines (see Figure E-7 of the BDAR) (DCCEEW, 2025a).	Following submission of the BDAR, supplementary surveys were completed from 19 – 23 August and 21 – 25 of October 2024, in land adjacent to the proposed Upper Reservoir footprint where the two individuals of the species were previously observed flying. The surveys were limited to Yancoal-owned land surrounding the Upper Reservoir footprint. Thorough searches over ten days by two ecologists, particularly near Unnamed tributary 1, did not identify a nest. The supplementary surveys suggest that the identified individuals are nesting further from the Upper Reservoir footprint than originally thought. This may be further south-east. Given that supplementary surveys indicate that the White-bellied Sea-Eagle was not nesting in adjacent Yancoal-owned land at the time of surveys (GHD, 2024b), a species polygon for this species is not required.

Table 4-20 (continued)
Summary of Response to CPHR Recommended Actions to Address Other Listed Matters

Issue Raised by CPHR	Summary in BDAR	Conclusion Compared to BDAR
Surveys were incomplete for nest trees during breeding seasons of a number of bird species (e.g. White-bellied Sea-Eagle, Glossy Black-Cockatoo, Little Eagle) and were ongoing at the time the BDAR was prepared. The outcomes of these surveys should be included in a revised BDAR.	N/A.	See the response to Issue 12 and 13 for further discussion regarding breeding habitat for these species.
Confirm if the Eastern Bristlebird was the species identified on site by eDNA testing, noting that EnviroDNA is doing further DNA testing of the species at the time CPHR prepared this advice.	As discussed in Section 3.6.2.7 of the BDAR, eDNA testing was completed on several watercourses and ponds on and adjacent to the Project Disturbance Footprint (see Figure 3.15 of the BDAR). The bird genus <i>Dasyornis</i> was identified at one location with a moderate level of confidence (site S3). This sample site is outside the Project Disturbance Footprint and the drainage line it is located on is not anticipated to be directly impacted by the Project. The only species of <i>Dasyornis</i> associated with the east coast of Australia is the Eastern Bristlebird, listed as Endangered under the BC Act and EPBC Act. This species is not identified as a potential candidate species in the BAM-C, and was not identified in desktop searches for the locality, nor opportunistically identified during field surveys. It was considered possible that the Eastern Bristlebird utilised the waterbodies or other foraging habitat in the vicinity of the SMC. The nearest known populations are located north of the Project Disturbance Footprint, at the border of NSW and Queensland, and south of Sydney. The northern population previously extended south as far as at least Dorrig, NSW (DCCEEW, 2025a). The Project Disturbance Footprint is located in a large gap in the known range of the species.	A second analysis was completed by EnviroDNA, aiming to confirm if the sample DNA was derived from the Eastern Bristlebird. This was done through the collection of a DNA sample from the species that was then sequenced at the mitochondrial 12S gene region. Upon comparison of the Eastern Bristlebird tissue to the eDNA sample detection, it was found to have only 95% similarity. The DNA sequence originally identified from the water sample north of the Project Disturbance Footprint was found to have greater similarity (97-98%) with a variety of other species other than the tissue sample (EnviroDNA, 2024). The additional analysis performed indicates that the eDNA detection in the water sample is unlikely to be of Eastern Bristlebird origin and may be one of several common and local species listed in Table 1 of the EnviroDNA (2024) report that have a closer percentage match to the eDNA sample detection. However, due to limited reference sequences of other bird species, EnviroDNA concluded that the identity is currently unable to be resolved further.

Table 4-20 (continued)
Summary of Response to CPHR Recommended Actions to Address Other Listed Matters

Issue Raised by CPHR	Summary in BDAR	Conclusion Compared to BDAR
Further assessment of rocky outcrops within and near the study area should be conducted during microbat breeding season to confirm whether or not this potential habitat is being utilised by the species as a maternity roost.	No rocky outcrops within the Project Disturbance Footprint were considered suitable for breeding habitat for the cave-dwelling microbats. The rocky outcrop adjacent to the Project Disturbance Footprint has been identified as potential breeding habitat for the Large-eared Pied-bat, given its confirmed presence within the Project Disturbance Footprint, as documented in the BDAR. Given that this outcrop was located more than 100 m from the Project Disturbance Footprint, it would not trigger a SAI assessment. However, any foraging habitat within a 2 km buffer of this outcrop that falls within the Project Disturbance Footprint would require offsetting. As such, a species polygon was prepared and credits generated to offset foraging habitat for this species.	Given the difficulty of the terrain, the inability to house bats during the day in accordance with the contractor's scientific licence and the associated difficulties with surveying the rocky outcrop adjacent to the Project Disturbance Footprint, acoustic detectors are considered to be the most suitable method of detecting the Large-eared Pied-bat at this rocky outcrop. However, as per DPIE (2021), this method is not suitable to indicate whether breeding bats are present at this location. As such, when this species is detected via acoustic detectors, and when potential breeding habitat is present, then breeding must be assumed. As the presence of breeding habitat at this location has already been assumed, with a species polygon created and credits generated, further assessment of this outcrop is not required given it is located more than 100 m from the Project Disturbance Footprint.
Additional areas of similar rocky habitat are present in the Project Disturbance Footprint that have not yet been mapped. Further survey effort is required to determine the full extent of suitable breeding habitat within the site.	All rocky habitat in the Project Disturbance Footprint was assessed for the potential for breeding habitat for threatened microbat species. No such habitat was identified.	Further discussion on rocky habitat surveys is provided in the discussion of Issue 11.

White-bellied Sea-Eagle, Glossy Black-Cockatoo and Little Eagle

See responses to Issues 12 and 13 for further discussion regarding breeding habitat for the White-bellied Sea-Eagle, Glossy Black-Cockatoo and Little Eagle.

Rocky habitat surveys

Further discussion on rocky habitat surveys is provided in the discussion of Issue 11.

18. **Additional information should be provided regarding Matters of National Environmental Significance**

The proponent should provide additional information in relation to the assessment of impacts to Matters of National Environmental Significance as outlined in this letter to enable the Bilateral Assessment to be completed for this project.

Recommended action:

The BDAR should be updated to include all relevant information in relation to MNES.

Response

Impacts to Matters of National Environmental Significance (MNES) have been identified and discussed in several sections of the BDAR (e.g. Tables 1.1, 9.12, 9.13, 9.14 and 9.15, Chapters 7 and 11 and Appendix G of the BDAR). Information/requests from CHPR relating to MNES in their response have been addressed in the sections above.

4.1.12 Department of Planning, Housing and Infrastructure and Independent Expert Advisory Panel for Energy Transition

DPHI

On 12 March 2025, the DPHI requested further detail on visual impacts from Dwelling 29.

The DPHI stated it “considers that given the distance to the solar array and the lack of nearby representative viewpoints, further consideration of the impacts to this dwelling may be required”.

The location of Dwelling 29 is provided on Figures 4-14 and 4-15.

There are three nearby receivers to Dwelling 29 which are located along The Bucketts Way (P6), Stratford Rest Area (P8) and Stratford Cemetery (P9) and were assessed by GHD (2024d) (Figures 4-14 and 4-15). The following visual impacts were determined for these public viewpoints:

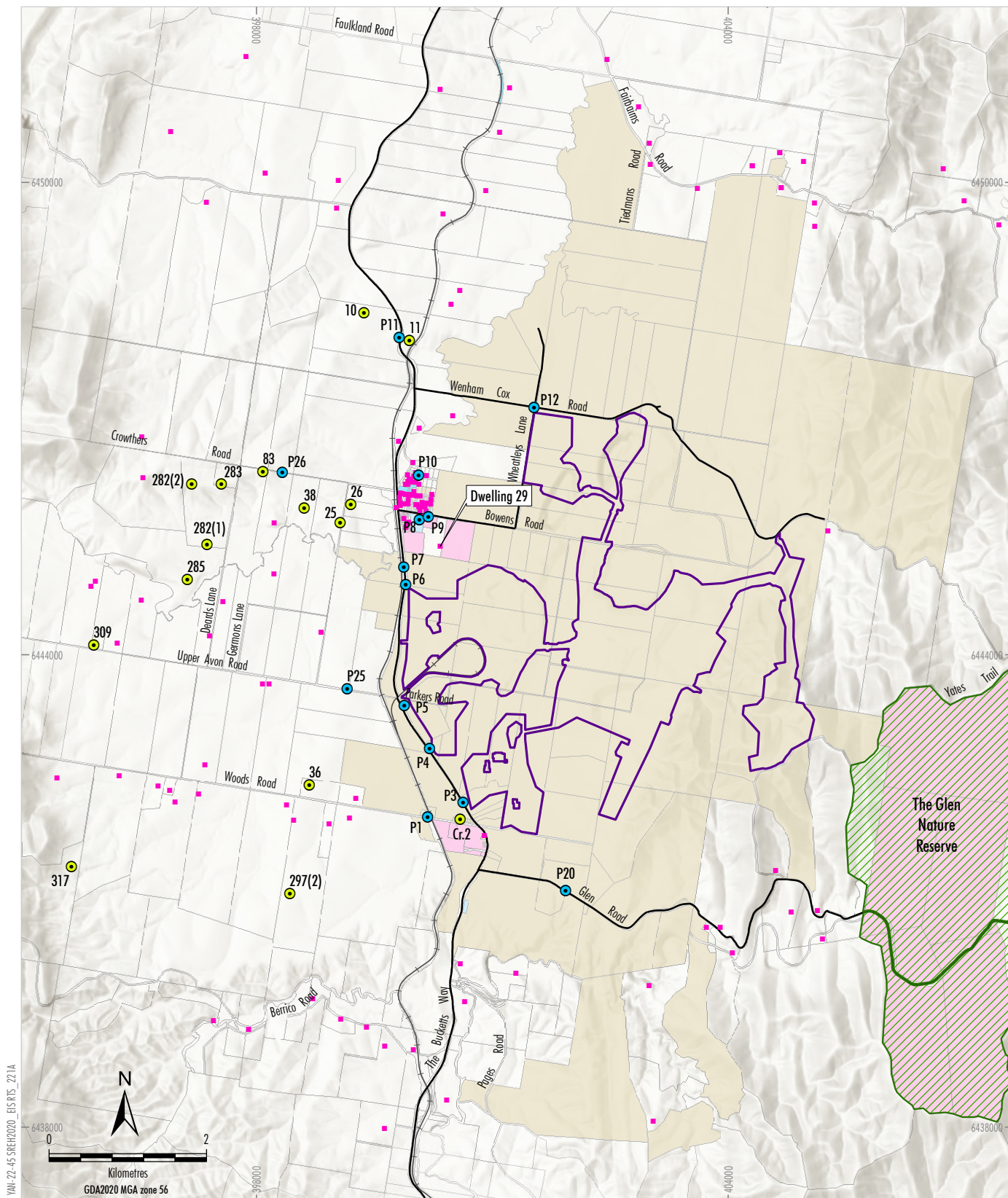
- P6: “Low” (Solar) and “No Impact” (Pumped Hydro).
- P8: No views.
- P9: No views.

Dwelling 29 is unlikely to have any view of the PHES due to the dense tree coverage in the Crown Land on its eastern side.

The DPHI requested consideration of views from the residence at Dwelling 29 of a portion of the Solar Farm in its eastern extent. However, intervening vegetation would largely restrict view of the portion of the Solar Farm in its eastern extent. This is evident on Figure 4-15 and Plate 4-19.

In addition to the intervening vegetation, the topography in this area is gently undulating with slopes that would also largely block views of the Solar Farm.

Yancoal has taken photographs in the area adjacent to Dwelling 29 (from Yancoal-owned land), which support that Dwelling 29 would have limited (if any) views of the Solar Farm due to the topography and intervening vegetation (Plates 4-19 to 4-21).



LEGEND

- National Park, Nature Reserve or State Conservation Area
- Crown
- State Government
- Local Government
- Privately Owned
- Yancoal (or Subsidiary) Owned
- Privately Owned Dwelling
- Project Disturbance Footprint

Visual Simulations

- Public Viewpoints
- Private Viewpoints

Source: NSW Spatial Services (2023); Yancoal (2023); GHD (2024)



YANCOAL - STRATFORD RENEWABLE ENERGY HUB

Visual Simulation Assessment Locations

Figure 4-14

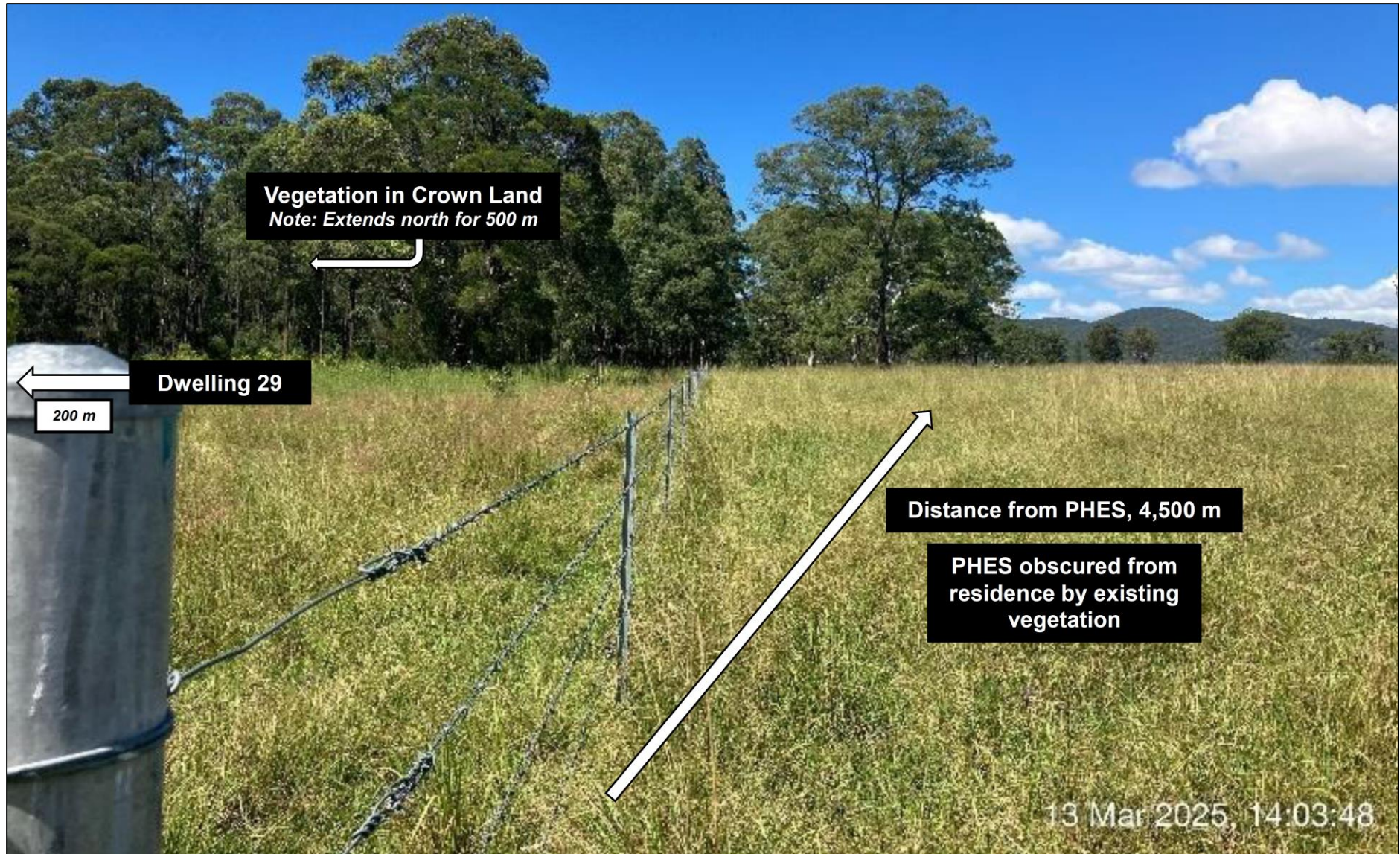


Plate 4-19: View Near Dwelling 29 on Yancoal-owned Land – Photograph 1

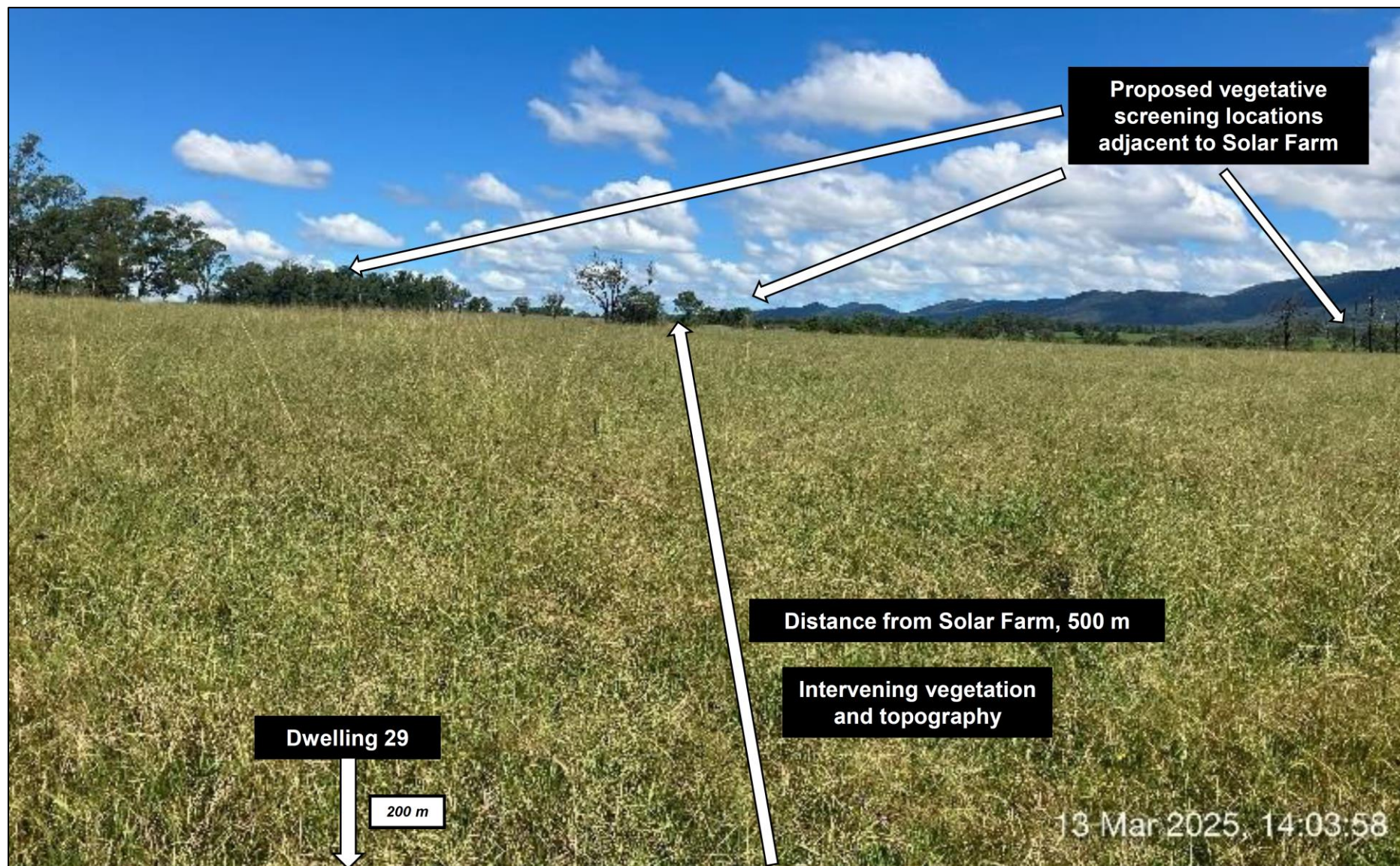


Plate 4-20: View Near Dwelling 29 on Yancoal-owned Land – Photograph 2

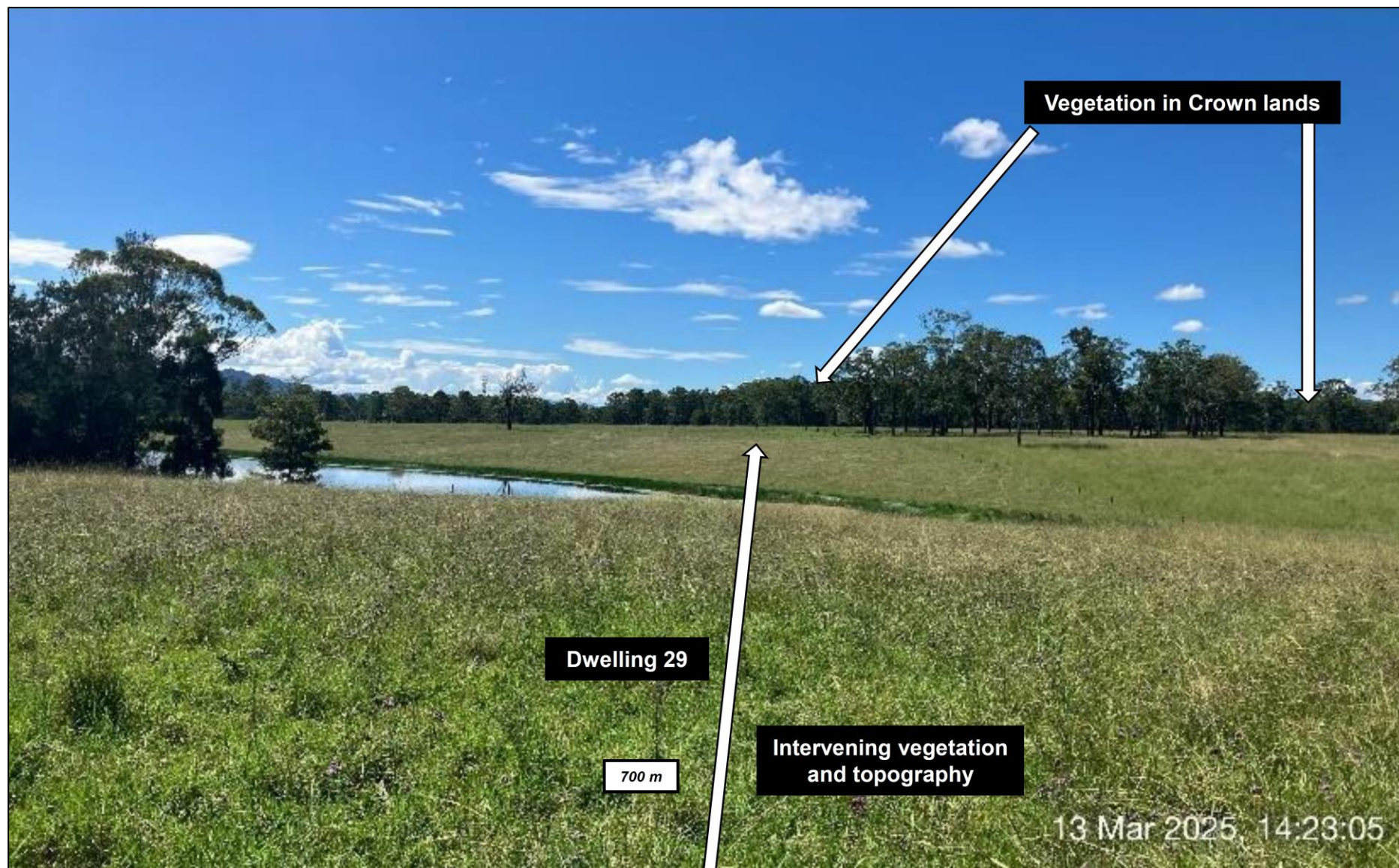


Plate 4-21: View Near Dwelling 29 on Yancoal-owned Land – Photograph 3

Given GHD (2024d) assessed residences with direct views of the PHES and partial views of the Solar Farm as likely to have no greater than “Low” visual impact, Dwelling 29 would experience “Low” or “No impact”.

The Panel

The DPHI requested advice from the Panel in relation to the potential for SAIL on Scrub Turpentine, including (the Panel, 2025):

1. *The extent to which the Project is likely to contribute significantly to the risk of Scrub Turpentine becoming extinct; and*
2. *The appropriateness of Gloucester Coal's proposed actions to contribute to the survival of the species.*

The “summary of advice” provided by the Panel (2025) advises the following (Attachment 13):

- a) *The Project, if approved, is very unlikely to contribute significantly to the risk of extinction of the species Scrub Turpentine in NSW. Neither avoidance of impact by refusal of the Project, or proceeding with the Project (causing the loss of 217 or more stems) would lead to a material change in the survival prospect of the species.*
- b) *Gloucester Coal's proposed actions to contribute money and (if requested) genetic material to the DCCEEW-led Save our Species program are appropriately directed because the identification, propagation and distribution of rust resistant strains of the species across its range appears to be the only available strategy with a reasonable prospect of preventing extinction.*
- c) *Prior to determination, Gloucester Coal should be requested to undertake further surveys to be able to determine the likely full extent of the impacts for Scrub Turpentine, as identified by DCCEEW (BCS) in their advice to the Department (dated December 2024), subject to any alternative arrangements made between Gloucester Coal and DCCEEW that could efficiently further reduce the risk of extinction.*

Response to the Panel advice is provided below:

- a) Yancoal acknowledges and agrees with this advice from the Panel.
- b) Yancoal acknowledges and agrees with this advice from the Panel and has commenced engagement with the DCCEEW-led Saving Our Species program to contribute to the program financially and through provision of genetic material (if requested).
- c) Surveys conducted for Scrub Turpentine are considered complete and sufficient due to the many rounds of targeted surveys and opportunistic sightings (noting some small, isolated areas were inaccessible due to safety access issues such as steep drops and/or impenetrable lantana thickets), within The Glen Nature Reserve and on Yancoal's adjacent land holdings.

Land-based offsets are unable to be generated for Scrub Turpentine due to the persistent and widespread nature of myrtle rust infection across the full range of the species. Given stems identified to date are infected by myrtle rust, and given Yancoal is unable to generate land-based offsets for Scrub Turpentine, there is limited benefit in trying to access previously inaccessible areas to undertake further survey for Scrub Turpentine within the proposed Project Disturbance Footprint. Accordingly, Yancoal does not propose conducting further surveys.

4.2 MIDCOAST COUNCIL SUBMISSION

The MidCoast Council provided comments on the EIS. Responses to the submission are provided below in Section 4.2.1.

4.2.1 MidCoast Council

A submission was received from the MidCoast Council which provided recommendations regarding development contributions/Voluntary Planning Agreement (VPA), landscape and visual impact, social and economic impact, and biodiversity impact.

Development Contributions and VPA

Payment of Section 7.12 Development Contributions

...

Accordingly, if the Minister grants consent to the development it is respectfully requested that it be subject to a condition requiring the applicant to pay to MidCoast Council a levy based on the proposed cost of carrying out the development as determined in accordance with the following table taken from the Gloucester Shire Council Section 94A Contributions Plan 2015:

Development cost Levy amount

Where the proposed cost of carrying out the development is up to and including \$100,000	Nil
Where the proposed cost of carrying out the development is more than \$100,000 and up to and including \$200,000	0.5% of the cost of the development
Where the proposed cost of carrying out the development is more than \$200,000	1% of the cost of the development

The estimated Development Cost (excl GST) on the application form submitted for the proposal is AUD \$1,923,000,000.00

This equates to a payment to MidCoast Council of \$19,230,000.00 based on the Gloucester Shire Council Section 94A Contributions Plan 2015.

...

Social and Economic Impact

The Stratford Coal Mine has been the largest single employer in the Gloucester region for the last 30 years. As indicated in the documentation accompanying the application:

“As of 2022, Stratford Coal reportedly employed around 100 workers, and Yancoal’s procurement expenditures with businesses in the region amounted to around \$74 million”.

Following the completion of mining operations, a portion of the workforce will remain on-site to continue closure works, however the number employees and local expenditure will significantly decline. The impact of both a loss of employment in community and a significant reduction in the level of investment in the Gloucester region has begun to have a negative impact both socially and economically in the locality as the cessation of mining takes effect.

There is however an opportunity to offset this impact through the Stratford Renewable Energy Hub - SSI and CSSI proposal.

As indicated in the documentation accompanying the application:

“Project construction is expected to take place over approximately 4 years. Total construction expenditures (excluding wages) are estimated at approximately \$1.56 billion, of which:

- approximately \$1.4 billion would be sourced from NSW suppliers; and
- approximately \$156 million would be sourced from suppliers located in the MidCoast Council LGA.

Over the four-year timeframe, the average construction workforce is expected to amount to approximately 300 FTE persons with a peak of 350 FTE persons, of which approximately 90% would be expected to reside in NSW and 10% in the MidCoast Council LGA. Total construction income and wages accruing to the NSW construction workforce over that timeframe are expected to amount to approximately \$327 million, with corresponding total disposable income of approximately \$189 million.

During operations, Yancoal expects to incur operational expenditures of approximately \$6 million per annum (excluding purchase of electricity), and to employ a workforce of around 10 people over an operational life of 50 to 100 years (or more)".

Expenditure of approximately \$6 million per annum (excluding purchase of electricity) and employing a workforce of around 10 people over an operational life of 50 to 100 years is not comparable to an employing a workforce of 100 and expending \$74 million per annum which has occurred over the last 30 years.

Similarly, the employment of up to 30 people and expenditure of \$39 million per annum locally during the construction period is not comparable to the historic employment at and expenditure by Stratford Coal in the local region.

There is no doubt that the proposed development will have a positive economic impact at a State level however Council is concerned that this positive benefit will not sufficiently extend to the local Gloucester region which will be impacted by the development and certainly it will in no way offset the impact of the Stratford mine closure on the local community.

Therefore, given the significant capital investment value of the project (AUD \$1,923,000,000.00) it would seem fitting that a Gloucester Community and Economic Development Fund should be established by Yancoal in partnership with MidCoast Council and the local community. This would be a proactive approach to managing the impacts of the development by using a one-off sum of money in the order of \$10,000,000 provided by the developer to increase economic growth and productivity, as well as promote health and wellbeing for the people in the Gloucester region.

The broad principles of such a fund would be centred on supporting the socio-economic future of Gloucester by:

- Creating an environment that fosters and supports business, promotes job creation, supports entrepreneurship and diversifies the industry base.*
- Provides education and training to create the foundations of a prosperous economy and community.*
- Supports and promotes activities that provide personal fulfilment for residents through arts and culture, encouraging personnel development and by creating beautiful outdoor spaces.*
- Supporting and promoting sporting activities and events that provide physical development and pathways to excellence.*
- Minimising the impacts of social issues such as homelessness and mental health issues.*
- Improving infrastructure to a standard equal to or better than what is available in our cities.*
- Promoting and supporting initiatives that preserves regional biodiversity, minimises waste, supports long-term community sustainability and minimises environmental impacts for future generations.*

The Fund could be administered by a Joint Management Board comprising representatives of MidCoast Council, Yancoal and the Gloucester Business Chamber so that funds are proactively used to increase economic growth and productivity and promote health and wellbeing in the Gloucester Region.

Response

On 16 May 2024, Yancoal provided MidCoast Council with an initial VPA offer based on the previously agreed contributions to MidCoast Council (formerly Gloucester Shire Council and Great Lakes Council) for the SMC.

MidCoast Council did not respond directly to Yancoal's offer, however, submitted the above commentary to the DPHI on 29 October 2024.

MidCoast Council Request

MidCoast Council stated that the Estimated Development Cost (EDC) of the Project is \$1,923,000,000 (excluding goods and services tax). MidCoast Council requested a Development Cost Levy of 1% of the EDC.

The *Estimated Development Cost Report* prepared by Goeldner Consulting Pty Ltd (2024) determined the EDC of the Project to be \$1,818,854,735. Accordingly, 1% of the Project EDC is \$18,188,547.35.

MidCoast Council also requested a one-off sum of \$10,000,000 to offset the impact of SMC closure to the community as part of Yancoal's contributions for the SREH. As the SMC operates as a separate project in accordance with Development Consent SSD-4966, Yancoal considers this request unreasonable, given:

- The requested \$10,000,000 to offset the impact of the SMC closure is not relevant to the Project, and therefore not considered to pass the Newbury Test, as outlined in the *Guide to writing conditions of consent* (DPHI, 2024b), which states:

...a condition must:

- be imposed for a **planning purpose** – not an ulterior one*
- fairly and reasonably relate to the development** that is the subject of the development application*
- not be so **unreasonable** that no planning authority would have imposed it.*
- The closure of the SMC will occur irrespective of the Project. Therefore, a condition that imposes a cost to offset its impact does not fairly and reasonably relate to Project.

Revised VPA Offer

On 7 February 2025, Yancoal provided a revised VPA offer to MidCoast Council (Attachment 12). This VPA offer is outlined in Table 4-21. It is based on:

- Annual payments over the design life of the PHES (80 years).
- Cumulatively, annual payments over 80 years would total \$18,188,547.35 (equivalent to 1% of EDC).
- Accordingly, annual payments of \$227,356.85, adjusted for inflation (indexed by the Sydney All Groups Consumer Price Index).
- Payments would commence in the first calendar year after the PHES produces electricity for export to the grid and is therefore generating revenue.
- Payments would continue for every calendar year the PHES generates electricity for export to the grid.

Table 4-21
Revised Planning Agreement Offer

	Yancoal Planning Agreement Offer
Description of Contribution	- Annual payments of \$227,356.85, adjusted for inflation (indexed by the Sydney All Groups Consumer Price Index). - Payments commencing in the first calendar year after the PHES produces electricity for export to the grid. - Payments continue for every calendar year the PHES generates electricity for export to the grid.

This offer is considered reasonable for the scope and magnitude of the SREH and its potential impacts.

The offer is also considered in keeping with DPHI's new *Benefit-Sharing Guideline* (DPHI, 2024c) which sets out a contribution model to ensure host communities benefit from large-scale renewable energy projects in their regions. Whilst this guideline does not apply to pumped hydro projects it encourages them to consider offering contributions that are proportionate to the amount and scale of development, and reflect the nature and magnitude of change likely to be experienced by the host communities. The proposed offer would ensure that Project benefits are shared with the local Gloucester community consistent with this new guideline.

Mitigation of Landscape and Visual Impact

The MidCoast Council Local Strategic Planning Statement indicates that:

- *Much of our rural area is used for agriculture, primarily dairy and beef cattle grazing, with a growing poultry industry.*
- *This landscape is characterised by pristine waterways, striking rural scenery and an abundance of natural treasures.*
- *One of the key objectives is to maintain the high levels of liveability, environmental amenity and rural character that the MidCoast is renowned for.*

...

'The Bucketts Way' holds significant historical and scenic value and serves as a vital route through the Gloucester region, providing access to attractions like the Barrington Tops National Park. Improvements to 'The Bucketts Way' are part of the Australian Government's Roads of Strategic Importance program, which focuses on upgrading priority road corridors to better connect agricultural and mining regions to transport hubs.

...

The link between 'The Bucketts Way' and rural tourism in the Gloucester region cannot be understated. MidCoast Council's award winning tourism brand destination "Barrington Coast" celebrates the unique rural character of the Gloucester basin which is a key rural destination in the MidCoast.

Given the importance of the local rural character, the natural scenic beauty of the locality and the broader visual catchment as a key tourism and therefore economic driver for local business, it is important that the scenic vistas from 'The Bucketts Way' are maintained and enhanced as a result of the development. Maintaining these vistas does not only support rural tourism and the destination "Barrington Coast" brand, it also has significant value to the local community in terms of maintaining the unique rural character of the Gloucester basin in which they live which has positive benefits for their psycho-social health and well-being.

Accordingly, if the Minister grants consent to the development it is respectfully requested that it be subject to a condition requiring the applicant to mitigate direct views of the development from 'The Bucketts Way' through a combination of setbacks to the Solar Farm, and visual screening to act as a barrier for any views to the development. Visual screening should comprise a mix of quick-grown and long-lived local native species to provide a sustained visual barrier for the life of the development.

Response

Yancoal agrees with the MidCoast Council's recommendation of setback of the Solar Farm from The Bucketts Way and implementation of vegetative screening.

The Project design has sought to maintain the rural character and amenity of the MidCoast through avoiding and minimising visual impacts. Following initial community feedback, the Project design was amended to remove and/or setback solar panels and implement vegetative visual screening along The Bucketts Way.

The LVIA undertaken by GHD (2024d) evaluated the impacts of both the Solar Farm and PHES system in accordance with the *Large-Scale Solar Energy Guideline: Technical Supplement for Landscape Character and Visual Impact Assessment* (the Technical Supplement) (DPHI, 2022). The visual impacts to views from public viewpoints were assessed as "moderate" to "very low", with impacts along The Bucketts Way assessed as "moderate".

To mitigate these impacts, Yancoal would adopt visual screening along The Bucketts Way, as recommended in the Landscape Plan prepared by GHD (2024d). Visual screening is proposed along two areas adjacent to The Bucketts Way where there is limited existing vegetative screening, as depicted in Figure 4-16. The visual screening would comprise a mix of quick-growing and long-lived native species (GHD, 2024d). Plate 4-22 provides simulations of the view from The Bucketts Way before and after implementation of the proposed visual screening (GHD, 2024d). Visual screening practices and maintenance would be documented in a Landscape and Visual Impact Management Plan developed for the Project.



Artistic Impression showing proposed solar panels - Unmitigated



Artistic Impression of proposed view, showing proposed mitigation planting after 10 years' growth

**Plate 4-22: Simulated Example of View Along The Bucketts Way,
Before and After Visual Screening**

Biodiversity Impact

- *The adequacy of some of the biodiversity knowledge and evaluations*

The BDAR is incomplete, which constrains a proper evaluation of the report.

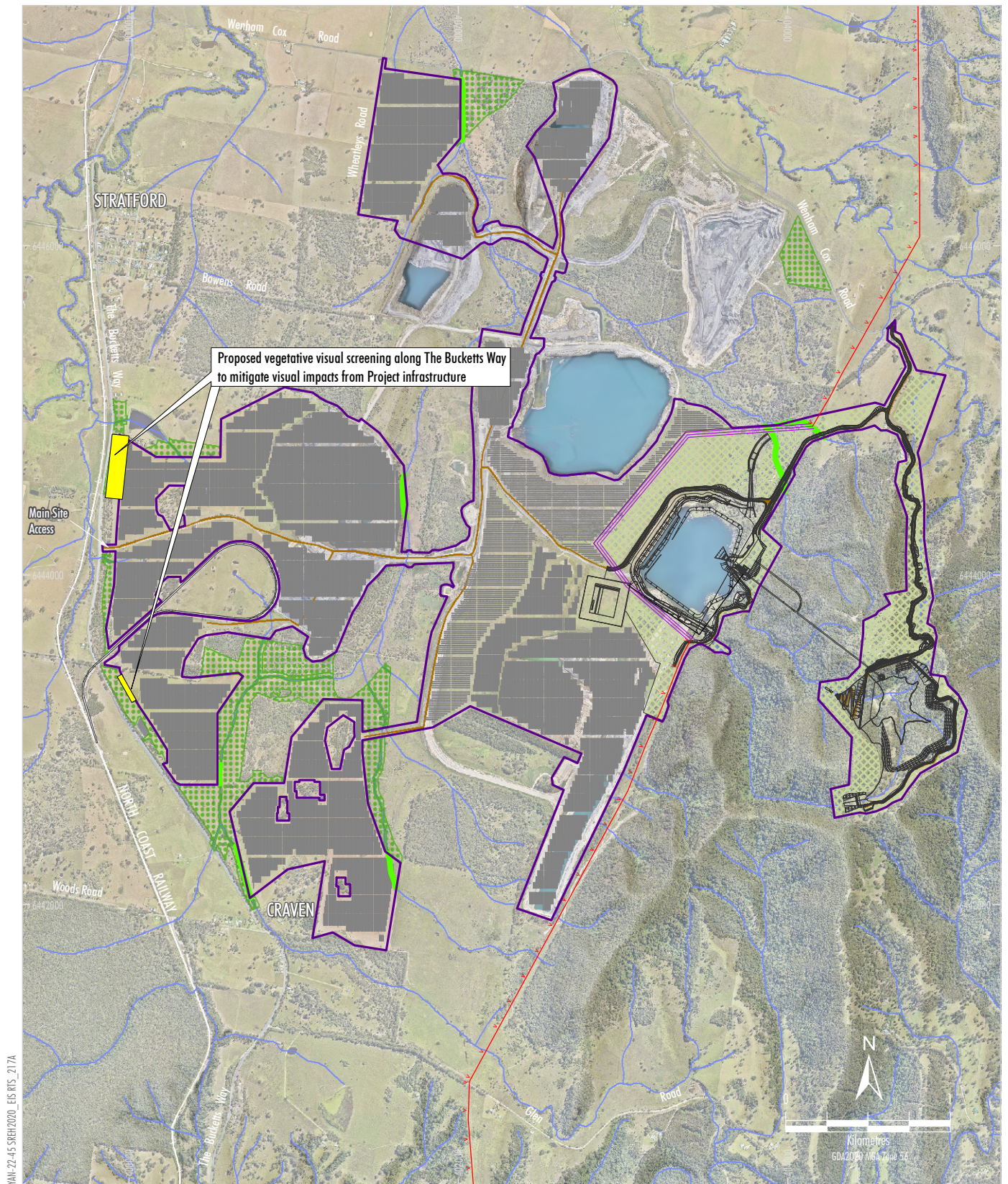
There is a specialist frog study that is in progress, and which is not reported within the BDAR. Threatened frogs, especially the stuttering frog, are likely to be pertinent to the evaluation of this project with respect to biodiversity.

Response

The BDAR was prepared in accordance with the SEARs as well as relevant State and Commonwealth requirements, legislative requirements under the BC Act and EPBC Act, and the BAM.

Dr Frank Lemckert produced expert reports on the Stuttering Frog, Giant Barred Frog, Green-thighed Frog and Green and Golden Bell Frog, which could not be prepared nor provided until confirmation had been received that Dr Frank Lemckert was recognised as a 'Biodiversity Expert' in the Project region.

GHD sought Dr Frank Lemckert to be recognised as a Biodiversity Expert on 21 August 2024. No response was received from CPHR prior to the EIS lodgement on 13 September 2024. A response from CPHR was received on 4 October 2024 confirming that Dr Frank Lemckert is recognised as a Biodiversity Expert for the four frog species in the Project region.



YAN-22-45 SREV2020_EIS RIS_217A

LEGEND

Project Components

-  Project Disturbance Footprint
-  Indicative Solar Photovoltaic Array Layout
-  Internal Access Road
-  Riparian Corridor Protection Zone
-  Area Available to be Rehabilitated or Repurposed During Operations
-  Potential Areas to Achieve Project Rehabilitation Obligation Associated with the SMC
-  Existing 132kV Transmission Line
-  Realigned 132kV Transmission Line
-  Proposed Vegetative Visual Screening

Source: NSW Spatial Services (2023); Yancoal (2023)



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Areas of Proposed Visual Screening
Along The Buckets Way

Figure 4-16

Dr Frank Lemckert's expert reports on the Stuttering Frog, Giant Barred Frog, Green-thighed Frog and Green and Golden Bell Frog are provided in Attachments 2, 3, 4 and 5, respectively.

Dr Frank Lemckert has concluded that no species polygons should be generated for any of the four frog species (Attachments 2, 3, 4 and 5), as suitable habitat is not present at the Project.

Field surveys undertaken for the project were generally extensive but were confined mostly to the impact footprint. Most of the records of threatened species were identified in the impact area. It is not known if their populations and habitat extend to the perimeter lands around the inundation area. Without this knowledge, it isn't known if the proposal has the potential to impact whole local populations of affected species, or just parts of the occupied ranges of such species. This is important for offset and conservation planning.

Response

This has been considered in the BDAR with regard to species presence, distributions, habitat fragmentation, SAIL, and EPBC Act species assessments of significance.

It is not considered likely the Project would impact whole local populations of threatened species, given the extensive contiguous vegetation surrounding the Project Disturbance Footprint, and the species distribution of potentially impacted threatened species and communities.

The BDAR is silent on the biodiversity offset strategy. An impact of this magnitude has profound local and sub-regional occurrences. Yancoal has a written interest in delivering a nature positive outcome (this was documented in the BDAR). A nature positive outcome means that an advanced local offset strategy must be prepared and exhibited with the proposal. Council and other agencies and stakeholders should have the opportunity to provide input to the local, advanced offset strategy for this project.

Response

It is not a requirement of the BDAR to outline the Project biodiversity offset strategy.

The BDAR outlines the offset requirements under the BC Act and under the EPBC Act. Offset requirements were calculated in accordance with the BAM, the NSW Biodiversity Offset Scheme, and BC Act.

The NSW biodiversity offset requirements for the Project would be addressed via one, or a combination, of the following:

- The retirement of biodiversity credits based on the like-for-like provisions in the BC Regulation.
- The funding of a biodiversity conservation action.
- Payment into the Biodiversity Conservation Fund.

Notwithstanding, Yancoal's preferred approach to offset the residual impacts of the Project on biodiversity would be to secure and retire credits through conserving lots owned by Yancoal in proximity to the Project Disturbance Footprint in perpetuity under a Biodiversity Stewardship Agreement, which is generally consistent with Council's suggestion.

A Biodiversity Offset Strategy would be implemented for the Project following Project approval, in accordance with the requirements of the BC Act and EPBC Act.

Finally, there is inadequate information on the water quality of the lower reservoir and the use of such water in the upper reservoir. This water has the potential to be acidic, with high heavy metal concentrations and other pollutants. It is acknowledged in the BDAR that the water used in the pumped hydro scheme, is “representative of lower quality water”. There is insufficient discussion on the consequences of using this low-quality water in the upper reservoir environment and local creek releases.

The project should not be determined in the absence of satisfactory biodiversity information.

Response

The PHES system has been designed to function as a closed system, with transfers between the upper and lower reservoirs via the tunnel.

As described in Section 3.2.1, Yancoal is proposing to refine the Project to incorporate a Project optimisation identified since lodgement of the EIS as part of ongoing feasibility studies being prepared for the Project, namely removal of the “low level outlet” from the Upper Reservoir dam wall.

The removal of the low level outlet from the Project design removes the need for maintenance releases from the Upper Reservoir. The removal of the low level outlet would avoid any impacts on downstream water quality and environmental values from the originally proposed safety maintenance releases. This would also remove any impact on macroinvertebrates in Unnamed tributary 1, outlined in the Aquatic Ecology Impact Assessment (GHD, 2024e), and therefore improve impacts to the environment when compared to those outlined in the EIS.

Erosion and sediment control measures would be in place to further prevent potential impacts to the local waterways during the construction of the PHES and Solar Farm.

The only credible impact from using lower quality water in the PHES is seepage, which has been addressed in the EIS and summarised below.

A Surface Water Management Plan would be developed as a sub-plan of the CEMP prior to Project construction. This would involve monitoring on downstream waterways to confirm impact predictions and TARPs to inform actions to be undertaken following monitoring results.

Seepage

In order to mitigate the potential for significant impact, each reservoir would be compacted and/or grouted where required to minimise seepage (SLR, 2024a).

As described in the EIS, seepage analysis was undertaken to assess the potential limits of seepage rates in the upper and lower reservoirs. A range of permeability scenarios using sensitivity analysis (to determine likely worst-case) were assessed.

For the Upper Reservoir, the median seepage of approximately 45 ML/year has been predicted. This is relatively low compared to the capacity of the Upper Reservoir (0.5% of the total capacity of 8.2 gigalitres [GL]) (SLR, 2024a).

Any seepage from the Upper Reservoir into the groundwater system would be small in comparison to the overall groundwater flows (SLR, 2024a).

There are no nearby registered groundwater bores downgradient of the Upper Reservoir that would be impacted by seepage from the Upper Reservoir, and no stygofauna were identified in the area of the Upper Reservoir (SLR, 2024a).

Any seepage discharge to the surrounding surface water environment, would be diluted by rainfall, which makes up a far greater portion of surface water stream flow (SLR, 2024a).

For the Lower Reservoir, median seepage of approximately 15 ML/year has been predicted (0.2% of the total capacity of 7.1 GL).

In the area of the Lower Reservoir, there would be a groundwater gradient toward the SMC Main Pit, located 500 m north-west, and therefore any seepage is predicted to migrate towards the SMC Main Pit (SLR, 2024a).

- Avoidance measures and impacts to threatened species

The proposal is associated with substantial impacts to threatened species.

Avoidance of biodiversity impacts is the highest priority in the consideration of the avoid – minimise – offset hierarchy enshrined in the Biodiversity Conservation Act 2016.

The proposal should be peer-reviewed and re-evaluated in relation to the avoidance, mitigation and offsetting actions to ensure that threatened species are not significantly or unreasonably harmed by the development. This includes consideration of edge effects and indirect impacts.

Further, avoided habitat does not appear to be actively conserved within this proposal at the present time. The advanced local offset strategy should consider the ongoing management of all the existing biodiversity offset obligations of the Stratford Coal Mine.

Response

The BDAR was prepared by accredited assessors from a third party (GHD) in accordance with the BC Act and with reference to the avoidance, minimisation, and offset hierarchy. The BAM outlines the two key areas of project planning, being project location and design, to avoid and minimise impacts.

To avoid impacts to areas of high biodiversity value, the Project has been strategically located to use previously disturbed land associated with the SMC and historic agricultural use. For example, 96% of the Solar Farm footprint is located on previously disturbed SMC land or non-native vegetation.

Due to elevation requirements between the lower and upper reservoirs, the proposed location of the Upper Reservoir is the only suitable topographic location for the Upper Reservoir.

Further avoidance and minimisation have been incorporated into the Project design, including changing the optimal layout to avoid impacts to high biodiversity value areas. Micro-siting would be considered in the detailed design of the Project to further avoid and minimise impacts to individual trees.

The Project biodiversity strategy would consider building on SMC offsets.

Edge effects and indirect impacts are assessed by GHD in the BDAR.

- Inadequate offsetting of residual biodiversity impacts

The proposal (as yet) does not confine offsets to the local area, does not secure local populations of affected threatened species in perpetuity and does not explore novel approaches to effective conservation (e.g. expansion of local National Parks, establishment of a cross-valley corridor, partnerships with local landholders, etc).

As part of the finalisation of the offset areas, there should be further scientific analysis of the local or sub-regional wildlife connectivity for the proposed offset areas and their contribution to agency and community aspirations. Greater attention to local connectivity opportunities and constraints and sub-regional wildlife corridor targets are required and should be utilised to place an offset area into a more effective, broader landscape context. This should include reference to key regional corridors, existing protected areas and aspirations for relevant agencies.

Response

Yancoal's preferred approach to offset the residual impacts of the Project on biodiversity would be to secure and retire credits through conserving lots owned by Yancoal in proximity to the Project Disturbance Footprint in perpetuity under a Biodiversity Stewardship Agreement, noting other offset mechanisms are available under the BC Act.

Yancoal generally agrees with the MidCoast Council's recommendation and would investigate opportunities for local or sub-regional wildlife connectivity for any future proposed Biodiversity Offset Areas.

In a sub-regional context, the proposed development occupies land between larger networks of remnant native vegetation, including agency lands of The Glen NP and the Avon River SF / Berrico NP.

An Offset Area Management Plan should consider issues associated with fencing, methods of active revegetation, the management of weeds and pests, management and use of fire, signage and restrictions on access, as well as the relocation of habitat features such as hollows and logs and performance measurement and monitoring.

Further, it should discuss pre-clearing capture and translocation of pertinent threatened fauna species from the disturbance area, which may be essential to avoid harm to individual species and serious loss of local populations. It should also program the compensation (at least on a 1:1 basis) of the loss of natural hollows from the disturbance area through a relocation of felled trees or artificial nesting box program and define the relocation and placement of other habitat furniture (rocks and fallen timber) into revegetation areas as cover for dependent fauna and to aid nutrient cycling and macro-invertebrate populations.

Response

Noted. As described in Section 6.5.4 of the EIS, a Biodiversity Management Plan would be developed as a sub-plan of the CEMP and OEMP. The Biodiversity Management Plan would include measures to mitigate impacts from the Project including weed and pest management, riparian vegetation monitoring and adaptive management, rehabilitation of disturbed areas and implementation of a Vegetation Clearance Protocol. Management of offset lands would be addressed in relevant Biodiversity Stewardship Agreements.

- Cumulative impact and strategic ecological context

Resource and renewable energy project proposals in the Stratford sub-region should be considered in a strategic framework.

In the broader context, MidCoast Council has developed the Tops to Lakes Initiative and has commissioned studies which demonstrate that the development is sited in an area that is an important connecting habitat (The Glen NP to Avon River SF / Berrico NP connection). The Tops to Lakes Initiative seeks to reinstate and protect connected landscapes and enhance the quality and integrity of natural landscapes to provide environmental services provisions. Relevantly, any decisions relating to this proposal should recognise the existence and aspirations of the Tops to Lakes Initiative and the Karuah Catchment modelled wildlife corridors (Lechner & Fung 2018).

One of the key goals of the Tops to Lakes Initiative is the establishment and ongoing management of a connecting corridor(s) of functional, resilient natural vegetation between The Glen NP and Avon River SF / Berrico NP, across the valley.

The BDAR for this project impacts but does not advance the preservation and restoration of regional connectivity.

Renewable energy and resource developments cumulatively have the potential to fragment and sever habitat, making the large-scale restoration of connecting lands and functional biodiverse natural areas in the landscape difficult to achieve.

To the contrary, long term strategic planning of avoided lands, offset areas and restored perimeter lands presents an opportunity to deliver the connectivity and ecological enhancement / restoration that is beneficial.

To realise these benefits also requires the timely delivery of offset requirements, in both a practical sense (i.e. revegetation of degraded or modified areas) as well as in an administrative sense (public dedication, environmental zoning, conservation mechanisms, etc). The Minister and the community need to be assured that conservation outcomes are prioritised within the impact area, effectively and appropriately delivered, and managed and secured in perpetuity.

It is important that the true ecological risks and threats of the proposal be clearly understood by all agencies and the Minister in formulating a decision in relation to the development.

Response

This comment is generally addressed to the NSW Government.

The EIS considers the potential cumulative impacts of known proposed and existing state significant projects.

The proposed reuse of an already industrialised site (i.e. the SMC) is a key strategic environmental advantage of the Project compared to other greenfield projects.

4.3 PUBLIC AND ORGANISATION SUBMISSIONS

88 public and seven organisation submissions were received on the EIS.

17 submissions were in support of the Project. Some of these submissions expressed general support for the Project, while others expressed support for specific Project components, including:

- 12 submissions noted the Project would have positive socio-economic impacts by creating jobs, generating tourism potential, and benefitting businesses.
- Three submissions noted the Project would positively contribute to minimising impacts of climate change due to the supply of renewable power that is necessary to support global decarbonisation efforts.
- Two submissions supported the beneficial reuse of water stored in mine voids for the PHES system, limiting impacts on regional water resources.

75 submissions objected the Project and responses to these comments are provided below.

4.3.1 Anti-renewable Energy Sentiment

4.3.1.1 General Anti-renewable Energy Sentiment

Reliability of Intermittent Power Supply

Submissions expressed concerns regarding the intermittent nature of renewable energy sources, claiming that renewable energy sources are unreliable.

Response

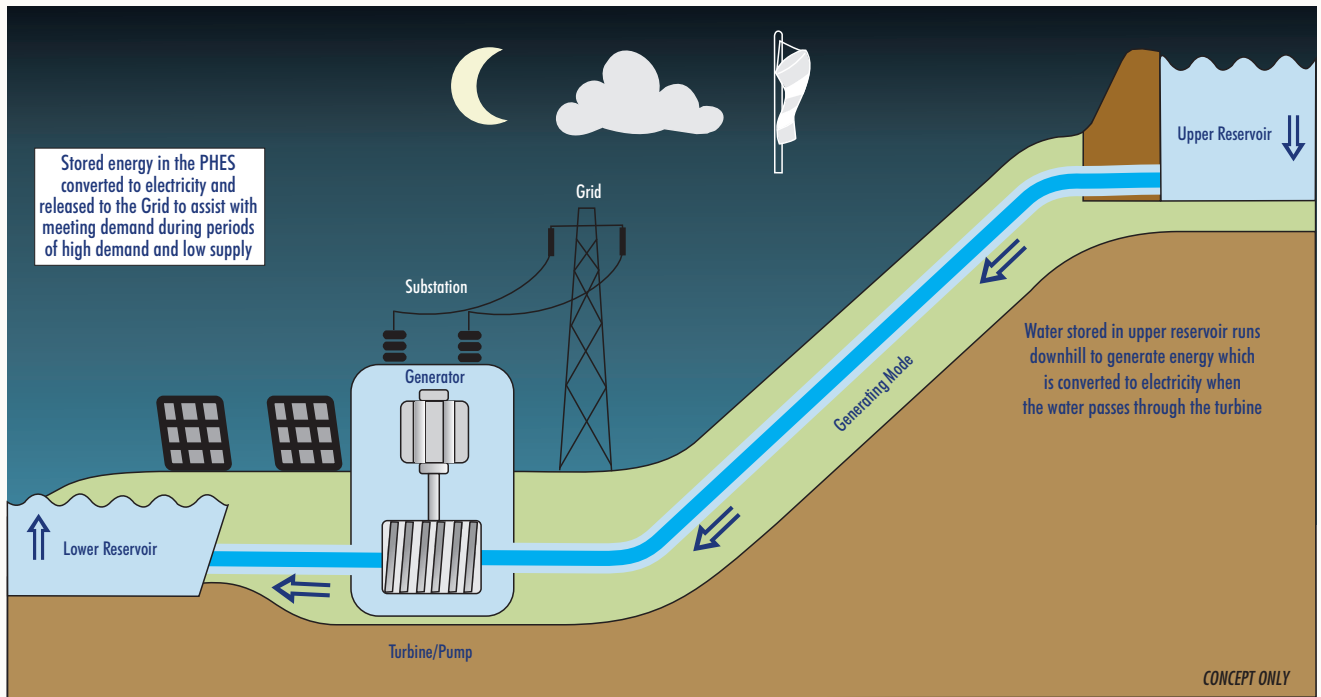
Due to the scheduled closure of coal-fired power stations, LDS projects, including the Project, have been identified as being critical to complement VRE (e.g. solar and wind), and address forecast exceedances of electricity reliability standards.

LDS is able to produce energy on demand and assist with the redistribution of VRE (Figure 4-17).

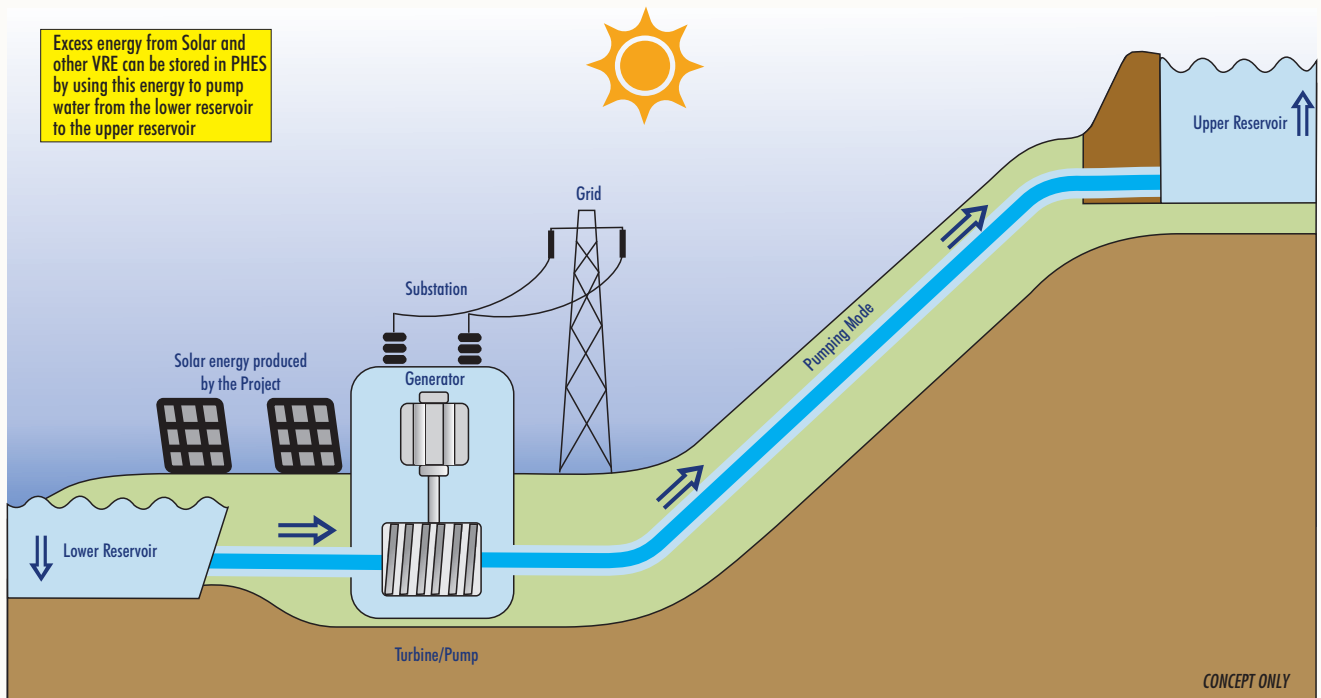
That is, during periods when the sun is shining and the wind is blowing, excess solar and wind energy can be generated and stored by LDS projects. This stored energy can then be redistributed to the grid when VRE is not sufficient, particularly during 6.00 pm to 8.00 pm and/or 6.00 am to 8.00 am when the peak electricity demand typically occurs in the grid, and solar energy is not abundant (Figure 4-17).

The Project would be capable of producing up to 300 MW for 12 hours, which exceeds the threshold for LDS under the NSW *Electricity Infrastructure Investment Act 2020*.

GENERATING MODE



PUMPING MODE



YAN-22-45-SRPH2020_EIS_RIS_002A



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Conceptual Illustrations
of Pumped Hydro

Figure 4-17

Built into the design, PHES systems provide a range of essential ancillary services to the grid, many of which increase the reliability of solar energy production. As described in the EIS, these ancillary services include:

- **Load balancing:** Pumped hydro plants can store excess electricity during periods of low demand by pumping water from a lower reservoir to an upper reservoir. During peak demand, the water is released back to the lower reservoir, generating electricity. This load balancing helps to manage fluctuations in electricity demand and supply, ensuring grid stability.
- **Frequency regulation:** Pumped hydro plants can respond quickly to changes in grid frequency by adjusting their generation or pumping capacity. This rapid response helps to maintain the grid's frequency within the required range, ensuring system stability and preventing potential blackouts.
- **Voltage regulation:** Pumped hydro plants can help to maintain voltage levels within the grid by adjusting their reactive power output. This voltage regulation is essential for the stable operation of transmission and distribution networks, reducing the risk of equipment damage and service interruptions.
- **Spinning reserve:** Pumped hydro plants can be kept in standby mode, ready to generate electricity at short notice if there is a sudden loss of power from other sources. This spinning reserve capability contributes to the grid's resilience and reliability in case of unexpected events or generator outages.
- **Black start capability:** Pumped hydro plants can often start without relying on the electricity grid, enabling them to provide critical support to restart the grid in the event of a complete system blackout.
- **Renewable energy integration:** Pumped hydro plants can help to integrate intermittent renewable energy sources, such as solar and wind, by storing excess generation during periods of high renewable output and releasing it when renewable generation is low. This storage capability allows for better utilisation of renewable resources and reduces the need for fossil fuel-based backup generation.

Overall, the PHES system assists in addressing the reliability shortfalls of VRE.

Net Energy Gain

Submissions claimed that more energy would be used to pump the water uphill into the Upper Reservoir than is generated when the water is released downhill into the Lower Reservoir, and therefore, the Project would yield minimal net energy gain.

Response

The purpose of the Project is to provide a form of LDS. Similar to a large-scale battery, LDS projects redistribute electricity supply to meet demand and address reliability shortfalls from VRE.

Other benefits of PHES systems are described above. The Solar Farm component of the Project would produce energy to partially power the PHES. While the Project would import electricity from the grid to supplement the Solar Farm when necessary, it remains a net producer of renewable energy (solar plus PHES) over the long-term.

4.3.1.2 *Anti-solar*

Submissions disliked the solar component of the Project and were concerned about the legacy of solar waste and visual impacts.

Response

The Solar Farm is designed to generate on-site renewable energy to power the PHES, reducing the reliance on the grid and non-renewable energy. As such, the Project contributes to the decarbonisation of the NSW grid, aligned with the policy objectives of the NSW and Commonwealth governments.

Solar waste is addressed in Section 4.3.10 of this Submissions Report, and concerns regarding the visual impacts from the Solar Farm are addressed in Section 4.3.6.

4.3.1.3 *Anti-Pumped Hydro Energy Storage*

Submissions expressed concern with the PHES aspect of the Project, favouring Battery Energy Storage System (BESS) technology or only developing the Solar Farm. Submissions claimed that BESS technologies were inadequately considered as an alternative to the Project.

Response

While there are many alternative locations for BESS, the Project site contains unique topography that provides elevation differences required to support a feasible pumped hydro development. Pumped hydro is also recognised as the most established and cost-effective technology to deliver LDS in consideration of current BESS technology limitations, and it can generally provide larger and longer storage than a BESS. The previous SMC operations offer a beneficial reuse of the Stratford East Dam as the Lower Reservoir and reuse of water stored in mine voids for the initial fill and top-up of the PHES. This makes the Project site uniquely suited to pumped hydro, which is the fundamental justification for the Project.

The requirements for LDS are discussed in the responses above.

Section 2.5 of the EIS considers alternative forms of LDS, including BESS technology. The findings in the *New South Wales Development Pathways Report* (Australian Energy Market Operator [AEMO], 2021) outline that pumped hydro is preferred over BESS when levelling the cost of both technologies. This is supported by findings in the *GenCoast 2023-24: Consultation draft* prepared by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in collaboration with AEMO (Graham et al., 2023); which outlines that PHES has a relatively lower capital cost per unit of energy than BESS.

4.3.1.4 *Pro-coal, Pro-gas, and Pro-nuclear Sentiment*

Submissions expressed preference for future energy projects to focus on coal, gas, and nuclear energy production, due to reliability and Australia's natural supply of coal and gas.

Response

The Project is aligned with various NSW and Commonwealth renewable energy policies designed to adhere to Australia's international commitments in reducing national greenhouse gas emissions, particularly from the stationary energy sector. These policies are outlined in Section 2 of the EIS.

It is noted there is a legislative ban on nuclear energy generation in NSW.

As coal-fired power stations reach the end of their lives and are replaced by VRE, LDS is critical to reducing the reliability shortfalls from these technologies. According to AEMO and CSIRO (Graham et al., 2023), PHES is considered the most cost-effective technology to deliver LDS.

4.3.2 National Security

Some submissions raised concerns regarding foreign ownership of the Project, urging a prioritisation of Australian-owned energy.

Response

The proponent for the Project is a subsidiary of Yancoal Australia, which is listed on the Australian Securities Exchange (ASX).

4.3.3 Water

Constraints on Regional Water Resources

Several submissions expressed concerns that the PHES system would negatively affect regional water resources.

Response

The Project is designed to beneficially reuse previously licensed water available from the SMC mine voids for the initial fill and top-up of the PHES system. This water has no other currently approved uses. This is a strategic advantage of the Project compared to other PHES projects, which typically rely on water from natural rivers and streams. The Project would have negligible impact on regional water resources, noting that the Project is designed to be a closed system.

Adequacy of Surface Water Runoff Calculations

Some submissions suggested that the runoff calculations in the Surface Water Assessment did not:

- use SMC Site Weather Station's existing rainfall data;
- address how PV panels reduce infiltration to the surface below; and
- address potential increases in the volume and velocity of rainfall downhill of the panels, potentially influencing flooding.

Response

The long-term rainfall data used for the Surface Water Assessment (HydroBalance, 2024) was sourced from the Scientific Information for Land Owners (SILO) climate database facility hosted by the Queensland Department of Energy and Climate. A location near the upper and lower reservoirs was used to obtain the climate data.

The PV panels would be placed at a tilt, such that all water would run off the panels onto the surface water below. Therefore, no assessment of solar panel impacts on infiltration is required.

The Surface Water Assessment (HydroBalance, 2024) analysed the potential impacts of the solar panel fields on flooding behaviour, summarising these impacts below:

The impacts generally consist of increased levels and velocities within and adjacent to the solar panel fields, and reduced levels and velocities immediately downstream of the fields. Impacts do not generally appear to propagate more than 1 km downstream of each solar panel field. The potential impacts do not affect any existing or proposed infrastructure (aside from the solar panels), with the exception of Wenham Cox Road, where it intersects Avondale Creek. Impacts to flood levels and velocities were observed on Wenham Cox Road, at Avondale Creek. Localised flood level impacts were also observed in the unnamed tributary of Avondale Creek, at the proposed excavation tunnel stockpile location.

There are no impacts on flood levels and velocities in the unnamed Avon River tributary or Dog Trap Creek, as the Project is located well outside of these floodplains.

Potential Decline in Surface Water and Groundwater Quality

Some submissions were concerned about the possibility of decline in groundwater and surface water quality from using water stored in mine voids in the initial fill of the PHES system. This extended to concerns for the potential impacts of use of this water on species in the area.

Response

The PHES system would function as a closed system, with water only moving between the two reservoirs via the tunnelled waterway.

The reservoirs would be treated (e.g. compaction and grouting) to minimise seepage. Any seepage from the Lower Reservoir would likely migrate towards the SMC Main Pit and back into the SMC water management system as it is a groundwater sink. Any seepage from the Upper Reservoir is expected to be small in comparison to the likely overall groundwater system. Seepage that reaches the surface via springs is expected to be heavily diluted by the surface water component of the drainage line (i.e. there is expected to be much more rain than groundwater expressed to the surface). Therefore, there would be negligible to no impact on flora in the vicinity of the reservoirs.

4.3.4 Biodiversity

Removal of Vegetation for the Upper Reservoir

Submissions expressed concern with the removal of native vegetation in the Upper Reservoir footprint and associated impacts on threatened species, including SAI species Scrub Turpentine, Sooty Owl and the Stuttering Frog. Concerns were also raised about the impacts to species that do not have a threatened species status.

Response

The BDAR was prepared in accordance with the BC Act and with reference to the avoidance, minimisation, and offset hierarchy. The BAM outlines the two key areas of project planning to avoid and minimise impacts, being project location and project design.

To avoid impacts to areas of high biodiversity value, the Project has been strategically located to reuse previously disturbed land associated with the SMC. 96% of the Solar Farm footprint is located on previously disturbed SMC land, in areas previously cleared for grazing and other purposes or in areas comprising non-native vegetation.

Due to elevation requirements between the upper and lower reservoirs, the proposed location of the Upper Reservoir is the only suitable topographic location.

Further avoidance and minimisation measures have been incorporated into the Project design, including changing the optimal layout to avoid impacts to high biodiversity value areas. This includes incorporating a tunnelled waterway between the upper and lower reservoirs, rather than overland pipes which would require additional clearing.

With regard to the SAI entities, further environmental assessment has been undertaken beyond that in the BDAR.

Dr Frank Lemckert concluded in his expert report on the Stuttering Frog that there are no records for the species in the Project Disturbance Footprint and there is no suitable breeding habitat present within a 10 km radius of the Project (Attachment 2).

In his report, Dr Stephen Debus concluded that impacts from the Project on the Sooty Owl do not constitute SAI (Attachment 7).

With regard to the Scrub Turpentine, GHD (2024a) has conducted additional fieldwork on Yancoal landholdings adjacent to the Project Disturbance Footprint and within The Glen Nature Reserve to contextualise impacts of the Project on the local Scrub Turpentine population (Attachment 8).

While 217 stems of Scrub Turpentine were recorded during field surveys within the proposed Upper Reservoir footprint, an additional 622 stems have since been recorded in The Glen Nature Reserve and an additional 145 stems have since been recorded on other Yancoal landholdings in the vicinity of the Project Disturbance Footprint, indicating the population is more broadly distributed (GHD, 2024a) (Attachment 8).

The Panel (2025) concluded that Project impacts to Scrub Turpentine would not constitute SAI.

Koala Habitat

Some submissions expressed concern about impacts to Koala habitat.

Response

In order to mitigate and manage impacts to Koalas, a suitably qualified expert in Koala spotting would be engaged prior to the commencement of disturbance, to facilitate moving the Koalas within the Project Disturbance Footprint into other suitable habitats. Furthermore, a vegetation clearance protocol would be developed as part of the CEMP to minimise impacts during approved disturbance activities and vegetation clearing.

In addition, the Project would provide suitable offsets for Koala.

Climate Change Impacts

Some submissions questioned how environmentally-friendly the Project would be, considering the removal of vegetation for the Upper Reservoir. Submissions claimed that these trees function as a carbon sink and implied that, by removing them, the Project would contribute to climate change.

Response

The Air Quality and Greenhouse Gas Assessment (Airen Consulting, 2024) (Appendix K of the EIS) addressed the loss of the carbon sink associated with the removal of woodland vegetation in the Upper Reservoir. Both the *National Greenhouse and Energy Reporting Scheme* (Commonwealth Department of Climate Change, Energy, the Environment and Water [Cth DCCEEW], 2024) or the *National Greenhouse Account Factors* (Cth DCCEEW, 2023) do not consider loss of carbon sinks due to vegetation loss. Nevertheless, carbon sequestration is considered in the Air Quality and Greenhouse Gas Assessment (Airen Consulting, 2024), which conservatively calculates a carbon sequestration loss of approximately 26,050 tonnes of carbon dioxide equivalent (t CO₂-e) over the life of the Project (estimated to be at least 50 years).

As outlined in the EIS, the Project's electricity generation would avoid between 320,000 and 550,000 t CO₂-e per year, if this electricity was alternatively produced by gas-fired power generation.

Habitat Connectivity

Some submissions expressed concern about the reduction in habitat connectivity in the region, with specific regard to connectivity around The Glen Nature Reserve.

Response

Existing connectivity is represented by the large, intact and contiguous bushland areas immediately surrounding the Project in addition to more regionally connected areas such as The Glen Nature Reserve, Barrington Tops National Park and Berrico Nature Reserve (GHD, 2024c). In addition, SMC Biodiversity Offset Areas, including offset properties and Biodiversity Enhancement Areas, are proximal to the Project Disturbance Footprint and would continue to provide and improve habitat connectivity around and within the Project Disturbance Footprint as they mature (GHD, 2024c).

The Project site has been largely modified through mining operations and given the extent of native vegetation around and between areas of development within the Project Disturbance Footprint, further impacts to habitat connectivity are unlikely to have significant impacts on any relevant native species' life cycles (GHD, 2024c).

Mitigation Measures

Submissions claimed that the suggestions for mitigation of impacts on biodiversity are inadequate. There were also concerns regarding the high number of species credits required for offsets.

Response

The Project design has incorporated measures to avoid and mitigate biodiversity impacts, which include (as stated in Section 6.5.4 of the EIS):

- Implementation of a Vegetation Clearance Protocol including delineation of areas to be cleared.
- Protocols developed for hygiene and biosecurity matters during construction and operation phases.
- Weed and pest management measures.
- Implementation of vehicle speed limits.
- Riparian vegetation monitoring and adaptive management.
- Rehabilitation of disturbed areas not affected by permanent works following construction.

These measures are detailed in Table 6-10 of the EIS and would be further expanded upon in a Biodiversity Management Plan (as a sub-plan of the CEMP and/or OEMP) to be prepared for the Project. This plan would be informed by successful strategies previously implemented at the SMC.

Additionally, the CEMP and/or OEMP would include recommendations outlined by GHD in Sections 9.2 and 9.3 of the BDAR, including, but not limited to, weed control, erosion and sediment control, APZs and other buffers.

The offsets for the Project were calculated in accordance with the BAM.

Impacts on Frog Species from Water Stored in Mine Voids

Submissions questioned the use of water stored in mine voids in the PHES system and the potential to impact frog species.

Response

Since lodgement of the EIS, Dr Frank Lemckert prepared expert reports on the threatened frog species assumed to be present within the Project Disturbance Footprint, namely the Stuttering Frog, Giant Barred Frog, Green-thighed Frog, and Green and Golden Bell Frog. These reports could not be prepared nor provided until confirmation from CPHR was received that Dr Frank Lemckert is recognised as a 'Biodiversity Expert' in the Project region according to the 'List of approved experts' database (DCCEEW, 2025c).

In his expert reports, provided in Attachments 2, 3, 4, and 5, Dr Frank Lemckert concluded that there are no records for any of the four frog species within the Project Disturbance Footprint and there is no suitable breeding habitat present within a 10 km radius of the Project.

In summary, and based on expert opinion, the Project is not anticipated to result in impacts to threatened frog species.

Hollow-bearing Trees

Submissions claimed that moving hollow-bearing trees would be an ineffective strategy for re-establishing habitat utilised by the Sooty Owl and other species.

Response

To mitigate the impact to species that occupy hollow-bearing trees, a fauna and flora management sub-plan/protocol would be prepared as part of the CEMP, which would be developed prior to clearing and construction works. The selective management and potential relocation of hollows would be undertaken by a qualified ecologist/fauna spotter.

The potential relocation of hollow-bearing trees is one of several management, mitigation, and adaptation strategies for the Project. Other measures addressing vegetative clearing, timing, and general impacts for the Sooty Owl and other bird species are outlined in the BDAR.

With regard to the Sooty Owl, Dr Stephen Debus concludes in his assessment (Attachment 7) that the proposed mitigation measures in the BDAR are appropriate and comprehensive.

4.3.5 Community Consultation

Some submitters were of the view that they did not have sufficient opportunities to review and comment on the Project. This included a request for more community information forums and an extension of the submission period.

Response

Yancoal used a variety of approaches to engage with the surrounding Stratford and Gloucester communities and the various representative groups and stakeholders both before and following lodgement of the EIS. Public consultation undertaken prior to lodgement included:

- Preparation and distribution of four Newsletter Fact Sheets released between December 2022 and July 2024, which were also made available on the SMC website.
- Establishing a dedicated website and email address.
- Online survey.
- Two in-person community information sessions held on 25 and 26 March 2024.
- One-on-one meetings with surrounding landowners.
- One-on-one meetings with representative groups.
- One-on-one meetings with government agencies stakeholders.
- SMC Community Consultative Committee briefings.

Following lodgement of the EIS, Yancoal engaged in community information sessions in Stratford and Gloucester on 17 and 18 September 2024, respectively. Notification of these community information sessions was advertised locally, including within the local Gloucester Advocate newspaper.

Additionally, Yancoal provides ongoing updates on the Project via newsletters which are published on the SREH website (<https://www.stratfordrenewableenergyhub.com.au>).

4.3.6 Landscape and Visual Impacts

Mitigation of Visual Impact

Submissions expressed concern for the solar panels reducing the landscape character and requested that the scenic quality of the region be maintained.

Response

The existing visual landscape associated with the Project has been subject to material disturbance by the SMC.

In consideration of community feedback, the Project design was revised in the early stages of the Project to avoid and minimise impacts, including through the removal and/or setback of solar panels that were originally proposed along portions of The Bucketts Way, both on the western side (solar no longer proposed) and along portions of the eastern side with visual screening now proposed in its place.

To mitigate direct views of the Project from The Bucketts Way, GHD (2024d) recommended visual screening to act as barriers for any views, and this has been adopted in the Project design, along with setbacks of the Solar Farm along The Bucketts Way.

Key mitigation, management and monitoring would be described in a Landscape and Visual Impact Management Plan.

Accuracy of Visual Simulations

A submission suggested the visual simulations did not accurately embody the impact of the Project on the view from their property.

Response

The visual impact simulations and assessment followed the Technical Supplement, *Large-Scale Solar Energy Guideline* (the Solar Guideline) (DPE, 2022h) and other relevant guidelines (see Section 2.1 of the LVIA [GHD, 2024d]). In accordance with the Technical Supplement, the visual simulations were scaled to reflect what is viewed by the human eye and therefore represent accurate simulations.

Prior to EIS lodgement, landowners who requested a viewpoint assessment received visual simulations of the Project and a rating of visual impact. Landowners received the simulations on 12 July 2024.

A visual impact assessment for the property relevant to this submission was completed by GHD (2024d) and provided in Section 6.2.2.12 of the LVIA and is replicated in Table 4-22 below. The visual simulations were provided in Appendix B of the LVIA.

Table 4-22
Visual Impact Assessment – Submitter Viewpoint

Criteria	Comments
<i>Description of Existing View</i>	<i>The viewpoint offers a view from an elevation location across a rural open landscape, with a flat top metal fence in the foreground. Partially cleared farmland extends from the foreground through undulating terrain into the midground, where cleared areas and clusters of remnant vegetation stretch into the distance. Various other residences are visible through filtered views in the midground vegetation. In the background, above the Avon River Valley and associated tree canopies, a wide ridgeline forms the distant horizon.</i>
<i>Anticipated Change to View</i>	<i>The proposed dam wall will be positioned to the right of the view and integrated into the mountain range. Due to the distance and angle of the proposed dam wall from this location, the change in view would be almost indiscernible.</i>
<i>Sensitivity to change</i>	Moderate
<i>Magnitude of change</i>	Low – Due to a minor change when viewed along the whole ridgeline. The ridgeline itself remains unaltered, as the current vegetation and slope partially obscure the dam.
<i>Significance of impact</i>	Low

Source: After Table 6.13 of the LVIA (GHD, 2024d).

Glint and Glare

A submission expressed that glare from the metal and solar panels would be psychologically distressing.

Response

A Glint and Glare Assessment was prepared by GHD (2024f) and provided as Appendix F of the LVIA (GHD, 2024f).

The Glint and Glare Assessment was prepared in accordance with key industry guidelines, including the Technical Supplement and the Solar Guideline.

The Glint and Glare Assessment concludes that glare from the Project is expected to be within the recommended thresholds identified in the Solar Guideline for all road and residential receivers.

4.3.7 Socio-economic Impacts

Employment Opportunities

Submissions raised concerns that job opportunities would be filled by non-local workers and that only 10% of workers may be sourced from within the MidCoast LGA.

Response

Construction of the SREH would require a specialist workforce, in which workers need to be sourced based on skills. The Social Impact Assessment (SIA) (Aigis Group, 2024) (Appendix L of the EIS) outlines that a “suitable workforce can be sourced from within the adjacent Newcastle and Hunter Valley region, given the region’s industrial base,” likely resulting in a drive-in drive-out (DIDO) workforce.

DIDO workers and workers that temporarily migrate for Project-related employment would generate beneficial economic effects. The SIA (Aigis Group, 2024) outlines that the DIDO workforce:

- *... may also reduce the potential for other negative social impacts including impacts on housing availability and affordability (Haslam McKenzie et al 2009:91), and other social problems associated with the isolation of the workforce from their usual environs (Haslam McKenzie et al 2009:92). It would also mitigate against any negative ‘post-boom’ impacts, when compared to a scenario of semi-permanent occupancy over the construction period*

The SIA (Aigis Group, 2024) identifies a proportion of the workforce could be sourced from the local pool of appropriately skilled workers. As such, the Project has the potential to benefit the immediate and surrounding social localities through employment and business activity, generating direct and derived employment benefits.

Impacts from the Construction Workforce

Submissions raised concerns that the SIA does not adequately address the social impacts of a short-term increase in full-time equivalent workers in the region. Further, submissions requested the SIA outline what the Construction Workforce Accommodation Strategy (CWAS) would contain.

Response

Aigis Group (2024) prepared the SIA which recommends that a CWAS be prepared to outline approaches for managing and mitigating both positive and negative impacts of a temporary construction workforce.

As a result, Yancoal would prepare a CWAS, which would include strategies to minimise potential impacts on accommodation associated with the Project, such as:

- minimising housing demand that could place upward pressure on housing prices and rent;
- considering accommodation demands for regional tourism; and
- provide timely information in relation to the expected mine development accommodation.

As the CWAS would require timely information related to the Project's development, such as updated local supply and demand of accommodation, it would be prepared closer to Project commencement.

As outlined in the SIA (Aigis Group, 2024), Yancoal has experience managing similar workforce numbers at the SMC and Duralie Coal Mine.

Government Expenditure

Some submissions are concerned that the Project is solely reliant on the use of public funds through government subsidies and would otherwise not be financially feasible. A submission expressed that the government should not be responsible for funding the ETL upgrades.

Response

Should the Project be approved, various funding sources would be considered as part of any Final Investment Decision.

Concerns About Power Shortages

Some submissions expressed concern for the possibility of power shortages and black outs, and the subsequent impacts on the community.

Response

The Project is proposed to assist with addressing the risk of power shortages and black outs.

The scheduled closure of NSW's coal-fired power stations and the transition to VRE is likely to create reliability shortfalls. The Project would enable excess energy generated from VRE to be stored and redistributed on demand to the grid to reduce the possibility of power shortages and black outs. This is described further in Section 4.3.1.1 of this Submissions Report.

Property Devaluation

Some submissions expressed concern that private and commercial properties may be subject to property devaluations associated with view of the solar panels.

Response

The Project has been located to reuse land associated with the SMC, where coal mining occurred for approximately 30 years. It is therefore considered unlikely that installation of solar panels on post-mining SMC land and immediate surrounds would significantly impact surrounding housing prices.

4.3.8 Existing Rehabilitation Commitments

Some submissions questioned if Yancoal is avoiding its rehabilitation commitments under Development Consent SSD-4966 in repurposing SMC land and infrastructure. Submissions further expressed the EIS did not provide enough information on the interaction between required SMC rehabilitation commitments and the Project.

Response

Irrespective of the Project, Yancoal is required to comply with the rehabilitation obligations set out under the various SMC approvals and licences.

As highlighted in the EIS, the NSW Government has outlined an intention to facilitate economic development in regional NSW via alternative post-mining land uses in the *Practical guide: Post mining land use* (NSW Department of Regional NSW, 2023), which includes repurposing mining land and infrastructure for renewable energy projects.

The interaction between the Project and the SMC is described in the Rehabilitation Review (Attachment 6 of the EIS).

If the Project prevents SCPL from completing its rehabilitation obligations, the Project proponent would need to take on this responsibility and/or the SMC development consent would need to be modified to authorise the relevant changes

4.3.9 Agriculture

Some submissions raised concern about the Project reducing the extent of agricultural land in favour of solar panels, and potential impacts to agricultural industries and food security in the region.

Response

If the Project is approved and developed, then areas required to be reinstated for grazing as part of the SMC rehabilitation obligations would be developed for solar.

A Soils, Land and Agricultural Impact Assessment was undertaken by Minesoils (2024), outlining that there would be 560 ha of Project disturbance, which would otherwise be utilised for agriculture in a no-Project scenario.

Following the life of the Project, 548 ha would be returned to agriculturally productive land. There would be a permanent removal of 12 ha from agricultural use following the Project, which is associated with the permanent retention of the electrical substation as well as the portion of the Upper Reservoir mapped as currently being available for agriculture (which would not be rehabilitated to agricultural use post-decommissioning of the Upper Reservoir).

Agrisolar may be considered post-construction to reduce the temporary loss of agricultural land, however this is not currently proposed as part of the Project.

4.3.10 Solar Waste and Chemical By-products

Solar Waste Generation

Concerns were raised regarding the legacy of panels following the Project's life cycle due to the potential to generate significant waste that could create an intergenerational burden.

Response

The EIS outlines the waste management approach for the Project, guided by the waste management hierarchy of avoid, reduce, use and recycle. Regarding solar panels, solar waste would be transported from the Project by licensed contractors.

During the operational life of the Project, recycling and reuse facilities for solar panels may advance in Australia. The future growth of solar panel recycling facilities would be considered throughout the life of the Project to inform potential recycling and reuse opportunities.

This could include beneficial use of Solar Farm waste for componentry reuse.

Waste disposal measures and a monitoring program would be described in the CEMP and OEMP.

Chemical Leakages from Solar Panels

Some submissions raised concerns regarding the possibility of chemical leakages from solar panels and the possible impacts on the surrounding environment and human health. These submissions largely related to public health and safety, surface water potable drinking supplies, and the long-term impact on agricultural production following decommissioning.

Response

PV solar panels are predominately made of glass, which provides transparency for the sun to pass through to the energy-generating cells and protection from environmental variables. Solar panels are designed to withstand physical damage and harsh weather conditions.

Section 6.17 of the EIS states Yancoal would conduct:

- *...ongoing and timely maintenance of all mobile and fixed plant equipment in accordance with the recommended maintenance schedule of the original manufacturer, and consistent with maintenance schemes required by relevant legislation.*

Following the life of the solar panels, they would be disposed of at a licensed facility considering industry best practice, noting the future growth of solar panel recycling facilities would be considered to inform potential recycling and reuse opportunities.

4.3.11 Fire

Some submissions highlighted a concern regarding solar inverters being prone to starting and spreading fires. The submissions requested adequate provisions and an action plan in the case of wildfire. One submission suggested that, in doing so, the Project should consider alternatives to firebreaks and fixed water tanks as they deemed these solutions ineffective at fire prevention and management.

Response

A Bushfire Assessment was undertaken by Peterson Bushfire (2024) to assess hazards and risks of potential bushfires in areas surrounding the Project, in addition to risks associated with fire initiating within the Project Disturbance Footprint and spreading off site to external assets. Several recommendations for the Project were proposed by Peterson Bushfire (2024), including:

- A minimum of 18 m APZ around the external perimeter of the solar array, with appropriate fuel management.
- PHES powerhouse designed in accordance with *AS 3959-2018 Construction of buildings in bushfire prone areas*.
- Vegetation management.
- Water supply and access for fire-fighting measures.
- Developing a Bushfire Emergency Management and Operations Plan, which would further identify all potential risks associated with construction, operation, and maintenance, and their corresponding mitigation measures. This would be reviewed on a regular basis.

4.3.12 Road Transport

Increase in Construction Workforce Traffic

Submissions claimed that the EIS inadequately addresses the traffic-generating potential of the Project along The Bucketts Way and its intersection with the Pacific Highway. Submissions outlined that the intersection is already under stress and the addition of construction heavy vehicle and workforce traffic causes further concerns regarding traffic build up, public safety and potential accidents.

Response

The Road Transport Assessment prepared by The Transport Planning Partnership (TTPP) (2024) (Appendix H of the EIS) outlines the traffic-generating potential of the Project at the Pacific Highway intersection with The Bucketts Way. The intersection has previously demonstrated that it has adequate capacity during peak trip periods. The Project's peak hourly traffic generation would not align with the background peak traffic at the Pacific Highway intersection with The Bucketts Way. Therefore, cumulative impacts would be negligible.

In addition, the indicative Project loads would be smaller than the historical loads for the SMC and Duralie Coal Mine, and the Project OSOM vehicles would be of a similar size to, or smaller than, the OSOM vehicles for the SMC and Duralie Coal Mine. Accordingly, The Bucketts Way is considered to provide an adequate level of road functionality for the Project OSOM vehicles.

TTPP notes that the Pacific Highway intersection with The Bucketts Way has been upgraded to include a left-slip lane onto The Bucketts Way, a concrete median island, improved line marking, and other improvement features. These upgrades reduce delays and increase opportunities for vehicles turning right onto The Bucketts Way from the highway and for vehicles turning right from The Bucketts Way onto the highway.

Road Transport Assessment Methodology

A submission expressed concerns that the Road Transport Assessment (TTPP, 2024) relies on anecdotal data rather than objective analysis when assessing the potential impact of OSOM vehicles.

Response

The Road Transport Assessment (TTPP, 2024) describes that the number and frequency of OSOM vehicle movements during the construction of the Project would be low, with no more than one OSOM vehicle in any typical day within a week anticipated. Accordingly, a concept-level route analysis was not deemed to be warranted, with each OSOM vehicle movement subject to permits that would assess the load and route on a case-by-case basis.

In addition, the indicative Project loads would be smaller than the historical loads for the SMC and Duralie Coal Mine, and the Project OSOM vehicles would be of a similar size to, or smaller than, the OSOM vehicles for the SMC and Duralie Coal Mine. Accordingly, The Bucketts Way is considered to provide adequate level of road functionality for the Project OSOM vehicles.

Therefore, the potential impact of OSOM vehicles from the Project was predicted to be low (TTPP, 2024).

Suggested Project Approval Conditions

Some submissions suggested that the Project design should assess alternative scenarios and deviations from current traffic models. The submissions further expressed that a condition of Project approval should require the Proponent to fund additional cumulative impact assessments over the life of the Project, as well as any additional roadworks if traffic impacts extend beyond a reasonable threshold for the current public infrastructure.

Response

The Road Transport Assessment (TTPP, 2024) was prepared in accordance with Austroads guidelines⁵ and the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE, 2022i). As such, the Road Transport Assessment (TTPP, 2024) considers changes to the general population and travel behaviours.

The Road Transport Assessment (TTPP, 2024) adopted a conservatively high assessment of potential impacts to road transport during both construction and operation of the Project. The assessment concluded that there are no specific road or intersection upgrades required to mitigate road transport impacts.

4.3.13 Aboriginal and Non-Aboriginal Heritage

Aboriginal Heritage Impacts

A submission outlined that the works associated with the Project would cause further distress to Aboriginal heritage at the Project site. Additionally, the submission claimed that a culturally significant site located close to the proposed wall of the Lower Reservoir has not been investigated and the Project would create damage to this site.

Response

An ACHA was prepared by Niche (2024a) for the Project. The Project would directly disturb two previously recorded sites, comprising an artefact scatter and an isolated find, and two new sites, also comprising an artefact scatter and an isolated find. Due to low rarity, Niche determined that all four sites are of low archaeological (scientific) significance.

A PAD was also recorded within the Subject Area, however outside of the Project Disturbance Area and therefore would not be directly impacted by the Project.

The Project would not cause a loss of heritage resources that could be viewed as being very rare, unique, or unlikely to occur elsewhere. Therefore, the Project would not result in any significant cumulative impact on regional Aboriginal heritage.

Management and mitigation measures would be implemented by Yancoal, as described in the ACHA (Niche, 2024a).

⁵ Austroads (2020a). *Guide to Traffic Management Part 3: Transport Study and Analysis Methods*; Austroads (2020b). *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*; and other Austroads guidelines where relevant (see Road Transport Assessment [TTPP, 2024]).

It is understood that the culturally significant site the submission is referring to is CTS-1, as described in the ACHA (Niche, 2024a). On Tuesday 14 May 2024, an interim meeting with the Elder women of the local Aboriginal community was conducted to progress the discussion of cultural knowledge of the area and the potential cultural values associated with CTS-1 (AHIMS #38-1-0117). Due to wet weather, site access could not be permitted and therefore physical inspection of CTS-1 was not possible on the day. A recommendation was included in the final ACHA to conduct a follow-up site visit to discuss the cultural significance and management of CTS-1 with representative Elder women.

As recommended in the Project ACHA (Niche, 2024a), a follow-up site visit of CTS-1 and meeting at the SMC site office was conducted on Tuesday 5 November 2024 to discuss CTS-1 with the Elder women.

The key finding of the site visit was that there remains uncertainty around the cultural significance of CTS-1. While it was noted as a distinguishable feature, the contributory values are not well remembered and unclear. There are some features present that support the suggested cultural value (i.e. rocky shelf to sit on and access to freshwater), however there are other features that provide sufficient doubt to its suggested cultural use (i.e. difficult elevated access). There is little knowledge of the site and it appears that the only recollection of the site is from one Elder woman who likely visited the site as part of the 2011 ACHA surveys. It was agreed that there were no further avenues to gain more knowledge of the site. Notwithstanding, there remains consensus that the site should still be avoided (as proposed).

A Letter of Advice outlines that the following recommendations were confirmed adequate measures for the management of CTS-1 at the 5 November 2024 site visit and meeting:

1. Yancoal would maintain the 20 m exclusion zone surrounding CTS-1 during construction of the Project and designate CTS-1 as a no construction zone.
2. Consistent with Heritage NSW's recommendation, CTS-1 has been registered as a water hole on AHIMS.
3. It was agreed that no further investigation or photographic recording is required, and it is acknowledged by the Elder women of the local Aboriginal community that attended the site visit that there are no further avenues for investigation.

Following review and confirmation/input from Elder women of the local Aboriginal community, the CTS-1 Letter of Advice has been included in Appendix 6 of the Updated ACHA (Niche, 2025). The Updated ACHA (Attachment 10) has been provided to all RAPs for review and comment. No comments were received from RAPs on the Updated ACHA.

Inadequate ACHA

Some submissions expressed that the Aboriginal cultural heritage of the Project site had been inadequately investigated, calling for a more detailed study.

Response

The ACHA (Niche, 2024a), field inspections and Aboriginal community consultation was undertaken in accordance with relevant statutory and regulatory frameworks, including the requirements of:

- Code of Practice (DECCW, 2010a).
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010b).
- *Guide to investigating, assessing and reporting Aboriginal cultural heritage in NSW* (NSW Office of Environment and Heritage, 2011).
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council, 2010).

- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia International Council on Monuments and Sites [Australia ICOMOS], 2013).
- *NSW National Parks and Wildlife Act 1974* and *NSW National Parks and Wildlife Regulation 2019*.

A complete summary of relevant legislation and associated planning instruments is available in Section 1.3 of the ACHA (Niche, 2024a).

The survey work undertaken to date is considered to provide an adequate characterisation and representative sample of the site's archaeological potential. The survey tracks shown on Figure 4-8 only represent one of the six survey participants' survey coverage. When considering all six participants, the breadth of the survey corridor broadens. Additionally, this area was previously surveyed for the Stratford Mine Exploration Clearance Letter (Niche, 2023), with the targeted inspection (shown in Plate 4-12) identifying no archaeological material (Attachment 11), further justifying the low archaeological potential of the Upper Reservoir.

Despite the constrained access, all survey participants agreed that due to the steep slopes, the unreachable areas had low archaeological potential and thus the survey coverage of this area was sufficient for the purposes of the assessment.

Protection of Non-Indigenous Heritage Items

Submissions outlined concerns for the future of the Craven Village sites, specifically the Union Church, Craven Schoolmasters residence and The Glen-Craven Logging Railway. The submissions suggest that approval of the Project should be contingent on heritage recognition of Craven Village, a requirement to produce a revised Historic Heritage Assessment (HHA), and a conservation management plan to maintain historical structures.

Response

Non-indigenous heritage items are assessed in the HHA (Niche, 2024c) (Appendix G of the EIS) for their historical potential, significance, heritage listing status, and if the Project would directly impact the heritage item. The HHA (Niche, 2024c) was prepared in accordance with the following guidelines:

- *NSW Heritage Manual* (NSW Department of Urban Affairs and Planning, 1996).
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS, 2013).
- *Assessing heritage significance: Guidelines for assessing places and objects against the Heritage Council of NSW criteria* (DPE, 2023b).
- *NSW Heritage Act 1977*.
- *Gloucester Local Environmental Plan 2010*.

Three non-indigenous historic features were identified within or immediately adjacent to the Project Disturbance Footprint. The SREH_1 Farm Structure and Cottage and Dairy Complex are both located within the Project Disturbance Footprint and would be directly impacted by the Project. Both features were assessed by Niche as having little to no heritage significance and it is therefore unlikely that the Project would impact historic heritage values. As a result, no mitigation or management measures were recommended by Niche (2024c).

The Glen Craven Logging Tramline is located outside of the Project Disturbance Footprint and would not be subject to any direct impacts.

Craven Village (comprising a church, a mill, cottages, and a school) contains places of local heritage significance but are located outside of the Project Disturbance Footprint (west of The Bucketts Way) and would not be subject to any direct impacts.

Other sites of historic significance are outside of the Project Disturbance Footprint and would not be impacted by the Project, therefore mitigation and management of these sites were not within the scope of the EIS.

4.3.14 Electrical Transmission Line

Submissions requested additional information on the ETL upgrades, the location of the ETL, and how this may impact the surrounding environment.

Response

Attachment 5 of the EIS provides the outcomes of a desktop Environmental Assessment of the Potential ETL Upgrade (i.e. upgrade of the existing 132 kV ETL to a double circuit line from the Project to the Stroud Road substation, and further potential upgrades between the Stroud Road substation and Tomago).

Energy requirements for the Project are also a matter subject to consultation between Yancoal and Transgrid, as the owner of the ETL. The Potential ETL Upgrade would be subject to separate detailed assessment by Transgrid outside the scope of the EIS.

Future consultation with Transgrid may include the identification of a number of connection options, noting that upgrade of the existing 132 kV ETL within the existing easement is the preferred option, based on consultation conducted with Transgrid to date.

If an upgrade is required to the Essential Energy substation in Stroud Road to accommodate the Project, this would likely occur within the existing substation disturbance footprint.

Consultation with Transgrid, Essential Energy and EnergyCo in relation to receiving and distributing electricity generated by the PHES component of the Project is ongoing.

5 PROJECT EVALUATION

A total of 111 submissions on the Project were received from government agencies, the local council, organisations and members of the public during the exhibition period for the EIS. These comprised 16 submissions (15%) from government agencies and the local council, seven submissions (6%) from organisations, and 88 submissions (79%) from members of the public.

This Submissions Report provides responses to issues raised during the exhibition period for the EIS and has been prepared in consideration of the *State significant development guidelines – preparing a submissions report* (DPHI, 2024a).

Since lodgement of the EIS, Yancoal has continued to consult with community members, MidCoast Council, DPHI and other government agencies regarding the Project.

As part of ongoing feasibility studies, Yancoal has proposed a refinement to the Project to remove the “low level outlet” from the Upper Reservoir dam wall. The low level outlet was designed to facilitate rapid drawdown of water stored in the Upper Reservoir in emergency circumstances. The water would have been released to the Lower Reservoir via Unnamed tributary 1 and the clean water diversion system around the Lower Reservoir. Following review of the engineering requirements for the Project, supported by input from engineering specialists, the low level outlet is no longer considered a required feature of the Upper Reservoir dam wall.

Residual potential impacts on biodiversity would be offset in accordance with the BC Act. Yancoal is expecting land-based offset options to be available to secure a portion of the Project’s offset liability for threatened species and ecological communities, including options to establish land-based offsets using Yancoal-owned land in the region.

In summary, when compared to the EIS, the proposed refinement to the Project would result in minor improvements in environmental impacts compared to those described in the EIS. Accordingly, the conclusion in the EIS that the Project would be a model of beneficial post-mining land use, while minimising environmental impacts, and is in the public interest, remains unchanged.

6 REFERENCES

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ATTACHMENT 1
REGISTER OF SUBMITTERS

ATTACHMENT 2

STRATFORD RENEWABLE ENERGY HUB *MIXOPHYES BALBUS*
(STUTTERING FROG) EXPERT REPORT

ATTACHMENT 3

STRATFORD RENEWABLE ENERGY HUB *MIXOPHYTES ITERATUS*
(GIANT BARRED FROG) EXPERT REPORT

ATTACHMENT 4

STRATFORD RENEWABLE ENERGY HUB *LITORIA BREVIPALMATA*
(GREEN-THIGHED FROG) EXPERT REPORT

ATTACHMENT 5

STRATFORD RENEWABLE ENERGY HUB *LITORIA AUREA*
(GREEN AND GOLDEN BELL FROG) EXPERT REPORT

ATTACHMENT 6

AREA OF STREAM INSPECTED FOR STRATFORD RENEWABLE ENERGY HUB PROJECT

ATTACHMENT 7

STRATFORD RENEWABLE ENERGY HUB: REVIEW OF THE ASSESSMENT FOR SERIOUS AND
IRREVERSIBLE IMPACTS ON THE SOOTY OWL

ATTACHMENT 8

SCRUB TURPENTINE SURVEYS –
THE GLEN NATURE RESERVE AND YANCOAL-OWNED LAND

ATTACHMENT 9

SUPPLEMENTARY WHITE-BELLIED SEA EAGLE SURVEYS
IN YANCOAL-OWNED LAND

ATTACHMENT 10

UPDATED ACHA

ATTACHMENT 11

NICHE RESPONSE TO SUBMISSIONS LETTER OF ADVICE

ATTACHMENT 12

REVISED MIDCOAST COUNCIL VOLUNTARY PLANNING AGREEMENT OFFER
(WITHOUT PREJUDICE)

ATTACHMENT 13

INTERIM INDEPENDENT EXPERT ADVISORY PANEL FOR ENERGY TRANSITION ADVICE ON
SERIOUS AND IRREVERSIBLE IMPACTS TO SCRUB TURPENTINE (*RHODAMNIA RUBESCENS*)