

Department of Planning, Housing and Infrastructure

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Stratford Pumped Hydro and Solar

State Significant Infrastructure Assessment Report (SSI-73368213)

July 2026





Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Stratford East Dam, Yancoal 2024

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's (the Department) assessment and evaluation of the critical State significant infrastructure (CSSI) application for the Stratford Pumped Hydro and Solar project located in Gloucester Valley, approximately 98 kilometres (km) north of Newcastle, lodged by Gloucester Coal Pty Ltd, a wholly owned subsidiary of Yancoal Australia Limited. This report includes:

- an explanation of why the project is declared CSSI and who the approval authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- a recommendation to the decision-maker, along with the reasons for the recommendation, to assist them in making an informed decision about whether development approval for the project should be granted and any conditions that should be imposed.

Executive Summary

This report details the Department of Planning, Housing and Infrastructure's (the Department) assessment of the critical State significant infrastructure (CSSI) application SSI-73368213 for the Stratford Pumped Hydro and Solar project. This report will be provided to the Minister for Planning and Public Spaces (the Minister) for their consideration when deciding whether to approve the carrying out of the CSSI.

Project

Gloucester Coal Pty Ltd, a wholly owned subsidiary of Yancoal Australia Limited (the Proponent) proposes to construct and operate a 300 megawatt (MW) pumped hydro power station with 12 hours of energy storage and a 320 MW solar farm. The project is located on the existing Stratford Mining Complex (SMC) and utilises the mine site and established infrastructure to deliver long-term energy outcomes. The project includes a new upper reservoir, connecting tunnels, an underground powerhouse and associated infrastructure, and augmenting the existing Stratford East Dam at the SMC to serve as the lower reservoir. The project is located near Gloucester, approximately 98 kilometres (km) north of Newcastle, in the Mid-Coast Council local government area (LGA).

The project is critical State significant infrastructure (CSSI) as it would significantly contribute to the State's *Electricity Infrastructure Investment Act 2020* target to deliver 28 gigawatt hours (GWh) of new long-duration storage in the grid by 2034.

The project has a capital investment value of \$1.8 billion and is expected to generate 350 construction jobs and 10 operational jobs.

Strategic context

The NSW energy system and broader National Electricity Market (NEM) are undergoing a complex and accelerating transition period with 15,000 MW of coal-fired generators set to retire by 2040. As NSW transitions away from coal-fired power, there is an increasing need for storage, including pumped hydro, to firm renewable energy sources.

The project would provide firming energy by storing surplus electricity during times of low demand and releasing it to generate electricity during peak demand or when renewable generation is insufficient. The project aligns with several Commonwealth and State policies, including *Australia's Long Term Emissions Reduction Plan* and NSW Net Zero Plan Stage 1: 2020-2030 and associated implementation update. It is a critical component of the Electricity Infrastructure Roadmap, which is the NSW Government's 20-year plan to diversify the energy generation mix and reduce the carbon

emissions intensity of the grid while providing energy security and reliability. The project leverages the post-mining land use opportunity of the existing Stratford Mining Complex since coal extraction ceased in August 2024 and Stratford Coal has commenced the mine closure phase.

Statutory context

The project is CSSI under section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) because it is listed as CSSI under section 41 of Schedule 5 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and forms part of the Stratford Pumped Hydro and Solar Projects. Consequently, the Minister is the approval authority. The existing 132 kilovolt (kV) transmission line would need to be upgraded to a double-circuit line to accommodate the project's full capacity and would be subject to a separate application process.

Engagement

The Department publicly exhibited the environmental impact statement (EIS) from 2 October 2024 to 29 October 2024 (28 days) and received 95 unique submissions from the public (74 objecting, 4 comments and 17 in support) and 7 submissions from special interest groups (6 objecting and 1 comment).

Key concerns raised include the benefits of renewable solar and pumped hydro, the consideration of alternative energy technologies such as nuclear and batteries, biodiversity impacts, loss of agricultural land, impacts to water quality and traffic and transport impacts. Other issues raised included the recycling of project components, impacts on Aboriginal cultural heritage values, landscape and visual amenity impacts, and interactions with the rehabilitation obligations of the SMC.

The Department received advice from 16 government agencies and submissions from Mid-Coast Council. The Department engaged with local Council and relevant government agencies on key issues, and they each recommended the implementation of mitigation and management measures. The Department visited the project area and surroundings from 21 to 22 February 2025.

Assessment

The Department has undertaken a comprehensive assessment of the potential impacts and recommended a range of detailed conditions, developed in conjunction with agencies and councils, to ensure all potential impacts are effectively minimised, managed or offset.

Energy transition

The project would provide necessary long-duration energy storage and an on-demand supplementary source of electricity when demand exceeds the supply of renewable electricity. It would be capable of providing “firming” power when variable sources of electricity such as solar and wind are not generating, which would help to maintain the stability and reliability of the electricity network. NSW DCCEEW Energy has confirmed that this project has the potential to contribute to the NSW 2034 long duration storage objectives and would deliver around 13% of the 2034 target. The project would support the State’s transition away from electricity generation derived from fossil fuels to renewable energy generation and the provision of long duration storage.

Biodiversity

The project would disturb 870 hectares (ha), including approximately 145 ha of native vegetation. Importantly, over 80% of the project footprint is in previously disturbed areas associated with the SMC or areas mapped as exotic vegetation.

Despite this strategic site selection, clearing for the upper reservoir would inevitably affect areas of higher biodiversity value on land that is adjacent to the National Park estate. Although there are no feasible alternatives to the location of the upper reservoir, opportunities to minimise clearing by optimising the reservoir layout and construction footprint would be available at the detailed design stage.

The Proponent has committed to conducting pre-clearance surveys for threatened species in the previously inaccessible areas. The outcome of these surveys would determine the final offset liability for the project.

To regulate biodiversity impacts, the Department has recommended conditions requiring the Proponent to:

- minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees, within the development footprint and protect biodiversity outside the approved disturbance area;
- prepare and implement the Biodiversity Management Plan detailing mitigation and management measures to avoid and minimise impacts to threatened species; and
- retire applicable biodiversity offset credits in line with the NSW Offsets Policy before any works that impact biodiversity values requiring offset. The credit liability may be reduced through further avoidance during detailed design, providing the Proponent an incentive to reduce biodiversity impacts, reflecting the avoid, minimise and offset hierarchy set out in the BC Act.

The Department considers biodiversity impacts acceptable, given the emphasis on utilising previously disturbed land, commitments to mitigation, and offset obligations. Subject to the implementation of

conditions, the project could maintain biodiversity values while supporting a beneficial post-mining land use.

Soil and water

Spoil management

The project would require the management of approximately 10 million cubic metres (m³) of spoil (bulked – i.e. the volume of spoil post excavation) from the excavation of the upper reservoir, underground tunnels, powerhouse and associated infrastructure. The Proponent intends to reuse up to 8 million m³ for construction (e.g., the upper reservoir dam wall). Surplus material not reused in construction would be permanently emplaced in the open pit voids, which have a capacity of approximately 20 million m³. This approach leverages existing mine infrastructure and aligns with SMC's rehabilitation objectives, minimising off-site disposal requirements. While contamination risk is considered low, any unsuitable material would be disposed of at an appropriately licensed facility.

Water

Following the public exhibition, the Proponent refined the upper reservoir design to operate as a closed-loop system. Water would be transferred between the upper and lower reservoirs via the tunnel with no surface water inflows or outflows. The Proponent would expand its existing water quality monitoring network upstream and downstream of the site, and these would be regulated under an Environment Protection Licence (EPL).

Water for initial reservoir filling would be sourced from existing SMC dams and voids, avoiding reliance on natural waterways. Groundwater seepage is predicted to be minimal and would flow towards the SMC Main Pit, which would remain as a groundwater sink post-closure of SMC. Stratford Coal is responsible for any changes required to the existing approvals, licences and management plans for the SMC where they would need to be amended to facilitate the construction of the project. Engineering measures, including grouting of the underground tunnel, would further reduce seepage. No significant groundwater-dependent ecosystems are near the project, and drawdown impacts during construction are expected to be temporary and negligible once operational.

Evaluation

The Stratford Pumped Hydro and Solar project is critical for energy security and reliability in NSW, as there is an increasing need for long duration storage, including pumped hydro, to support renewable energy sources and the transition away from coal-fired power. Consequently, the Minister declared the project to be critical State significant infrastructure.

It would also deliver significant economic benefits to NSW, including a capital investment of \$1.8 billion and the creation of 350 construction jobs.

Overall, the Department considers that the project has been designed to utilise opportunities for beneficial reuse of the mine site. The Department has carefully considered the residual environmental impacts of the project. The Department has worked closely with key government agencies to prepare a comprehensive framework of recommended conditions of approval, requiring a range of controls and measures to minimise the impacts of the project.

On balance, the Department considers that the Stratford Pumped Hydro and Solar project benefits to energy security and reliability outweigh its costs, and the project is in the public interest and approvable, subject to strict conditions.

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1 Introduction

Gloucester Coal Pty Ltd, a wholly owned subsidiary of Yancoal Australia Limited (the Proponent) is seeking approval to develop the Stratford Pumped Hydro and Solar (the project), a 300 megawatt (MW) pumped hydro power station with 12 hours of energy storage and a 320 MW solar farm. The project is near Gloucester, around 98 kilometres (km) north of Newcastle, in the Mid-Coast Council local government area (LGA) (see Figure 1).

The project is critical State significant infrastructure (CSSI) as it would significantly contribute to the State's *Electricity Infrastructure Investment Act 2020* target to deliver 28 gigawatt hours (GWh) of new long duration storage in the grid by 2034.

The project shares land with the existing Stratford Mining Complex (SMC). SMC was formerly used for open-cut coal mining and Stratford Coal completed coal extraction in August 2024 and has commenced the mine closure phase. The project would use and/or upgrade infrastructure associated with the SMC as required. Rehabilitation and closure obligations related to the SMC could proceed in parallel and are not dependent on the project.

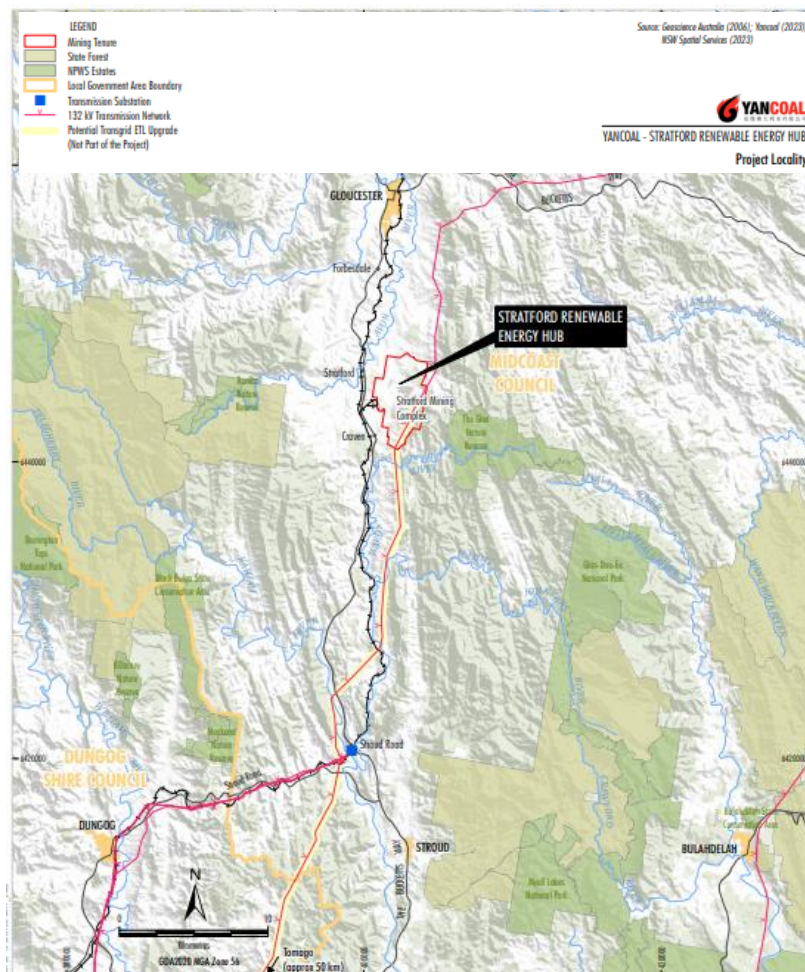


Figure 1 | Regional context map

2 Project

2.1 Project overview

The project involves:

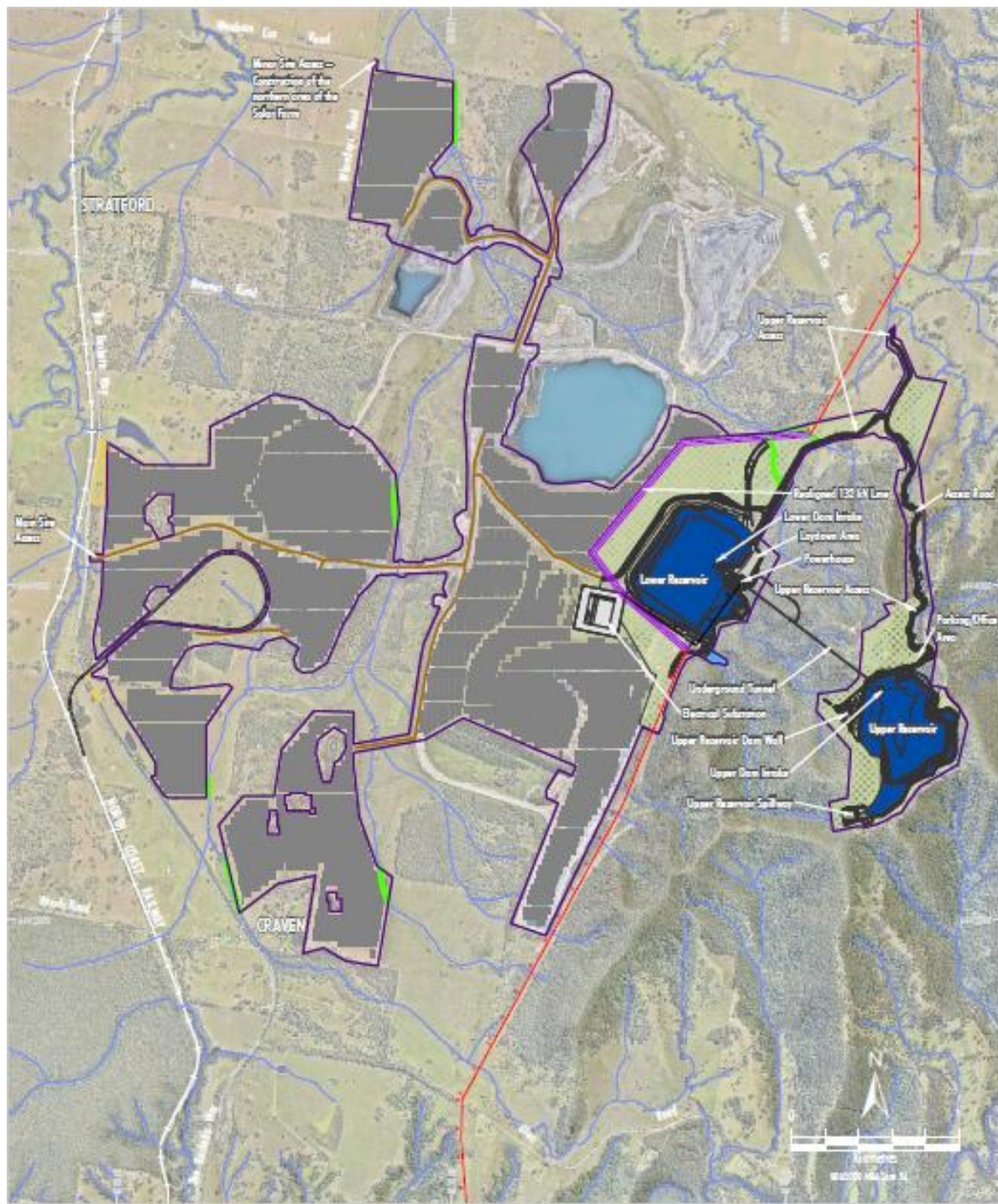
- a 300 MW / 3,600 MWh pumped hydro energy storage system;
- a 320 MW solar farm with electricity generation going to the pumped hydro energy storage system or grid; and
- ancillary infrastructure associated with the construction and operation of the project.

The key parts of the project are listed in **Table 1**, shown in **Figure 2**, and described in the Environmental Impact Statement (EIS) (see **Appendix A**), Submissions Report (see **Appendix C**) and additional information provided during the Department's assessment of the project (**Appendix D**).

Table 1 | Key aspects of the project

Aspect	Description
Project summary	• Construction and operation of a pumped hydro storage project with a capacity of up to 300 MW / 3,600 MW-hour (MWh), including: – a new upper reservoir, connecting tunnels and an underground powerhouse and associated infrastructure; – augmenting the existing Stratford East Dam to serve as the lower reservoir; • Construction and operation of a 320 MW solar farm • An on-site substation to connect the project to the transmission network • Realignment of the existing Transgrid 132 kV transmission line that currently traverses the Stratford East Dam to the west of the lower reservoir
Ancillary infrastructure	• Upgrading existing access tracks and construction of new access tracks • Use of existing SMC infrastructure (e.g. access roads, site offices, communications infrastructure) • New permanent carparks and site offices at the upper reservoir • Water management infrastructure.
Disturbance area	• 870 ha (468 ha is on land previously disturbed by the SMC)
Off-site road works	• No public road upgrades required

Aspect	Description
Construction	• Around 4 years, with a 4 month peak • Hours would generally be Monday to Saturday 7am to 6 pm and 24 hours / 7 days proposed for tunnelling activities
Operation	• Pumped hydro – ongoing, 24 hours / 7 days • Solar farm – replacement works estimated every 20 – 30 years • The project may involve infrastructure upgrades that could extend its operation
Access route	• Heavy vehicles requiring escort: Port of Newcastle via the M1 (Pacific Highway), The Bucketts Way and the existing designated site access for the SMC • Vehicles accessing the northern area of the solar farm and the upper reservoir would access the site from Wenham Cox Road via a newly constructed site access point
Decommissioning and rehabilitation	At the end of the project life: • dewatering of the upper reservoir and removal of the upper reservoir dam wall • removal of powerhouse equipment and filling of the powerhouse silo, waterway tunnel and vertical shaft • above ground infrastructure associated with the solar farm • removal and revegetation of hardstand areas
Employment	• Up to 350 construction jobs and 10 operational jobs
Capital Investment Value	• \$1.8 billion
VPA	• Approximately \$18.2 million (adjusted to CPI) split over the operational life of the project



- LEGEND**
- Existing 132 kV Electricity Transmission Line
 - 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
 - Redefined 132kV Transmission Line
 - Location of Screening Vegetation

Source: NSW Spatial Services (2022); Yancoal (2022)

YANCOAL
 YANCOAL - STRATFORD RENEWABLE ENERGY HUB
 Indicative Operational General
 Arrangement

Figure 2 | Site layout

2.2 Related development

Stratford Coal Mine

The project is located on land owned by Yancoal. The SMC (operated by Stratford Coal) began operating in 1995 and comprises three open-cut pits, a coal handling and preparation plant, rail transport facilities and a water management system with four major water storages on site. It is subject to a separate development consent granted by the Planning Assessment Commission under delegation from the then Minister for Planning (SSD 4966). As discussed in Section 1, Stratford Coal has completed coal extraction and has commenced the mine closure phase.

Stratford Coal is responsible for any changes required to the existing approvals, licences and management plans for the SMC where rehabilitation objectives would need to be amended to facilitate the construction of the project.

The SMC, including the majority of the project footprint, is subject to a number of existing approvals, including:

- the Stratford Extension Project approval (SSD-4966) granted in 2015 and modified in 2020 under the *Environmental Planning and Assessment Act 1979* (EP&A Act);
- a Rehabilitation Management Plan (RMP);
- mining lease ML1360, ML1409, ML1447, ML1521, ML1528, ML1538, ML1577, ML1733 and ML1787; and
- an Environment Protection Licence (EPL) No. 5161.

Any interactions with these existing approvals have been discussed as required in Sections 6.4 and 6.5.

Transmission network upgrades

An initial connection assessment by the Proponent found that the existing single circuit 132 kilovolt (kV) Transgrid transmission line can currently accommodate approximately 131 megawatts (MW) (~44% of the pumped hydro scheme's potential capacity). For the full capacity of the project to be realised, the existing 132 kV line from the project to the Stroud Road substation would need to be upgraded to a double-circuit line, and further potential upgrades may be required between the Stroud Road substation and Tomago. These upgrades would be subject to a separate approvals process.

The Proponent undertook a strategic assessment of the potential impacts associated with constructing and operating the various transmission line options in its EIS, concluding that the likely environmental impacts would not be significant, as discussed in Section 6.5.

3 Strategic context

3.1 Project area and surrounds

The project is located within the Mid-Coast LGA on land associated with the existing SMC and is regulated under the *Gloucester Local Environment Plan 2010* (Gloucester LEP). Mining operations at the SMC were completed in 2024, and Stratford Coal has commenced the mine closure phase.

Land use is primarily associated with historical open-cut mining operations, including mining infrastructure (such as the coal loader and stockpile areas) and previously disturbed and rehabilitated lands. Portions of the project site were also cleared for agricultural use (i.e., grazing). Intact remnant vegetation is generally located along ridgelines, watercourses, and in isolated patches within the cleared landscape. The proposed upper reservoir is situated on a vegetated ridgeline to the east of the SMC. Some areas of remnant vegetation also occur within existing biodiversity offset areas established under the development consent for the SMC, which the project would avoid.

The nearest regional population centre to the project is Gloucester (approximately 3,100 people), with the smaller villages of Craven (approximately 100 people) and Stratford (approximately 160 people) located within 2 km of the project area. Land tenure in the region is predominantly freehold, with Yancoal owning several residential properties near the project site. Dwellings are mainly concentrated around the villages of Craven and Stratford.

Most of the project area is zoned RU1 Primary Production and E5 Heavy Industrial. The surrounding area is predominantly zoned RU1 Primary Production, with a small area of C3 Environmental Management to the west and south, and areas zoned RU5 Village and RE1 Public Recreation in Stratford.

Much of the landscape surrounding the project footprint has been historically cleared and is highly fragmented. Key landscape features in the general vicinity of the project include The Glen Nature Reserve (approximately 1 km to the south-east) and Barrington Tops National Park (approximately 7 km north-west).

There are no State significant renewable energy projects within 50 km of the site, with the closest project being Bowmans Creek Wind Farm, approximately 80 km to the west.

3.2 Renewable energy context

The NSW energy system and broader National Electricity Market (NEM) is undergoing a complex and accelerating transition period with 15,000 MW of coal-fired generators set to retire by 2040. As NSW undergoes a rebuild of the energy system, there is an increasing need for storage, including pumped hydro, to firm renewable energy sources. The Australian Energy Market Operator's (AEMO) 2026

Integrated System Plan (ISP) identifies that pumped hydro storage is required to smooth out the peaks and troughs in renewable energy generation, helping to maintain grid stability and balance out changes in supply and demand.

Accordingly, the project aligns with several Commonwealth and State policies, including *Australia's Long Term Emissions Reduction Plan* and the NSW Net Zero Plan Stage 1: 2020 – 2030 and associated Implementation Update. These policies identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability. The relevant strategies, plans and policies have been considered below in Table 2.

Table 2 | Energy context

Strategy, plan or policy	Comments
<i>Australia's Long Term Emissions Reduction Plan (2021) and Nationally Determined Contribution (2025)</i>	Sets a pathway to net zero emissions by 2050 and affirms Australia's commitment to meeting its revised 2030 target (43% below 2005 levels) and 2035 targets (62-70% below 2005 levels).
<i>Climate Change (Net Zero Future) Act 2023</i>	Legislates a whole-of-government climate action to deliver net zero by 2050.
<i>Australian Energy Market Operator's 2026 Integrated System Plan (ISP)</i>	Notes that: • without coal, investment is urgently needed to meet significantly increased electricity demand requiring a six-fold increase in large-scale variable renewable energy generation; and • pumped hydro would firm renewables through longer dark and still conditions, especially during winter, and also help manage planned network outages as infrastructure is connected.

Strategy, plan or policy	Comments
NSW: <i>Climate Change Policy Framework (2016), Transmission Infrastructure Strategy (2018), Electricity Strategy (2019), Electricity Infrastructure Roadmap (2020), Net Zero Plan Stage 1: 2020 – 2030 (2020) and Implementation update (2022); Hunter Regional Plan 2041; Practical guide: Post mining land use, 2023.</i>	Relevant aspects of these policy documents include: • aim to achieve net zero emissions in NSW by 2050 and reduce emissions by 70% below 2005 levels by 2035; • note that all coal fired power plants in NSW are scheduled for closure within the next 20 years; • unlock regional investment and new energy generation infrastructure; • explore alternative and innovative opportunities for post-mining land uses.

3.3 NSW Solar Guideline

The Department released the Large-Scale Solar Energy Guideline (the Guideline) in August 2022 to provide the community, industry, and regulators with guidance on the planning framework for assessing large-scale solar projects and identifying the key planning considerations relevant to solar energy development in NSW.

The Department released an updated solar guideline in November 2024, which does not change the key outcomes of the assessment. The Proponent has considered the potential visual and landscape impacts of the solar component of the project in accordance with the revised guideline, and the Department considers the project is consistent with the principles set out in the revised guideline.

The Guideline recognises that large-scale solar projects could help reduce reliance on fossil fuels, thereby contributing to reductions in air pollution and greenhouse gas emissions, while also supporting regional NSW through job creation and investment in communities that may not have similar opportunities in other industries.

4 Statutory context

4.1 Critical State Significant Infrastructure

The project is critical State significant infrastructure (CSSI) under section 5.13 of the EP&A Act because it is listed as CSSI under section 41 of Schedule 5 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Consequently, the Minister for Planning and Public Spaces (the Minister) is the approval authority. Under section 2.15 of the Planning Systems SEPP, the project may be carried out without development consent under Part 4 of the EP&A Act.

4.2 Administrative and procedural requirements

Under the EP&A Act and the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), there are several administrative and procedural requirements that must be met before the Minister may determine the application, including the Proponent applying to the Minister for approval, preparing an EIS and responding to submissions, and the Department exhibiting the EIS and making key documents available on the NSW Planning Portal. The Department is satisfied that all requirements have been met and that the Minister may now determine the application.

4.3 Application of the Biodiversity Conservation Act 2016

4.3.1 Biodiversity Development Assessment Report

The EIS was accompanied by a biodiversity development assessment report (BDAR) in accordance with section 7.9 of the *Biodiversity Conservation Act 2016* (BC Act). The Minister must consider the likely impact of the project on biodiversity values as assessed under the BDAR in accordance with section 7.14 of the BC Act.

The Department has considered the findings of the BDAR (including revisions) and the advice from the NSW Department of Climate Change, Energy, the Environment and Water's Conservation Programs, Heritage & Regulation Branch (CPHR), in its assessment (see [Section 6.3](#)).

4.3.2 Concurrence

Concurrence from the NSW Minister for the Environment is required in accordance with section 7.14 of the BC Act for State significant projects where the relevant authority is determining an application with a condition other than to retire the number and class of biodiversity offset credits detailed in the final BDAR.

The Department has recommended conditions that require the retirement of the number and class of biodiversity offset credits detailed in the final BDAR, while allowing the Proponent to reduce the total biodiversity credit liability post-approval. It is intended that this may be achieved through the following:

- further avoidance of impacts to biodiversity values as a result of detailed design works and micro-siting ancillary infrastructure; and
- undertaking additional ecological surveys for species that were assumed present.

This approach to conditions is intended to provide an incentive for the Proponent to reduce biodiversity impacts, reflecting the avoid, minimise and offset hierarchy set out in the BC Act.

This approach to conditions will require concurrence from the NSW Minister for the Environment should the Minister for Planning and Public Spaces decide to grant development approval with this approach to conditions.

4.4 Environmental planning instruments

Although environmental planning instruments do not apply to CSSI projects under section 5.22 of the EP&A Act, the Department has assessed the project against the provisions of several instruments and concluded that the land is suitable for the project, and that the project is not a potentially hazardous or offensive development under the *State Environmental Planning Policy (Resilience and Hazards) 2021*.

4.5 Long-duration storage

The *Electricity Infrastructure Investment Act 2020* (EII Act) coordinates investment in transmission, generation, storage and firming infrastructure in NSW and gives effect to the *Electricity Infrastructure Roadmap*.

The NSW *Electricity Infrastructure Investment Act 2020* also sets objectives to commission at least 16 GWh of long duration storage by 2030 and a total of 28 GWh by 2034. Pumped hydro is one of several long duration storage technologies under development to achieve these objectives.

4.6 Mandatory matters for consideration

When deciding whether or not to approve the carrying out of the project under section 5.19 of the EP&A Act, the Minister is required to consider the reports, advice and recommendations contained in this report, which includes the EIS, public submissions, agency advice, the Department's whole-of-government assessment, and the recommended conditions of approval. The Department has considered these matters in its assessment, as discussed in **Section 6** of this report.

4.7 Other approvals and authorisations

Under section 5.23 of the EP&A Act, the following approvals are not required for CSSI projects:

- a permit under section 201, 205 or 219 of the Fisheries Management Act 1994;
- various approvals for State Conservation Areas and heritage under the *National Parks and Wildlife Act 1974* and *Heritage Act 1977*;
- a bushfire safety authority under section 100B of the *Rural Fires Act 1997*; and
- various water-related approvals under sections 89 to 91 of the *Water Management Act 2000*.

However, the assessment of these matters has been integrated with the assessment of all other matters under the EP&A Act. The Department has considered all the relevant matters associated with these in its assessment (see Section 6), consulted with the agencies responsible for administering these (see Section 5.4.4), and included conditions in the recommended project approval (see Appendix E) to ensure that the Proponent minimises the biodiversity, heritage, bushfire and water impacts of the project.

Under section 5.24 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any planning approval for the project. These include:

- approvals for works on public roads under the *Roads Act 1993* (Roads Act); and
- an environment protection licence (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act). It is noted that electricity generation is a scheduled activity under Schedule 1 of the POEO Act. Several ancillary activities, such as chemical storage, concrete batching, process water treatment, extractive activities, crushing, grinding and separating, and sewage treatment may also be regulated under an EPL.

The Department has consulted with the relevant government agencies responsible for these integrated approvals in its assessment of the project (see Section 5.4.4), considered their advice in its assessment of the merits of the proposal and included suitable conditions in the recommended conditions of approval to address these matters (see Appendix E).

4.8 Objects of the EP&A Act

The Department has assessed the project against the objects in section 1.3 of the EP&A Act (at the time of exhibition of the EIS), including incorporating ecologically sustainable development principles and promoting the social and economic welfare of the community and a better environment (see Appendix F).

The Department acknowledges that the objects of the EP&A Act were amended by the *Environmental Planning and Assessment Amendment (Planning System Reforms) Act 2025*, which commenced on 15

December 2025. Transitional arrangements apply such that the amended objects do not apply to applications lodged prior to that commencement date. The Department has therefore assessed the proposal under the legislative framework that applied at the time the application was lodged.

4.9 Commonwealth matters

On 11 April 2024, the project was declared (EPBC 2023/09733) to be a controlled action in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to likely significant impacts to listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).

The assessment process under the EP&A Act has been accredited under a bilateral agreement with the Australian Government. Accordingly, the NSW Government has undertaken the assessment on behalf of the Australian Government and has assessed matters of national environmental significance (see **Section 6.3** and **Appendix G**). The Department consulted with the Australian Government Department of Climate Change, Energy, the Environment and Water (AG DCCEEW) in accordance with the bilateral agreement, provided draft copies and incorporated comments from AG DCCEEW into this assessment report and the recommended conditions of approval.

5 Engagement

5.1 Department's engagement

The Department publicly exhibited the EIS from 2 October to 29 October 2024 (28 days) and advertised the exhibition in the Gloucester Advocate the local newspaper, and one national newspaper, The Australian. The Department visited the project site and the surrounding area on 21 to 22 February 2025.

The Department consulted with relevant Councils and government agencies throughout the assessment.

5.2 The Proponent's engagement

The Proponent's engagement with the local community included a dedicated website, phone number and email address, stakeholder briefings, community information sessions, landowner webinars, and face-to-face meetings with nearby landowners.

The Proponent also consulted with the Department, relevant Commonwealth and State government agencies, Mid-Coast Council, Aboriginal stakeholders, the existing SMC and Duralie Coal Mine Community Consultative Committees (CCCs), and potentially impacted neighbours and associated landowners.

5.3 Summary of submissions

During the exhibition of the EIS, the Department received 95 unique public submissions (74 objecting, 4 comments and 17 in support). A summary of the proximity of unique submissions is provided in **Table 3**, and the issues raised in the submissions are summarised in **Section 5.4**. All submissions are publicly available on the NSW Planning Portal (see **Appendix B**).

The Department received feedback from the public following the end of the submissions period. These comments did not raise any additional issues beyond those discussed below and have been considered in the assessment process.

The majority (78%) of the public submissions received during the public exhibition objected to the project. However, as shown in **Table 3**, most submissions (64%) came from people living greater than 50 km from the project.

Table 3 | Summary of submitter distances

Submitter	Objection	Support	Comment	Total
<5 km	2	2	1	5
5-15 km	11	3	2	16
15-50 km	3	9	1	13
>50 km	41	3	0	44
Other state	17	0	0	17
TOTAL	74	17	4	95

5.4 Summary of public submissions

5.4.1 Submissions in objection

Key matters raised in submissions are categorised in Figure 3.

Submissions objecting to the project primarily raised concerns about the benefits of renewable solar and pumped hydro, the consideration of alternative energy technologies such as nuclear and batteries, biodiversity impacts (including the clearing for the upper reservoir, impacts to threatened species and habitat and loss of native vegetation), loss of agricultural land (including food security impacts and loss of grazing land), impacts to water quality and traffic and transport impacts. Other issues raised in submissions included the recycling of project components, impacts to Aboriginal cultural heritage values, landscape and visual amenity impacts and the interaction with the rehabilitation obligations of the SMC.

5.4.2 Submissions in support and comments

Submissions in support raised the social and economic benefits of the project and the beneficial reuse of mining land for renewable energy projects. Submissions commenting on the project generally emphasised the same concerns as the submissions objecting to the project.

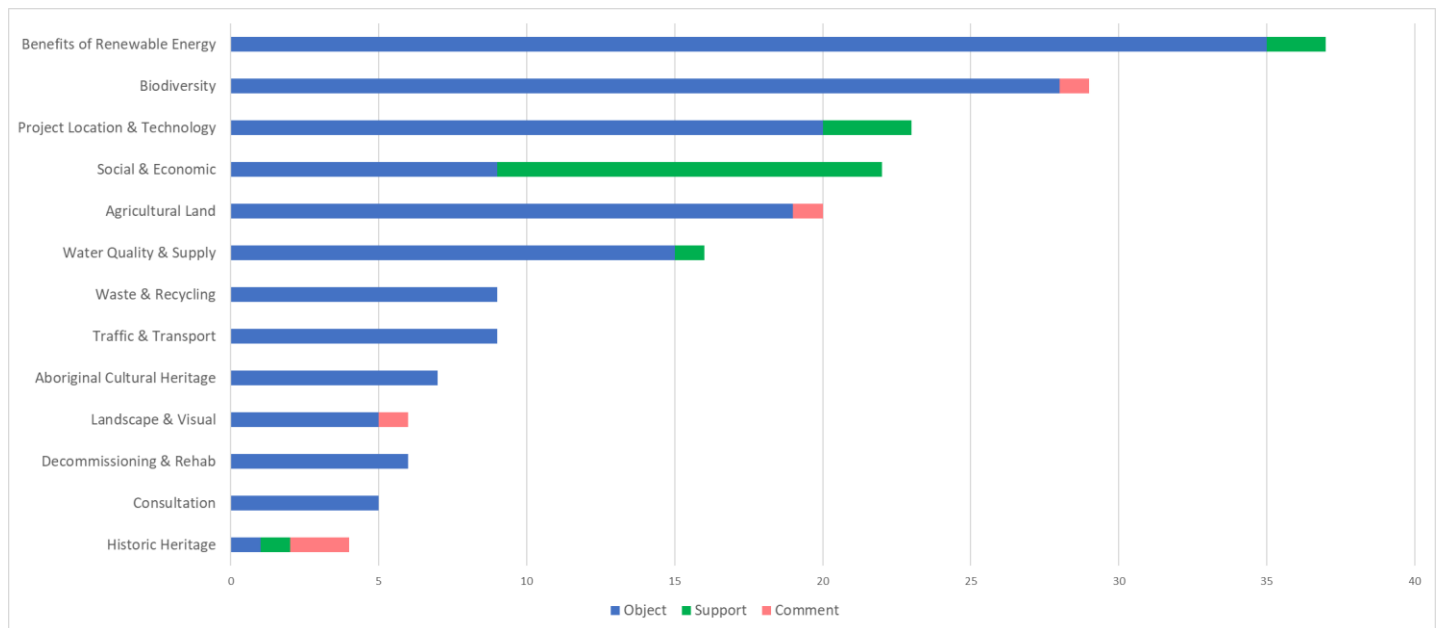


Figure 3 | Key matters raised in public submissions

5.4.3 Special interest groups and organisations

The seven submissions on the project from special interest groups are summarised in Table 4 below.

Table 4 | Summary of matters raised in special interest groups and organisation submissions

Position	Groups	Key Issues
Object (6)	Advance Gloucester Inc., Gloucester Knitting Nannas, CWO REZist Inc., Save Our Surroundings Murrumbidgee, Save Our Surroundings Riverina and SOS Moulamein	- Questioning the benefits of renewable energy and the consideration of alternative technologies such as nuclear and batteries. - Traffic impacts to The Bucketts Way. - Lack of community engagement. - Loss of agricultural land.
Comment (1)	Gloucester District Historical Society	Impacts to the character of Craven village, including the Union Church, Craven Schoolmaster's residence and The Glen – Craven Logging Railway (a local heritage item).

5.4.4 Summary of agency advice

The Department received advice from 16 government agencies. A summary of the agency advice is provided in

Table 5. A link to the full copy of the advice is provided in **Appendix C**.

Table 5 | Summary of government agency advice

Agency	Advice summary
NSW DCCEEW CPHR (formerly Biodiversity and Conservation Sciences, BCS)	• Following review of the EIS: – expressed concerns about impacts to Serious and Irreversible Impact (SII) entities; and – requested further information and a revision of the BDAR, providing recommendations on survey methodology, further targeted surveys, and further avoidance, impact minimisation and mitigation measures; • Following review of the submissions report: – requested the BDAR to be updated to reflect impacts to potential SII species, risk of SII to threatened species and inclusion of mitigation measures to minimise impacts; and – requested consideration of additional threatened species in a revised BDAR. • Following review of the revised BDAR, CPHR confirmed that impacts to threatened species have been adequately assessed, and no further issues were identified.
Dams Safety NSW	• Following review of the EIS: – indicated the upper and lower reservoirs would likely be classified as declared dams under the <i>Dams Safety Act 2015</i>. • Dams Safety NSW offered no further comment on the submissions and amendment reports.
Department of Primary Industries and Regional Development (DPIRD) – Agriculture	• Following review of the EIS: – advised that mitigation measures in the EIS were generally appropriate and provided additional recommendations to facilitate grazing around solar infrastructure and return of the land to agricultural use post-rehabilitation and decommissioning of the project; and – advised that while agrisolar is not currently proposed, if it is undertaken, grazing management and biosecurity management plans should be prepared. • Following review of the submissions report: – provided recommendations for onsite grazing, biosecurity and decommissioning to be considered in conditions of approval.

Agency	Advice summary
DPIRD – Fisheries	• Following review of the EIS: – recommended the proponent review whether proposed riparian buffers and revegetation commitments meet DPIRD policy and guidance. • Following review of the submissions report: – confirmed it was satisfied the revegetation works adjacent to Avondale Creek would meet the requirements; – provided advice regarding the management of aquatic species impacted by the construction of the upper reservoir; and – advised that the Terrestrial Crayfish (<i>Eustacus maccai</i>) would be imminently listed as Endangered under the NSW <i>Fisheries Management Act 1994</i> and the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> and recommended measures for consideration in conditions of approval.
DPIRD – NSW Resources and Resources Regulator	• Following review of the EIS: – requested further information regarding the transfer of water from the final mine void to the lower reservoir and the stability of overburden emplacement areas for the operation of the solar farm. • Following review of the submissions report: – requested consultation if rehabilitation plans change, and the existing rail loop is retained.
NSW EPA	• Following review of the EIS: – requested further information on potential water pollution impacts and management, wastewater management, other sources of wastewater, erosion and sediment control, discharge from sediment basins, proposed monitoring program, and potential noise impacts at receiver 23; – recommended conditions of approval regarding potential impacts to groundwater and management. • Following review of submissions report: – requested the Proponent to address hydrogeology and groundwater raised in the EIS advice; – requested the Proponent to address the potential groundwater impacts from the EIS advice; – provided conditions to address noise impacts to receiver 23; and – identified the project will require a new EPL.

Agency	Advice summary
	Following review of additional information provided by the Proponent, EPA advised any residual issues had been addressed and impacts could be managed via a Water Management Plan.
Heritage NSW	- Following review of the EIS - advised that further surveys in relatively undisturbed areas at the northern and southern portions of the site are required, and requested additional information on management measures for heritage items and consultation undertaken, including consideration of feedback from Registered Aboriginal Parties (RAPs). - Following review of the submissions report: - requested additional information related to photographic recording of CTS-1, confirmation disturbance areas, survey coverage, and consultation with Registered Aboriginal Parties (RAPs). - Following further consultation with the Department, Heritage NSW were satisfied that additional surveys could be conducted following an approval of the project, with results for previously unsurveyed areas detailed in an Addendum Aboriginal Cultural Heritage Assessment Report (ACHAR).
NSW National Parks and Wildlife (NPWS)	- Following review of the EIS, NPWS: - requested further consideration and assessment of impacts to The Glen Nature Reserve, including noise and vibration impacts, habitat fragmentation, light pollution, reservoir water quality and bushfire management. - Following review of the submissions report: - requested further assessment to quantify and determine impacts to the Glen Nature Reserve regarding noise and vibration and light pollution. - Following review of additional information provided by the Proponent, NPWS offered no further comment.

Agency	Advice summary
DCCEE Water Group	• Following review of the EIS: – requested more detail on water take and demonstration of the feasibility of using the SMC Water Access Licence (WAL). – requested further information on impacts and activities on waterfront land, groundwater quality impacts. – provided recommendations regarding securing water entitlements and water access licences and the preparation of a Groundwater Management Plan. – Noted that revisions to the assessment of groundwater impacts were needed to account for seepage and to consult with Mid-Coast Council to ensure potable water requirements can be met. • Following review of the submissions report: – acknowledged the Proponent has adequately addressed its previous recommendations; – further recommendations were made regarding groundwater inflow to the pit lake and water licensing, potable water supply, and works on waterfront land and its ongoing management. • Following further consultation with the Department, DCCEE were satisfied that any residual impacts would be appropriately managed through the implementation of a Water Management Plan.
Subsidence Advisory NSW	• Following review of the EIS: – noted the project is not within a declared Mine Subsidence District and approval is not required under the <i>Coal Mine Subsidence Compensation Act (2017)</i>. • Subsidence Advisory NSW offered no further comment on the submissions and amendment reports.
Transport for NSW (TfNSW)	• Following review of the EIS: – Requested additional information relating to the assessment of high-risk over-size over-dimension (OSOM) vehicle movements. – Requested revisions to the Traffic Impact Assessment (TIA) and EIS to include a high-risk OSOM route assessment. • Following review of the submissions report: – Provided recommendations for details to be included in a Traffic Management Plan.

The following agencies and utility providers raised no concerns or provided no comment:

- Crown Lands;
- Fire and Rescue NSW;
- NSW Rural Fire Service;
- Transgrid; and
- WaterNSW.

5.4.5 Summary of Council submissions

The Department received a submission from Mid-Coast Council. The Department also sought advice from Port Stephens Council but did not receive a response. A full copy of Mid-Coast Council's submission is available in **Appendix B**.

Summary of issues raised by Mid-Coast Council:

- raised concerns relating to visual amenity and scenic quality impacts along The Bucketts Way and biodiversity impacts;
- comments relating to payment of section 7.12 Development contributions, mitigation of landscape and visual impact, social and economic impact and biodiversity impact; and
- provided specific terms for a Voluntary Planning Agreement (VPA) as well as a request for additional monetary contributions to offset economic impact of the closure of the SMC.

5.5 Response to submissions

Following the public exhibition period, the Department asked the Proponent to respond to the issues raised in submissions and the advice received from government agencies.

The Proponent provided a submissions report to the Department on 2 May 2025 (see **Appendix C**).

The Department published the submissions report on the NSW Planning Portal and referred the submissions report to relevant government agencies and councils for comment. The Department continued to consult with government agencies and Council throughout the assessment process and requested additional information from the Proponent to address residual comments.

The Proponent provided a range of additional information throughout the Department's assessment, with the latest information provided in March 2026.

6 Assessment

6.1 Overview

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues for the project, including the energy transition, biodiversity, spoil and water (see Sections 6.2 to 6.4). The Department has also considered the full range of other potential impacts associated with the project and its assessment of these matters in Section 6.5.

6.2 Energy rebuild

The project aligns with Commonwealth and State policies and legislation, which identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability.

The project would support the State's continued shift away from power generation derived from fossil fuels, which is largely dispatchable (able to quickly ramp up or down depending on electricity demands), to renewable energy generation such as wind and solar, which is inherently variable.

The project aligns with the objectives of the EII Act to commission at least 28 GWh of long duration storage by 2034. Shallow and medium storage will support intra-day firming which allows renewable energy to be absorbed and released during evening peaks. Pumped hydro is one of several long-duration storage technologies under development to achieve these objectives.

With a storage capacity of up to 12 hours, the project would contribute towards the AEMO 2026 ISP forecasted demand for 33 gigawatts (GW) of shallow and medium energy storage capacity in the NEM by 2034-35, and 35 GW by 2049-50. The ISP highlights the need for different storage technologies and durations to smooth out peaks and troughs in renewable energy generation and electricity supply.

Pumped hydro provides 'firming capacity', contributing to dispatchable energy availability during peak demand or when renewable production is low. Importantly, the project would contribute to energy security and reliability by providing vital long-duration storage to help meet energy demands.

NSW's mine rehabilitation framework has recently been revised to promote better opportunities beyond 'default' post-mining land use, recognising that traditional outcomes such as low-intensity agriculture or revegetation often deliver limited economic benefit compared to mining.

The Department considers that the project is an appropriate post-mining land use and presents a significant opportunity for mining-reliant communities to support economic diversification and future

productivity. The development of appropriate renewable energy projects to enable NSW's ongoing energy transition has been identified as feasible and practicable post-mining land use.

6.3 Biodiversity

Objectors raised concerns about biodiversity impacts linked with clearing for the upper reservoir, loss of native vegetation and threatened species habitat, and connectivity to the adjacent Nature Reserve.

Over half the project area is on previously disturbed mining land, with the balance comprising cleared agricultural land. Larger patches of remnant vegetation are located in the upper reservoir footprint.

6.3.1 Biodiversity assessment process

The Proponent provided a BDAR as part of the EIS in accordance with the BC Act and Biodiversity Assessment Method (BAM), which was later revised to address CPHR's concerns regarding the mapping of species polygons, threatened species survey effort, and the assessment of SAIL.

The Department worked closely with CPHR and also sought advice on SAIL from the Independent Advisory Panel on Energy Transition (see **Appendix H**).

6.3.2 Avoidance and mitigation

The Proponent has designed the project to avoid and minimise potential biodiversity impacts by:

- locating over 80% of the disturbance footprint in previously disturbed mining areas or mapped exotic vegetation;
- implementing buffers from riparian corridors within the solar farm footprint as per the *Controlled activities – Guidelines for riparian corridors on waterfront land*; and
- eliminating the need for off-site discharges from the upper reservoir.

Despite the strategic selection of the site, the Department notes that impacts to native vegetation within the upper reservoir footprint would occur. Although there are no feasible alternatives to the location of the upper reservoir, opportunities to minimise clearing by optimising the reservoir layout and construction footprint would be available at the detailed design stage.

The Proponent has conservatively assumed presence for a number of species in inaccessible areas of the upper reservoir footprint (see **Section 6.3.4**). The Proponent has committed to conducting pre-clearance surveys for threatened species in the previously inaccessible areas. The outcome of these surveys would determine the final offset liability for the project.

6.3.3 Native vegetation impacts

The 870 ha disturbance footprint includes around 145 ha of native vegetation, of which 132.15 ha requires an offset and around 3% of the total disturbance footprint is a Threatened Ecological Community (TEC) listed under the BC Act and/or EPBC Act, including:

- 6.14 ha of Lowland Rainforest listed as CEEC under the BC Act and 6.02 ha listed as CEEC under the EPBC Act; and
- 20.6 ha of Subtropical Coastal Floodplain Forest listed as endangered under the BC Act and 19.53 ha listed as endangered under the EPBC Act.

The Proponent has committed to further minimising TEC impacts where feasible during detailed design and would be required to offset residual biodiversity impacts in accordance with the *NSW Biodiversity Offset Scheme* (BOS), with offsets to be retired prior to impacts occurring.

Table 6 summarises the estimated vegetation impacts and associated ecosystem credit liability under the BOS. The Department and CPHR confirm that all communities, including those listed under the EPBC Act, have been correctly identified and assessed.

Table 6 | Ecosystem credit requirements

Plant Community Type	Condition	Conservation Status		Impact Area (ha)	Credit Liability
		BC Act	EPBC Act		
PCT 3086 - Lower North Hinterland Riparian Dry Rainforest	High	EEC	CEEC	2.15	88
	Moderate	-	-	3.99	141
PCT 3170 - Northern Hinterland White Mahogany Moist Grassy Forest	Moderate	-	-	2.02	49
PCT 3241 - Lower North White Mahogany-Spotted Gum Moist Forest	Moderate	-	-	9.69	225
	Low	-	-	2.72	29
PCT 3244 - Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	High	-	-	13.91	390
	Moderate	-	-	32.51	869
	Low	-	-	2.73	30

Plant Community Type	Condition	Conservation Status		Impact Area (ha)	Credit Liability
		BC Act	EPBC Act		
PCT 3251 - Northern Gorges Diverse Grassy Forest	High	-	-	5.59	174
	Moderate	-	-	17.49	304
	Low	-	-	2.25	29
	Planted	-	-	0.46	6
PCT 3252 - Northern Hinterland Grey Gum-Mahogany Grassy Forest	Moderate	-	-	3.85	81
PCT 3254 - Northern Hinterland Tallowwood-Forest Oak Grassy Forest	Moderate	-	-	0.75	15
PCT 3329 - Northern Hinterland Valleys Red Gum Grassy Forest	High	-	EEC	0.22	8
	Moderate	-	-	4.62	109
	Low	-	-	2.13	21
PCT 3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest	Moderate	-	-	4.47	110
PCT 4042 - Lower North Riverflat Eucalypt-Paperbark Forest	Moderate	EEC	EEC	10.22	396
	Low	-	-	9.56	147
	Planted	-	-	0.82	9
Total				132.15	3,230

6.3.4 Threatened flora and fauna

Targeted surveys undertaken for 24 candidate threatened flora species identified two threatened species within the project area:

- Craven Grey Box listed as Endangered under the BC Act and the EPBC Act; and
- Scrub Turpentine listed as Critically Endangered under the BC Act and EPBC Act.

An additional three threatened flora species were assumed to be present due to the presence of suitable habitat:

- Trailing Woodruff listed as Vulnerable under the BC Act and the EPBC Act;

- Rainforest Cassia listed as Endangered under the BC Act; and
- Native Guava listed as Critically Endangered under the BC Act and EPBC Act.

Scrub Turpentine and Native Guava are also entities at risk of SAI, as discussed further in Section 6.3.6. The project would result in the removal of up to 224 individual Scrub Turpentine stems. While Native Guava was not recorded onsite, the species has been assumed present, resulting in a calculated impact equivalent to removing 2.08 ha of potential habitat for the species.

Species credits are required for 15 fauna species listed under the BC Act, six of these species are also listed under the EPBC Act.

Of these 15 species, seven were found during field surveys. The remaining species were identified as having suitable habitat within the development footprint that would be impacted by the project.

Six fauna species listed as entities at risk of SAI were initially identified as occurring or potentially occurring on the site, namely Large-eared Pied Bat, Little Bent-winged Bat, Large Bent-winged Bat, Eastern Cave Bat, Stuttering Frog and Sooty Owl. CPHR also raised concerns regarding potential impacts to the Eastern Cave Bat. Of these six species, the Sooty Owl was observed during field surveys. Suitable foraging habitat was also observed for the Large-eared Pied Bat and Eastern Cave Bat. The Little Bent-winged Bat, Large Bent-winged Bat and Stuttering Frog were ultimately determined not to be present at the project site. The likelihood of occurrence and the impacts to entities at risk of SAI are discussed further in Section 6.3.6.

Species Credit Species

There would be 20 species credit species directly impacted by construction. These are threatened species that require dedicated offsets because they cannot be addressed through general ecosystem offsets. Survey coverage within parts of the proposed upper reservoir footprint was constrained by significant wet weather and dense vegetation on steep terrain, requiring the assumed presence of seven species. Impacts on these species would be offset via the credit offsets detailed in Table 7.

Table 7 | Species credit requirements

Species	Conservation significance		SAI Entity	Impact on habitat (ha)	Credit Liability
	BC Act	EPBC Act			
<i>Asperula asthenes</i> (Trailing Woodruff)	V	V	No	20.9*	585
<i>Calyptorhynchus lathami lathami</i> (Glossy Black-cockatoo)	V	V	No	36.5*	1269
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat)	E	E	Yes	118.7	5091

Species	Conservation significance		SAIL Entity	Impact on habitat (ha)	Credit Liability
	BC Act	EPBC Act			
<i>Eucalyptus largeana</i> (Craven Grey Box)	E	E	No	46 individuals	92
<i>Haliaeetus leucogaster</i> (White-bellied Sea Eagle)	V	-	No	1.09	40
<i>Hoplocephalus stephensii</i> (Stephen's Banded Snake)	V	-	No	103.4*	3453
<i>Myotis macropus</i> (Southern Myotis)	V	-	No	78.5	1973
<i>Ninox strenua</i> (Powerful Owl)	V	-	No	64.0	2312
<i>Notamacropus parma</i> (Parma Wallaby)	V	V	No	113.4	3386
<i>Petaurus norfolcensis</i> (Squirrel Glider)	V	-	No	110.3	3596
<i>Phascogale tapoatafa</i> (Brush-tailed Phascogale)	V	-	No	85.0	2791
<i>Phascolarctos cinereus</i> (Koala)	E	E	No	107.0	3452
<i>Planigale maculata</i> (Common Planigale)	V	-	No	130.3*	3667
<i>Potorous tridactylus tridactylus</i> (Long-nosed Potoroo)	V	V	No	90.3	2993
<i>Rhodamnia rubescens</i> (Scrub Turpentine)	CE	CE	Yes	224 stems	672
<i>Rhodomyrtus psidioides</i> (Native Guava)	CE	CE	Yes	2.08*	116
<i>Senna acclinis</i> (Rainforest Cassia)	E	-	No	5.14*	186
<i>Tyto novaehollandiae</i> (Masked Owl)	V	V	No	51.4*	1826
<i>Tyto tenebricosa</i> (Sooty Owl)	V	-	Yes	47.6	2566
<i>Vespadelus trougtoni</i> (Eastern Cave Bat)	V	-	Yes	110.5*	4648
Total					44,714

* assumed present based on the likely presence of suitable habitat in inaccessible areas of the site

6.3.5 Indirect and prescribed impacts

The project may cause indirect impacts to adjacent habitat or vegetation, particularly during construction, including edge effects from the spread of weeds and pathogens, increased pest populations and predation of native fauna.

The project may also result in prescribed impacts not directly related to native vegetation clearing. These include potential impacts to rocky or man-made habitat structures, non-native vegetation providing habitat for threatened species, habitat connectivity, water resources and vehicle strikes.

While there is no policy on how to calculate or provide these impacts or to provide biodiversity offset credits, the BAM allows proponents to propose offsets or other measures where such impacts cannot be avoided, minimised or mitigated.

CPHR initially raised matters for further consideration, including potential effects on bat breeding habitat, habitat connectivity with the Glen Nature Reserve, noise and vibration impacts from blasting, impacts to surface water, and the transfer of contaminated water to the upper reservoir.

In response, the Proponent committed to preparing a Biodiversity Management Plan to manage any indirect and prescribed impacts through standard and well-established measures, including:

- protocols to prevent the introduction or spread of weeds and pathogens;
- rehabilitation of cleared areas and salvage of habitat features;
- timing works to avoid sensitive breeding periods;
- fauna protection measures, including pre-clearance surveys; and
- erosion and sediment controls.

The Department has recommended conditions to this effect (see Section 6.3.9) and is satisfied that, with the implementation of the Biodiversity Management Plan, indirect and prescribed impacts would be minor and can be appropriately managed.

6.3.6 Serious and irreversible impacts

The Proponent assessed potential impacts for eight SAIL entities, namely Scrub Turpentine, Native Guava, Sooty Owl, Stuttering Frog, Large-eared Pied Bat, Little Bent-winged Bat, Large Bent-winged Bat and the Eastern Cave Bat.

The BDAR included an assessment of the potential SAIL risk in accordance with the five assessment provisions set out in section 9.1.2 of BAM 2020, including the *Guidance to assist a decision-maker to determine a serious and irreversible impact, 2019*.

CPHR provided advice on the potential SAIL risk to Scrub Turpentine (*Rhodamnia rubescens*), Stuttering Frog (*Mixophyes balbus*), Sooty Owl (*Tyto tenebricosa*), Eastern-cave bat (*Vespadelus*

troughtoni) and Large-eared Pied bat (*Chalinolobus dwyeri*). Following a review of additional information provided by the Proponent, CPHR concluded the project was not likely to result in a SAIL to the Stuttering Frog, Sooty Owl, Eastern-cave bat or the Large-eared Pied bat. However, CPHR initially raised concerns that the impacts to Scrub Turpentine would be consistent with the principles of SAIL.

The Department sought advice from the Independent Expert Advisory Panel for Energy Transition (IEAPET) (the Panel) in relation to the project’s potential to result in the extinction of the Scrub Turpentine (see **Appendix H**), and also considered advice from CPHR on all SAIL entities.

In response to this advice, the Proponent provided a revised BDAR supported by expert reports from CPHR-accredited species experts to address matters raised by both the Panel and CPHR.

The Department’s consideration of SAIL is outlined in **Table 8** below.

Table 8 | SAIL Assessment

Entity	Principle for SAIL Listing	Key Considerations	Final Conclusion
Scrub Turpentine	• Principle 1 (rapid rate of decline) • Principle 4 (unlikely to respond to management measures)	• Myrtle rust pathogen (fungal disease) has irreversibly spread across the State's population, leading to a rapid decline in population numbers across its range. • Removing up to 224 Scrub Turpentine stems. • Stems on the site are badly affected by myrtle rust and are very unlikely to flower or reproduce to sustain the local population, although CPHR identified that a small proportion of the species impacted by the project may exhibit natural rust resistance. • Notwithstanding, the Panel advised that the project is very unlikely to significantly increase the risk of extinction for the species. Neither avoiding the project's impact nor removing 224 stems would materially affect the species' survival prospects. • The Proponent has committed to providing funding to a recognised species recovery program for Scrub Turpentine, such as those established by Saving Our Species (SOS).	Unlikely to significantly contribute to extinction

Entity	Principle for SAI Listing	Key Considerations	Final Conclusion
		Considering advice from the Panel, CPHR agreed that the project is unlikely to contribute significantly to extinction.	
Native Guava	- Principle 1 (rapid rate of decline) - Principle 4 (unlikely to respond to management measures)	- Myrtle rust pathogen irreversibly spread across the State's population, leading to a rapid decline in population numbers across its range - This species was not recorded during field surveys; however was assumed present based on nearby historical records from The Glen Nature Reserve and the availability of suitable habitat within inaccessible areas of the upper reservoir footprint. - Based on an area of occupancy in NSW of 884 km² and the estimated 20,000 individuals remaining in the wild, the number of individuals within the inaccessible 2.08 ha is estimated to be one stem. - The BDAR concluded that any records of this species in the upper reservoir footprint (if present) are likely to be impacted by rust. - As such, the loss of up to 1 stem would not impact the prospect of species survival.	Unlikely to significantly contribute to extinction
Sooty Owl	Principle 4 (unlikely to respond to management measures)	- The project would directly impact up to 47.6 ha of habitat, including at least one mature breeding pair and up to two immature individuals. The known roost tree and the majority of suitable habitat occur within the upper reservoir footprint. - Based on an area of occupancy in NSW of 25,000 km² and the estimated population of between 4,000 to 10,000 individuals, the impact to this species could represent between 0.04% and 0.1% of the total NSW population. - The Proponent commissioned Dr Stephen Debus (a CPHR-accredited species expert) to	Unlikely to significantly contribute to extinction

Entity	Principle for SAI Listing	Key Considerations	Final Conclusion
		assess the likely impacts and concluded that losing one breeding pair and offspring is highly unlikely to contribute significantly to the risk of extinction • Dr Stephen Debus noted that the Sooty Owl is likely to respond to habitat improvement and supported these proposed minimisation measures: – pre-clearing surveys near known threatened species habitat – avoid relocating hollows during the breeding season; – preserve and relocate the habitat features of hollow-bearing trees; – habitat installations (e.g. artificial hollows); and – monitoring to assess the effectiveness of these measures. • The Proponent has committed to undertaking the above measures. • Considering advice from Dr Stephen Debus, CPHR agreed that the project is unlikely to significantly contribute to extinction.	
Stuttering frog	• Principle 4 (unlikely to respond to management measures)	• The Stuttering Frog was initially conservatively assumed present because 66.62 ha of suitable habitat was within the project footprint • The Proponent commissioned Dr Frank Lemckert (a CPHR-accredited species expert) who determined that there are no suitable breeding streams that would support a permanent population within the project area or make the area important habitat. • While there are records of the species within the project's locality, there are no records of the species within the project footprint • The BDAR was revised to confirm no impact on the species and no added extinction risk.	Unlikely to significantly contribute to extinction

Entity	Principle for SAI Listing	Key Considerations	Final Conclusion
Cave-dwelling microbats (Large-eared Pied Bat, Little Bent-winged Bat, Large Bent-winged Bat and Eastern Cave Bat)	Principle 4 (unlikely to respond to management measures)	- Surveys recorded one threatened microbat species (Large-eared Pied Bat) and noted three other threatened microbat species are known to occur in the project locality (Little Bent-winged Bat, Large Bent-winged Bat and Eastern Cave Bat). - Potential SAI for these species relates to impacts to breeding habitat (i.e. caves in scarps, cliffs and rock overhangs, as well as disused mines). - No suitable breeding roost features occur within 100 m of the development footprint, and no signs of use were observed in any man-made structures - A rocky outcrop approximately 250 m from the development footprint has been identified as potentially suitable breeding habitat for microbats, however, separation distance to the project is too far to impact this feature - As the project would not impact any breeding habitat, it would not contribute significantly to the risk of extinction of these species. - CPHR agreed that the removal of foraging habitat for these species would be unlikely to significantly contribute to extinction.	Unlikely to significantly contribute to extinction

6.3.7 Significance of impacts on Commonwealth listed species and communities

The Proponent identified and addressed all listed threatened species and communities, and listed migratory species included in the Commonwealth Referral Decision (EPBC 2023/09733).

Assessments of significance were undertaken for threatened species and communities identified as likely to be impacted by the project, including two threatened ecological communities, 19 threatened flora species, 22 threatened fauna species and 40 migratory species listed under the EPBC Act.

Assessments of significance concluded that there would likely be a significant impact on two threatened ecological communities (Subtropical Coastal Floodplain Forest and Lowland Rainforest), two threatened flora species (Craven Grey Box and Scrub Turpentine), and three threatened fauna species (Spotted-tailed Quoll, Glossy Black-cockatoo and Koala).

The Proponent has proposed offsetting of EPBC listed species and communities under the NSW Biodiversity Offset Scheme, as outlined in Section 6.3.8.

The Department considered Commonwealth matters in consultation with CPHR and AG DCCEEW, including the Proponent's assessments of significance and the relevant approved conservation advice, recovery plans, and threat abatement plans. A summary of this assessment is provided in Appendix G.

6.3.8 Biodiversity offsets

Under the BC Act, the impacts of the project on native vegetation and species would generate 3,230 ecosystem credits and 44,714 species credits.

Both the Department and CPHR are satisfied that the offset credit requirements have been correctly calculated. The Proponent would offset the residual biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme, which includes the following options:

- acquiring or retiring 'biodiversity credits' within the meaning of the BC Act;
- creating Biodiversity Stewardship Agreements (BSAs) on local land;
- making payments into an offset fund that has been developed by the NSW Government;
- funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the offset scheme.

The Department has recommended conditions requiring the Proponent to retire the required biodiversity offset credits in accordance with the NSW Biodiversity Offsets Policy for Major Projects prior to carrying out any work that could directly or indirectly impact the biodiversity values requiring offset.

The Department notes that with further avoidance measures during detailed design, the number and class of credits required to be offset could be reduced. The credits would be recalculated once the final layout design of the project is known, to confirm the final number and class of biodiversity credits required to be offset. This would also allow the Proponent to reduce the liability for species it has assumed are present. As outlined in Section 4, the concurrence of the Minister for the Environment is required as the credits retired may differ from the number and class of biodiversity credits detailed in the BDAR. The concurrence of the Minister for the Environment is not required to stage the retirement of the credit liability.

The Department has formed the view that the variation of the credit liability following approval is justified as the Proponent would be incentivised to continue avoiding and minimising the project's biodiversity impacts during the detailed final design phase prior to construction.

Subject to the recommended conditions, the Department and CPHR are satisfied that the project could be undertaken in a manner that maintains the biodiversity values of the locality over the medium to long term.

6.3.9 Recommended conditions

The Department has recommended conditions requiring the Proponent to:

- minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees, within the development footprint and protect native vegetation and key fauna habitat outside the approved disturbance area in accordance with limits in the recommended conditions;
- prepare and implement the Biodiversity Management Plan which includes a description of the measures to:
 - implement clearing and operational management protocols;
 - avoid and minimise impacts on potential SAI entities and provide minimisation measures for these entities;
 - minimise the impacts of the development on threatened flora and fauna species within the disturbance footprint;
 - minimise the potential prescribed and indirect impacts on threatened flora and fauna species, migratory species and ‘at risk’ species;
 - rehabilitate and revegetate temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
 - control weeds and feral pests;
 - provide a detailed program to monitor and report on the effectiveness of these measures;
- retire the applicable biodiversity offset credits in accordance with the NSW Offsets Policy prior to carrying out any development that would directly or indirectly impact biodiversity values requiring offset; and
- submit a Revised Offset Obligation report reflecting any additional avoidance achieved during detailed design, thereby providing a clear incentive to further reduce impacts on biodiversity prior to construction or reduce the credit liability for species assumed to be present through surveys.

6.3.10 Conclusion

The Department acknowledges that the project has been designed to avoid and minimise impacts on high-quality vegetation and habitat where practicable. Project infrastructure has largely been sited

on land previously disturbed by historical mining associated with the SMC, mapped exotic vegetation, or cleared agricultural land, with larger remnant vegetation patches mainly confined to the upper reservoir footprint.

While biodiversity impacts associated with the construction of the upper reservoir would occur, the Proponent has adequately demonstrated avoidance of biodiversity values by selecting a site on previously disturbed land and utilising existing infrastructure to the greatest extent possible. Opportunities for further avoidance and minimisation, where practicable, would be addressed through detailed design. In this regard, the Department has recommended a condition that allows the Proponent to submit a Revised Offset Obligation report reflecting any additional avoidance achieved during detailed design, thereby providing a clear incentive to further reduce impacts on biodiversity prior to construction.

The Department has also recommended a condition requiring the preparation and implementation of a Biodiversity Management Plan, which would further minimise impacts on vegetation and fauna during construction and operation.

Overall, informed by advice from CPHR and the Panel, the Department considers that the project's biodiversity impacts are acceptable, subject to the implementation of the recommended conditions, the offsetting of the residual biodiversity impacts, and the application of mitigation measures to manage potential impacts to threatened species.

6.4 Spoil and Water

Excavation of the upper reservoir, underground tunnels, powerhouse and associated infrastructure would generate significant volumes of soil and rock (spoil), requiring a strategy for permanent emplacement and beneficial reuse of excavated material. Material would be excavated via drill and blast.

Initial estimates by the Proponent indicated that around 10 million cubic metres (m³) of spoil (bulked) would require management. The Proponent intends to use as much of the excavated material in construction (e.g. the upper reservoir dam wall) as possible and estimates that up to 8 million m³ would be reused for the project. The balance of the spoil or any material not suitable for reuse in construction would be permanently emplaced in the open pit voids, which are approved for retention following closure of the SMC under the existing consent. The pit voids have an estimated capacity of 20 million m³ for spoil emplacement.

NSW EPA and DCCEE Water Group initially raised concerns about the management of spoil and the impacts on groundwater and surface water resulting from seepage from the upper reservoir and the transfer of water from existing mine voids associated with the SMC to the upper reservoir for use in the pumped hydro scheme.

The Proponent undertook further work, in consultation with NSW EPA and DCCEE Water regarding the potential water quality impacts from seepage losses and the management of spoil. The resulting strategies for spoil emplacement and water management are discussed in Sections 6.4.1 and 6.4.2 respectively.

6.4.1 Spoil management

Temporary spoil emplacement

Material excavated during construction of the project would be stored in designated temporary stockpile areas within the project footprint. Excess material not used during construction of the project would be transferred and emplaced in the SMC mine voids.

The SMC has an existing surface water management system in place, including clean water diversions, sediment traps and runoff capture systems. The Proponent intends to manage runoff from material in temporary stockpile areas using the existing infrastructure of the SMC where possible. Stratford Coal is responsible for any changes required to the existing approvals, licences and management plans for the SMC where they would need to be amended to facilitate the construction of the project.

Where the use of existing water management infrastructure is not feasible or practical, the Proponent has committed to implementing best-practice erosion and sediment controls, to be detailed in a Spoil Management Plan and a Water Management Plan. The overall surface water management approach is discussed further in Section 6.4.2.

Contaminated material management

NSW EPA initially raised concerns regarding the handling and disposal of material unsuitable for permanent emplacement and pollutants from drilling and blasting in the underground tunnels.

The Proponent relied on detailed hydrogeological investigations associated with historical mining activities across the SMC footprint undertaken by Stratford Coal to characterise the physical and geochemical properties of the spoil to be generated from the excavation of the upper reservoir and tunnels.

Based on these historical investigations of the underlying geology, no material unsuitable for permanent emplacement is expected. Notwithstanding, excavated material would be subject to characterisation testing at a minimum of one test per 50,000 tonnes. Any material not suitable for use in construction or deemed unsuitable for permanent emplacement would be transported off site and disposed of at an appropriately licensed facility.

Material that has historically been stored in the mine voids includes overburden and coal seam interburden, comprising non-acid-forming materials, potentially acid-forming (PAF) materials, and coal handling and processing plant reject materials.

The Proponent has committed to managing material containing naturally occurring contaminants (such as PAF material) in line with established management practices at the SMC, including the emplacement of any PAF material below the final mine void water level.

Pollutants from blasting required to construct the tunnelled waterways and powerhouse silo would involve significantly less blast materials than that compared to the SMC. As a result, the likely final concentration of blast products is expected to be significantly lower than that found in material previously emplaced in mine voids. Any potential runoff from stockpiles likely to be impacted by blasting contaminants would be managed and captured using a combination of existing water management infrastructure and erosion and sediment controls.

NSW EPA and the Department consider that any material containing naturally occurring contaminants or blasting contaminants could be appropriately stored onsite, and that any associated runoff from temporary storage could be managed through the implementation of standard erosion and sediment controls and by utilising existing SMC water management infrastructure.

The Department has recommended conditions to this effect. Runoff from the project would be regulated by the NSW EPA in accordance with an Environment Protection Licence (EPL). Stratford Coal is responsible for any changes required to the existing approvals, licences and management plans for the SMC to facilitate the construction of the project.

Permanent spoil emplacement

At the conclusion of mining operations, the SMC is approved to retain open pit voids, which are designated for water storage and disposal of rejects from the SMC's coal handling plant. These voids have ample capacity to store the expected spoil from the construction of the upper reservoir and associated infrastructure.

The existing development consent for the SMC requires the final voids to comply with a range of rehabilitation objectives, including:

- minimising the size and depth of final voids so far as is reasonable and feasible;
- minimising the drainage catchment of final voids so far as is reasonable and feasible;
- minimising high wall instability risk so far as is reasonable and feasible;
- designing the size and depth of final voids having regard to their function as long-term groundwater sinks, to maximise groundwater flows across back-filled pits to the void and to not be a source of saline groundwater for aquifers and streams;

- designing the voids to ensure adequate freeboard to ensure no spillage under any foreseeable conditions; and
- minimising the risk of flood interaction for all flood events up to and including the Probable Maximum Flood (PMF).

The Department is satisfied that there is sufficient capacity in the SMC mine voids to accommodate spoil from construction and that the objectives required under the existing SMC development consent could continue to be met. The ongoing management of the final mine voids is not part of the project and would continue to be regulated by the SMC development consent and Stratford Coal is responsible for any subsequent changes required to make to the existing approvals, licences and management plans.

6.4.2 Water management

Surface water

NSW EPA and DCCEEW Water Group initially raised concerns about impacts on surface water, wastewater management, and erosion and sediment control measures. The Proponent responded by providing additional information on mitigation measures and performance measures relating to surface water management as detailed below. The upper reservoir design was refined post-EIS exhibition to remove the requirement for a low-level outlet for maintenance discharges. This change creates a closed system and as a result, direct interactions between the pumped hydro scheme and the surrounding surface water systems would be limited to construction.

Stratford Coal currently undertakes surface water quality monitoring on and around the existing SMC. To monitor the effectiveness of any erosion and sediment controls, this program is proposed to be expanded upstream and downstream of the project during construction. Reporting requirements for water quality monitoring results would be regulated by NSW EPA under an EPL. The Proponent has also committed to additional performance and mitigation measures, including:

- implementing a clean water diversion system around the lower reservoir;
- minimise the erosion and generation and dispersion of sediment using suitable controls generally in accordance with the *Managing Urban Stormwater: Soils and Construction*;
- no active discharges to surface waters from the upper or lower reservoirs except to the SMC voids (subject to commercial agreement) or where permitted under an EPL; and
- maintaining adequate freeboard to minimise risk of discharge to surface waters.

The Proponent does not propose any discharges to surface water receivers from the pumped hydro project during operation, and the downstream surface water quality would not be significantly impacted. In any case, the Department notes that the Proponent would need to comply with any

conditions required by an EPL and the relevant considerations under the *Protection of the Environment Operations Act 1997* (POEO Act).

The Department has recommended conditions including a Water Management Plan that would detail the water quality monitoring program and performance measures.

With these measures incorporated into a Water Management Plan, the NSW EPA, DCCEE Water Group, and the Department are satisfied that surface water impacts can be appropriately managed.

Water availability and licensing

The total storage volume of the upper reservoir is 8.2 GL with an active storage volume (i.e. volume of water transferred between the upper and lower reservoirs) of approximately 6.95 GL. The Stratford East Dam, which would be used as the lower reservoir, is currently a mine water dam. Existing pipelines connecting the dam to the mine voids have been installed under SMC's current rehabilitation works to enable dewatering and augmentation of the dam in accordance with its closure criteria.

The initial fill of the pumped hydro scheme is proposed to be sourced from water stored in SMC dams and voids, to avoid reliance on natural waterways. The SMC currently holds several water access licences (WALs) allowing for water take from the mine voids. Subject to agreement with the SMC, the Proponent proposes to use the existing water take entitlements from these WALs to fill the pumped hydro scheme and Stratford Coal would need to make any associated changes to the existing approvals, licences and management plans. At the end of 2024, Stratford Coal had approximately 31 GL of water stored across the SMC site which is sufficient to supply the expected operational volume for the project.

After the initial fill of the pumped hydro scheme, there would be limited interaction between the project and the SMC voids, barring ongoing transfers of water to top up the reservoirs if required. The water stored in the mine voids of the previous SMC operations would be utilised for reservoir top-ups.

The SMC currently holds WALs in the Gloucester Basin Groundwater Source totalling over 1,400 megalitres (ML) per year, which would be available for the construction of the project as required.

The Department is satisfied that the project's water use is unlikely to have a significant impact on water supply and demand in the region, and that sufficient entitlements can be acquired for the project.

Groundwater

The Proponent conducted a Groundwater Impact Assessment (GIA) as part of the EIS, and included a peer review by Dr Noel Merrick. NSW EPA and DCCEE Water Group raised concerns regarding seepage losses and groundwater quality impacts from seepage of mine void water from the proposed reservoirs and associated underground infrastructure.

During construction, modelling indicates that drawdown of up to 2 m may extend to approximately 1.1 km from the project while the tunnels and underground infrastructure remain unlined. A maximum groundwater take of 33 ML is predicted in Year 1 and 74 ML in Year 2. No privately owned bores are expected to be impacted by drawdown during project construction. Groundwater inflows would be dewatered and managed as construction water, and pumped into the mine voids for storage.

While some areas within the predicted construction drawdown contour are mapped as potential GDEs, none are identified as high priority GDEs with recognised groundwater dependence and having a high or very high ecological value. The Department notes that any impacts to potential GDEs would largely be limited to construction, with operational drawdown expected to be negligible.

The GIA also modelled potential seepage from the upper and lower reservoirs during operation. Potential seepage pathways include rock fractures and permeable zones in the consolidated rock mass at the base of the reservoirs, as well as through or under the dam walls. While the assessment predicted seepage rates from the upper reservoir ranging from 4 – 176 ML/year, the likely maximum seepage of 51 ML/year represents less than 0.6% of the upper reservoir's total volume. Seepage from the lower reservoir of up to 31 ML/year represents less than 0.3% of the lower reservoir's total volume of 7.1 GL.

Seepage from the lower reservoir is predicted to migrate towards the SMC Main Pit, which would act as a groundwater sink following the closure and rehabilitation of the SMC. The assessment concluded that any seepage from the upper reservoir is likely to be minimal relative to the overall groundwater system, and any seepage reaching the surface via springs would be heavily diluted by surface water flows in the receiving drainage lines.

In response to concerns raised by the EPA and DCCEE Water Group, the Proponent provided further historical baseline monitoring data collected as part of the existing SMC groundwater monitoring program. The Proponent also provided further evaluation of projected seepage losses in consultation with EPA, including modelling across a range of design cases accounting for varying reservoir water levels and hydraulic conductivity scenarios.

The Proponent has committed to mitigation measures to minimise seepage impacts, including:

- grouting and compaction of the reservoirs to minimise seepage;
- concrete lining of tunnelled waterways and underground infrastructure; and
- installing additional groundwater monitoring locations to supplement the existing groundwater and surface water monitoring network.

The Department considers that the available information, including baseline monitoring data from SMC, seepage modelling and the proposed mitigation measures provides a sufficient basis to assess the likely groundwater risks. Importantly, the EPA and DCCEE Water Group were satisfied that groundwater impacts could be appropriately managed with the implementation of a Groundwater

Management Plan (GWMP), and could be appropriately regulated under an environment protection licence issued under the POEO Act 1997.

The GWMP would be prepared in accordance with DCCEE Water's groundwater guidelines for major projects. The plan would include:

- a groundwater monitoring program, which includes trigger action response plans, site specific guideline values, and mitigation measures;
- regular updates to baseline monitoring data;
- details of newly installed groundwater monitoring bores around the upper reservoir (as relevant); and
- details on the monitoring frequency and water quality parameters to be tested.

6.4.3 Recommended conditions

Accordingly, the Department is satisfied that the project's spoil and water impacts can be appropriately managed subject to conditions requiring the Proponent to:

- ensure any infrastructure, access roads and any other land disturbances have appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with *Best Practice Erosion and Sediment Control* (IECA, 2008) and *Managing Urban Stormwater – Soils and Construction Volume 2C Unsealed Roads* (DECC, 2008);
- ensure all waterway crossings are constructed in accordance with the *Water Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018) and the *Policy and Guidelines for Fish Habitat Conservation and Management* (Update 2013) and *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries, 2003);
- meet specific surface water and groundwater performance measures, including the requirement to minimise seepage;
- prepare a Spoil Management Plan that provides an overarching framework for the testing and management of all spoil generated on site; and
- prepare a Water Management Plan including a description of the measures that would be implemented to ensure impacts are appropriately monitored and managed, including a Surface Water Management Sub Plan and a Groundwater Management Sub Plan.

6.4.4 Conclusion

The Department acknowledges that the project has been designed to avoid and minimise impacts on surface and groundwater quality. The use of existing mine voids for material handling and storage

limits the potential for naturally occurring contaminants to impact the surrounding environment, as these would be managed by Stratford Coal's rigorous existing water management system.

Stratford Coal is responsible for any subsequent changes required to their existing approvals, licences and management plans. Overall, the Department considers that the spoil and water impacts of the project are acceptable, subject to the implementation of the recommended conditions.

6.5 Other issues

The Department's consideration of other issues is in Table 9 below.

Table 9 | Assessment of other issues

Findings and conclusions	Recommended conditions
Traffic and Transport	
• Submissions expressed concern about the existing condition and capacity of The Bucketts Way, damage to local roads and cumulative impacts with traffic from nearby quarries. • During peak construction (approximately four months), the project would generate 76 one-way heavy vehicle movements and 780 one-way light vehicle movements per day (i.e. a vehicle arriving and departing constitutes two movements). A maximum of one heavy vehicle requiring escort would access the site on any given day during construction. Heavy vehicles requiring escort would typically occur during daytime hours, while excluding school pick-up and drop-off times, consistent with the current permitting requirements for the SMC. • Traffic generated during operation would be significantly less than during construction, with up to 20 movements per day during peak maintenance periods. • The TIA concluded that the intersections of The Bucketts Way with the SMC access road and with Wenham Cox Road would continue to operate at a good level of service during morning and evening peak periods throughout construction. • With the proposed road maintenance measures and the implementation of a Traffic Management Plan, the Department considers that the project would not result in unacceptable impacts on the capacity, efficiency or safety of the road network. TfNSW and Mid-Coast Council have confirmed they have no concerns, subject to the implementation of the recommended conditions.	• Obtain all relevant approvals for the use of heavy vehicles requiring escort on the public road network prior to these vehicle movements occurring for the project. • Carry out dilapidation surveys and obtain all relevant approvals and undertake any works on local roads required by Council, prior to commencing construction of the project. • Preparation of a Traffic Management Plan in consultation with Mid-Coast Council and TfNSW.

Findings and conclusions

Recommended conditions

Interactions with Mining Rehabilitation

- As discussed in **Section 2.2**, the project includes land formerly used for open-cut coal mining at the SMC, including rehabilitated overburden emplacement areas, backfilled mine voids and former mining infrastructure areas. Some submissions raised concerns that the project would interfere with the SMC's rehabilitation obligations.
 - While mining ceased in August 2024, the development consent (SSD-4966), Rehabilitation Management Plan (RMP) and Environment Protection Licence (EPL 5161) remain in force and continue to regulate safety, stability and rehabilitation across the former mine site, including for areas proposed for the project within the SMC boundary.
 - Rehabilitation of the SMC would remain the responsibility of Stratford Coal, and its obligations to achieve a safe, stable and non-polluting landform would be unchanged by the project. Stratford Coal would need to make any associated changes to the existing approvals, licences and management plans to accommodate the project.
 - Where the Project overlaps the SMC footprint, the final land use would change to reflect the project land use and become the responsibility of Stratford Coal. While there would be interactions between the two projects during the initial fill of the reservoir and potential top-ups, the existing SMC mine voids would remain the responsibility of Stratford Coal.
 - Subject to a commercial agreement, water from the SMC mine voids may be used for the initial fill of the reservoir. Following initial fill, interaction with the mine voids would be minimal and Stratford Coal's obligations would remain unchanged.
 - The project footprint avoids areas designated as Biodiversity Offset Areas but intersects some areas identified by the SMC development consent as Biodiversity Enhancement Areas. Notwithstanding the areas that will form part of the project footprint, Stratford Coal can still achieve the 240 ha required under the SMC development consent within the broader site.
 - Multiple development consents can legally apply to the same land, with consent holders responsible for complying with the conditions, or seeking to modify the consent to align inconsistent obligations. Accordingly, Stratford Coal and the Proponent have confirmed they would modify the SMC development consent as necessary to ensure compliance with rehabilitation objectives.
- No recommended conditions.

Findings and conclusions

- As such, any mine-related rehabilitation and re-vegetation issues would remain the responsibility of Stratford Coal under the existing Mining Leases and associated obligations under the *Mining Act 1992*. Vegetation enhancement would also remain the responsibility of Stratford Coal in accordance with the SMC development consent.
- Consequently, the Department is satisfied that existing regulatory processes would deliver appropriate outcomes, and there is no need to duplicate or transfer these obligations to the project.

Recommended conditions

Land use compatibility

- Submitters raised concerns about potential loss of agricultural land as a result of the development.
- The project site comprises around 468 ha of previously disturbed mining land, with additional areas cleared for agricultural use. Surrounding land is largely agricultural.
- There is no mapped Biophysical Strategic Agricultural Land (BSAL) within the disturbance footprint.
- The project would disturb around 560 ha of agricultural land, comprised of Class 4 (moderate to severe limitations) to Class 6 (very high limitations), with large areas of indeterminate soil class and capability due to historic mining. The upper reservoir comprises Class 4 to Class 8 (nature conservation) land.
- The Proponent has committed to rehabilitating up to 548 ha of disturbed land to agricultural use at the end of the project's life, resulting in a net loss of approximately 12 ha of agricultural land associated with the permanent retention of some project infrastructure, such as the electrical substation.
- The Proponent committed to preparing Rehabilitation and Decommissioning Management Plans detailing infrastructure removal and land rehabilitation.
- The project is appropriate within the land use context and consistent with the *Hunter Regional Plan 2041*, which identifies the SMC as a site with potential for post-mining use to support the transition to renewable energy. The project would not detract from the area's character or result in land use conflict.
- The Department considers the project to be a beneficial land use that aligns with NSW Government post-mining land use policies, which identify pumped hydro facilities as appropriate reuse options and would support economic diversification in the region.
- Stringent rehabilitation and decommissioning performance measures including rehabilitation of disturbance areas and decommissioning of project infrastructure.

Findings and conclusions	Recommended conditions
Subdivision • The Proponent requires the subdivision of new lots to separate the different land uses between the SMC and the project. This would clarify responsibilities between the project, and provide flexibility for the project to be operated independently of the SMC. • The site is zoned RU1 Primary Production and E5 Heavy Industrial under the Gloucester LEP, however these environmental planning instruments do not apply to CSSI projects under section 5.22 of the EP&A Act. Notwithstanding, the Department has considered the provisions of the Gloucester LEP. • The proposed subdivision would create new lots that would not meet the minimum lot size for land use zoned RU1 – Primary Production and therefore prohibited under a strict reading of the Gloucester LEP. Notwithstanding, approval for the project as a whole can be granted despite the subdivision of the application being prohibited by the LEP. • The Department has considered the merits of the proposed subdivision as follows: – Council raised no concerns regarding the subdivision; – it is necessary for the operation of the substation; – it is required for the separation of land uses between the Project and the SMC; – it would not result in any additional dwelling entitlements on the subdivided lots; – the project aligns with the RU1 zone's key objective by supporting land use diversity and primary industry enterprises; and – the Department has fully considered the project's impacts and considers it suitable for approval. • The Department is satisfied that the proposed subdivision would be in the public interest, as they would allow the project to provide net benefits to the National Electricity Market that could be realised in a timely manner. • The Department considers the Proponent should prepare a subdivision plan to enable the required land subdivision within the project area.	• Subdivide the proposed lots in accordance with requirements of the EP&A Act, EP&A Regulation, <i>Conveyancing Act 1919 (NSW)</i> and the NSW Land Registration Services or its successor).

Findings and conclusions

Recommended conditions

Visual Amenity

- Submitters and Council raised concerns about the project's potential visual impacts, including impacts to the broader rural landscape, particularly along The Bucketts Way, and to the Glen Craven Logging Tramline, an item of local heritage significance.
- The Proponent assessed the potential visual impacts in line with the Large-Scale Solar Energy Guideline (the Guideline) and accompanying *Technical Supplement - Landscape and Visual Impact Assessment*.
- Existing views of the site are largely of a post-mining landscape, including mining infrastructure (such as the coal loader and stockpile areas), previously disturbed and rehabilitated lands, cleared agricultural areas with dilapidated farm structures, limited trees, and patches of undisturbed native vegetation.
- The site is bounded to the east by The Glen Nature Reserve, which provides dense vegetation that largely screens public views. Vegetation and topography to the west also restricts views. These characteristics were confirmed during the Department's February 2025 site visit.
- The solar farm would be the closest and most visually prominent project element. The Department considers the Guideline's methodology appropriate for determining overall visual impact.
- Although the Guideline does not apply to the pumped hydro component, the Proponent provided a representation in the LVIA of the visual magnitude of elements of the pumped hydro scheme that would be visible in the landscape (i.e. the upper reservoir wall). These elements did not contribute to the overall visual magnitude rating methodology as required by the Guidelines and were provided for comparison only.
- Land use within and around the site is primarily mining and agricultural. Existing topography and vegetation would minimise views of the project from the surrounding area.
- Although the project would introduce new landscape elements of a different type and scale, these would somewhat replace existing larger infrastructure and mining landforms, and the industrial character of the site would remain consistent.
- Detailed viewpoint assessments were undertaken for private receivers and from public vantage points, showing very low to moderate sensitivity to change. The assessment found that low to moderate changes would mainly result from the pumped hydro scheme due to its elevated position in the landscape.
- Minimise the off-site visual impacts of the project and to ensure the visual appearance of all infrastructure blends in as far as possible with the surrounding landscape.
- Establish and maintain landscape screening as proposed in the EIS at the locations adjacent to The Bucketts Way.
- Ensure that external lighting complies with *Australian/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting*, or the latest version.

Findings and conclusions

Recommended conditions

- The LVIA considered impacts on the Vale of Gloucester Landscape Conservation Area and concluded they would be minor as the project would be viewed as part of the existing prevailing landscape character (i.e. existing views of the SMC).
- Due to intervening vegetation and topography between the Glen Craven Logging Tramline and the site, the Department considers potential visual impacts on the tramline's heritage values to be limited.
- All private residential receivers were considered to have moderate scenic quality and sensitivity to change, and the LVIA indicated the visual magnitude thresholds for all receivers ranged from no change to low levels of change to the existing viewshed. The Department notes that topography and vegetation immediately surrounding the site largely screen views from residences, resulting in low visual impacts.
- NPWS raised concerns regarding the impacts of night lighting on the Glen Nature Reserve. The Department notes that construction would generally occur during the day (except tunnelling), making lighting impacts temporary and limited. Operational lighting would be limited to internal roads, offices and control rooms, similar to existing SMC operations. Overall, night lighting impacts on the Glen Nature Reserve could be appropriately managed with the implementation of standard measures.
- Council highlighted the importance of the local rural character and scenic values as key tourism and economic drivers, and requested mitigation for direct views from The Bucketts Way. In response, the Proponent removed the proposed solar array west of The Bucketts Way to avoid areas of higher visibility.
- The LVIA found that motorists on The Bucketts Way adjacent to the site would experience moderate visual impacts due to the proximity of some solar arrays, though views would be fleeting. The Proponent has committed to additional vegetative screening along the project boundary to further mitigate this impact, as outlined in the Landscaping Plan included in the LVIA.
- Motorists travelling along The Bucketts Way adjacent the solar component may experience some glare from the solar arrays, impacts would remain within the threshold of the Solar Guideline. Proposed vegetation screening would further reduce glare, and the Proponent has committed to restricting backtracking of panels where needed. No glare impacts are expected for any residential receivers.
- Subject to measures committed to in the EIS and the recommended conditions of approval, the Department considers the visual impacts acceptable and not likely to fundamentally change the broader landscape character or result in significant visual impacts on surrounding residences.

Findings and conclusions	Recommended conditions
Heritage	
<u>Aboriginal cultural heritage</u> • The Proponent prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) in consultation with Aboriginal stakeholders and an addendum report addressing concerns raised by Heritage NSW. • Surveys to identify areas of Aboriginal cultural or heritage significance were undertaken across the site, excluding areas already disturbed or approved for disturbance under the SMC. Field surveys, informed by predictive modelling, ground-truthed previously recorded sites and identified new sites. • Eighteen previously recorded Aboriginal sites were identified within the project footprint, including: – eight sites that had been salvaged under the SMC Heritage Management Plan (HMP); and – one site (SEP-OS-2) recorded in the SMC HMP as not disturbed, which was unable to be reidentified during surveys. • Field surveys identified three new sites: one PAD, one artefact scatter and one isolated find. • Two previously recorded sites and two newly recorded sites would be directly impacted by the project. All four were all assessed as having low archaeological significance as they were either isolated finds or low-density artefact scatters, often in disturbed contexts. Surface salvage collection is proposed. • A potential cultural site (CTS-1) was identified on a section of drainage line in the eastern portion of the project site, downstream of the lower dam wall. As a precaution, the project would avoid direct disturbance and maintain a 20 m exclusion zone around CTS-1. • Heritage NSW has reviewed the ACHAR and advised that where historical disturbance could not be demonstrated, additional pedestrian surveys should be conducted, particularly near the Stratford East Dam. The Proponent has committed to undertaking these surveys and detailing the results in an addendum ACHAR in consultation with RAPs. The Department has recommended conditions to this effect. • The Department has included a condition requiring the Proponent to prepare a Heritage Management Plan, including an unexpected finds protocol, in consultation with Aboriginal stakeholders and Heritage NSW. The Heritage Management Plan must be prepared prior to the Proponent carrying out any development that could directly or indirectly impact any heritage items identified in the development footprint.	• Ensure the development does not cause any direct or indirect impacts on any items outside the approved development footprint. • Salvage and relocate Aboriginal items in consultation with RAPs. • Prepare an Addendum ACHAR for unsurveyed areas on the site in consultation with RAPs. • Prepare and implement an Aboriginal Cultural Heritage Management Plan in consultation with RAPs, including an unexpected finds protocol.

Findings and conclusions

Recommended conditions

Historic heritage

- Submitters raised concerns about potential impacts to the Glen Craven Logging Tramline, a local heritage item under the *Gloucester Local Environment Plan 2010*. The Tramline is located approximately 300 m outside the proposed disturbance footprint and would not be directly impacted by the project.
- No listed historic heritage items occur within the project area, however one previously unidentified structure (SREH_1 Farm Structure) was recorded within the disturbance footprint. The item does not meet the criteria for local or State listing.
- The Proponent has committed to implementing an unexpected finds protocol in the event previously unidentified heritage items are encountered during works.
- The Department considers that with the proposed mitigation measures and conditions the project would not significantly impact the Aboriginal or historic heritage values of the locality.

Noise and Vibration

- The Proponent prepared a Noise Impact Assessment (NIA) as part of the EIS to assess noise impacts.

Construction Noise and Vibration

- The NIA predicts one private receiver (receiver 23) would experience noise above the 'noise affected' criterion of 45 dB(A) in the EPA's *Interim Construction Noise Guideline* (2009) (ICNG) during construction, with exceedances of up to 4 decibels (dB) during standard construction hours and up to 2 dB during out-of-hours tunnelling works under noise enhancing weather conditions. All other private receivers are predicted to remain below the criterion.
 - These exceedances would be temporary, and all construction noise would remain below the ICNG 'highly noise affected' criterion of 75 dB(A) at all nearby residences.
 - The Department has recommended conditions requiring the Proponent to implement reasonable and feasible mitigation measures to reduce construction noise below the criteria outlined in the ICNG. These mitigation measures would be detailed in a Noise and Vibration Management Plan prior to the commencement of construction.
 - Construction activities would generally occur during standard daytime construction hours, however, continuous tunnelling and associated underground works are proposed to operate 24 hours per day, 7 days per week. Where out of hours tunnelling works (i.e. outside of Monday to Saturday, 7am to 6 pm) would
- Minimise noise generated by the construction activities, including blasting, on site in accordance with best practice requirements outlined in the ICNG.
 - Comply with the noise management levels as derived from the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence.
 - Implement noise mitigation measures for any 'noise affected' or 'highly noise affected' receivers prior to commencing works.
 - Restrict construction hours to Monday to Saturday, 7am to 6 pm

Findings and conclusions	Recommended conditions
result in an exceedance of the ICNG ‘noise affected’ criterion or ‘sleep disturbance’ criterion of 52 dB(A) during nighttime hours, the Department has recommended conditions requiring the Proponent to implement feasible mitigation and management measures to reduce construction noise below the relevant criteria at all private receivers. The Proponent would be required to demonstrate the relevant criteria can be achieved at impacted private receivers prior to construction commencing. • In response to NPWS concerns, the Proponent assessed construction noise impacts on The Glen Nature Reserve in accordance with the ICNG. The NIA predicts a maximum construction noise level of 35 dBA at The Glen Nature Reserve, meeting the relevant noise criteria. • Although active mining operations at the SMC ceased in August 2024, existing mining approvals permitted operations from 7 am to 6 pm, 7 days a week and 24/7 operation in the Stratford East pits. <u>Blasting</u> • Most blasting would occur underground for tunnel construction, where airblast levels would attenuate before reaching the surface and are unlikely to impact sensitive receivers. As such, underground airblast has not been assessed, however, limited surface blasting may be required at the headrace and powerhouse silo during early construction and has been considered. • Noting these impacts can be managed by designing smaller blasts and optimising drill patterns, the Department has recommended conditions with standard limits for ground vibration and air blast pressure. • Where blasting would occur outside of standard construction hours, the Department has recommended conditions requiring the Proponent to demonstrate that noise would comply with the nighttime ‘sleep disturbance’ criteria of 52 dB(A). <u>Road noise impacts</u> • Road traffic noise during construction, including heavy movements on The Bucketts Way and Wenham Cox Road, is predicted to increase by up to 11.3 dB but remain below the EPA’s <i>Road Noise Policy</i> criteria of 55 dB(A) and 50 dB(A) for local roads during the day and night-time period. • The Proponent has committed to developing a Noise and Vibration Management Plan which would outline mitigation measures for road noise impacts to sensitive receivers, including scheduling, community engagement, plant and equipment controls and monitoring methods.	for non-tunnelling related activities. • Implement mitigation and management measures at sensitive receivers where out of hours works would result in an exceedance of the ‘noise affected’ or ‘sleep disturbance’ criteria. • Limit blasting to between 9 am to 5 pm Monday to Saturday. • Demonstrate that blasting for underground works to be carried out outside of 9 am to 5 pm Monday to Saturday, noise impacts are below the nighttime ‘sleep disturbance’ criteria. • Prior to commencing construction, prepare a Noise and Vibration Management Plan that evaluates and reports on the effectiveness of the noise and vibration management system and identifies a process for the consideration, management and approval of works outside standard construction hours.

Operational Noise and Vibration

- Operational noise from the pumped hydro component would primarily come from pumps and turbines located about 100 m underground and is not expected to generate significant surface noise.
- Noise from the solar farm component would primarily come from solar tracking motors and inverters distributed across the site.
- Overall, operational noise would comply with relevant noise criteria, as calculated in accordance with the *NSW Noise Policy for Industry (NPfI)* (EPA, 2017), at all residences.
- The NIA assessed amenity impacts on The Glen Nature Reserve, where the applicable passive recreation noise level is 48 dB(A). The predicted maximum operational noise level experienced in The Glen Nature Reserve is 35 dB(A) meeting the relevant noise criteria.
- The Proponent has proposed a range of mitigation measures to manage noise and vibration during construction and operation of the project. These measures include:
 - staging and scheduling works to minimise impacts;
 - with the exception of tunnelling, construction works would occur during standard daytime construction hours. Tunnelling and underground works may occur 24 hours per day, 7 days a week, subject to meeting the ICNG criteria at any sensitive receiver;
 - noise mitigation measures would be implemented; and
 - maintaining blast sizes to achieve relevant vibration and overpressure criteria.
- The Proponent may request to undertake some construction works (other than tunnelling and underground works) outside of standard construction hours. As such, the Department has recommended conditions requiring further assessment and justification of such works on a case-by-case or activity specific basis, for approval by the Planning Secretary, for activities that are inaudible at residential receivers.
- The Department considers that noise generated during construction and operation can be appropriately managed through the implementation of appropriate mitigation measures and compliance with the recommended conditions.

Findings and conclusions	Recommended conditions
Social and Economic • The project would generate direct and indirect benefits to the local and broader community, including: – Approximately \$1.8 billion in capital investment into the NSW economy; – Up to 350 construction jobs and up to 10 operational jobs; and – Procurement of goods and services by the Proponent and its contractors, noting the Proponent's preference to engage local workers where possible. • The Proponent expects to spend approximately \$6 million per annum on operating costs (excluding electricity purchases), and employ a workforce of around 10 people over the operational life of the project. • The Proponent has committed to a Voluntary Planning Agreement (VPA) with Mid-Coast Council to support local and regional social infrastructure. • The offer to Mid-Coast Council is a contribution equal to 1% of the estimated cost of development (EDC) (totalling approximately \$18.2 million) paid annually over the project's 80-year design life. • The Department notes that Mid-Coast Council raised concerns about the economic impacts on the Gloucester community following the closure of the SMC. While the Department acknowledges that the closure is likely to have regional economic impacts, the project is not required to compensate for these losses. Notwithstanding, the project provides an ongoing economic opportunity for the region as the site would otherwise be rehabilitated and left vacant under the existing SMC development consent. • The Proponent's Social Impact Statement (SIA) identified the potential need to manage impacts associated with a temporary workforce in the Gloucester region. The Department notes that the Proponent has prior experience accommodating a similar workforce locally, with the Stratford Extension Project requiring a peak workforce of 250 personnel. • Prior to commencing construction, the Proponent would prepare an Accommodation and Employment Strategy to further assess accommodation availability in the Gloucester area, including the use of Yancoal owned properties previously used to accommodate mine workers, local short term rental options and temporary accommodation within commuting distance (i.e. Newcastle and Mid-Coast areas). The Department has recommended conditions to this effect. • The Department considers that the project aligns with the NSW Government's <i>Practical guide: Post mining land use</i> (Department of Regional NSW, 2023), which identifies energy generation as a key opportunity for	• Enter into a VPA with Mid-Coast Council prior to commencing construction. • Prepare an Accommodation and Employment Strategy in consultation with Mid-Coast Council.

Findings and conclusions

post-mining land use. The project also presents a unique opportunity for energy generation on post-mining land, given its proximity to existing transmission infrastructure, the ability to repurpose existing assets (such as the lower reservoir) and the suitable topography required for pumped hydro projects (i.e. change in elevation over a short distance).

- Accordingly, the Department considers that the social and economic benefits of the Project outweigh the potential negative social and economic impacts and that the Project is in the public interest.

Recommended conditions

Hazards

Hazards Analysis

- The Proponent undertook a preliminary hazard screening for the transport and storage of hazardous materials (including explosives during construction), electromagnetic fields, bushfire and flooding risk (dam failure), in accordance with the *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP), and the relevant Hazardous Industry Planning Advisory Papers (HIPAP).
- The screening identified that the project would not store or transport hazardous materials in quantities exceeding the screening thresholds established under the HIPAP documents.

Dam Safety

- Dams Safety NSW advised that the dams would likely be “declared” under the *Dams Safety Act 2015*, which would trigger additional requirements for their design, operation and maintenance of the dam. Dams Safety NSW “declares” dams where a preliminary assessment establishes that a dam failure could endanger life or cause major damage to property or the environment.
- The Proponent conducted an *Intermediate Dambreak and Consequence Category Assessment* (dambreak assessment) to inform feasibility considerations for the project.
- The assessment concluded that the dambreak affected zone of the upper reservoir would impact the SMC site and rural areas between the SMC boundary and confluence of Avon River and Dog Trap Creek.
- The dambreak affected zone associated with a breach of the lower reservoir is largely contained within the floodplain and rural lands upstream of Gloucester. For these areas, the dambreak affected zone is limited to areas inundated by the 1% Annual Exceedance Probability (AEP) flood event.

- Prepare a Bushfire Management Plan and an Emergency Plan for the project.
- Ensure the project complies with the relevant asset protection requirements in the RFS’ Planning for Bushfire Protection 2019 and Standards for APZs.
- All chemicals, fuels and oils to be stored in accordance with Australian Standards and EPA requirements.
- Prepare an Environmental Management Plan for the project.
- Provide detailed dam designs to Dams Safety NSW prior to construction.
- Preparation of an unexpected contamination finds protocol for the project.

Findings and conclusions

Recommended conditions

- The upper and lower reservoirs would be designed and constructed in line with relevant standards and legislation, including Dams Safety NSW requirements. The Department has recommended conditions to this effect.
- Accordingly, the Department considers that the dam safety risks associated with the project can be appropriately managed.

Contamination

- Historical investigations indicate a moderate likelihood for significant contamination in areas associated with the existing SMC and a low likelihood in surrounding areas used mainly for rural, residential and agricultural purposes.
- The Department notes that the SMC is obligated under its development consent, its mining leases, and the *NSW Contaminated Land Management Act 1997* (CLM Act) to rehabilitate the SMC so it is safe, stable and non-polluting, including remediating contaminated soils and sediments and removing hazardous materials.
- Based on these obligations, the land within the existing SMC is expected to be made suitable for the project and remediated before construction begins.
- For areas outside of the SMC footprint (specifically the upper reservoir, transmission alignment and the northern, south western and southern solar arrays), the Proponent's Preliminary Site Investigation (PSI) found that any previously unidentified contamination or hazardous materials can be managed through an unexpected finds protocol, to be detailed in the Soil and Water Management Plan. The Department has recommended conditions to this effect.
- The Department considers that contamination risk can be appropriately managed through the completion of the SMC's obligations and through management measures should contaminants of potential concern be identified during further investigation.

Electric and magnetic fields (EMF)

- EMF would be generated by the electrical components of the project including solar panels, energy storage facility, power conversion units (including transformers), transmission lines and substation.
- The main source of EMF would be the proposed onsite substation, however the installation of the internal proposed high voltage transmission lines (i.e. transmission lines needed for reticulation within the project footprint) and associated infrastructure could potentially increase the electric and magnetic field exposure of personnel in the area.

Findings and conclusions

Recommended conditions

- The proposed transmission line easement has been designed with reference to applicable health and safety guidelines for EMF, and EMF levels are not expected to pose any public safety concerns. Predicted EMF levels associated with the project are well below the relevant International Commission on Non-ionizing Radiation Protection (ICNIRP) EMF criteria for general public exposure.
- Accordingly, the Department considers the project would not have any significant EMF related impacts.

Bushfire Risk

- The project is situated on bushfire prone land and is at risk of bushfire. The Proponent prepared a bushfire impact assessment and would be required to comply with RFS' *Planning for Bushfire Protection 2019*.
- The Proponent states that the project would not present a substantial bushfire threat or represent an unacceptable hazard in the event of a bushfire subject to the implementation of mitigation measures set out within the EIS and Submissions report including:
 - adequate setbacks, access and firefighting facilities maintained on site;
 - control of vegetation and grass fuels, including maintenance of groundcover within the development footprint;
 - water supply for firefighting; and
 - application of best practice and technical operational practices through a Bushfire Management Plan and Emergency Plan.
- The NSW RFS and FRNSW have reviewed the project and confirmed that the proposed bushfire procedures are appropriate for managing any bushfire risk associated with the project.
- The Department considers that bushfire risks can be suitably mitigated through the implementation of standard procedures and recommendations made by FRNSW and RFS, including:
 - complying with the requirements of RFS's *Planning for Bushfire Protection 2019* and Standards for asset protection zones (APZs);
 - development of a comprehensive Emergency Response Plan; and
 - development of an Emergency Services Information Package and an Emergency Responders Induction Package.

Findings and conclusions

Recommended conditions

- Subject to the recommended conditions, the Department, FRNSW and RFS are satisfied that risks associated with the project would be minimal and can be appropriately managed through the proposed approval conditions.

Air quality

- The project would generate dust during earthworks and excavation, including the excavation of the upper reservoir and spoil handling.
 - Dispersion modelling for particulate matter (PM) emissions from the project during construction demonstrated that concentrations of PM2.5, PM10 and Total Suspended Particles (TSP) would be below the Impact Assessment Criteria established under the Approved Methods for the *Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) at all sensitive receivers.
 - The Proponent has committed to dust suppression and control measures to manage potential construction impacts. Dust generation during operation is expected to be low, as the project would not involve significant emission sources.
 - With standard mitigation measures and compliance with recommended conditions, the Department considers that the project would not significantly impact local air quality.
- Implement all reasonable and feasible measures to minimise dust, odour and blast emissions from the development.

Greenhouse Gas Emissions

- Greenhouse gas (GHG) emissions were assessed for both construction and operation, with total project life emissions estimated at approximately 26,050 tonnes of carbon dioxide (t CO₂-e).
- During construction, scope 1 emissions were estimated at 6,074t CO₂-e/year. During operation, emissions were estimated at 2,110 t CO₂-e (scope 2) and 1,641 t CO₂-e (scope 3), with annual operational emissions of 20 t CO₂-e (scope 1), 7,402 t CO₂-e (scope 2) and 1 t CO₂-e (scope 3).
- The Proponent has committed to measures to minimise scope 1 emissions during construction, including maintaining plant and equipment and scheduling works to reduce fuel use and to maximise energy efficiency. The pumped hydro facility would support broader decarbonisation of the NSW electricity sector, and the inclusion of a solar farm would help offset energy used to recharge the upper reservoir, resulting in low scope 2 emissions during operation.

Findings and conclusions	Recommended conditions
Waste (non-spoil) • The project would generate a range of waste streams that would require appropriate waste management consistent with the <i>NSW Waste Classification Guidelines</i>. • Cleared vegetation would be mulched and reused on site for rehabilitation where feasible, with any excess transported to a licensed off site facility. Other solid waste would be collected, separated and transported to off-site licensed waste facilities. • Existing SMC sanitary facilities would be used during construction, with bio-waste collected in tanks and transported to off-site licensed disposal facilities. • Operational waste would be significantly less than construction waste would be limited to those generated by operations and scheduled maintenance activities. • The Proponent has committed to preparing construction and operational environmental management plans that would set out waste disposal procedures and include a waste monitoring program for each phase of the project. The Department is satisfied that waste produced from the development can be managed, subject to formal arrangements being finalised prior to construction and detailed in a Waste Management Plan.	• Minimise waste generated by the development, classify and store waste according to appropriate guidelines and ensure all waste is reused, recycled, or sent to an appropriately licensed waste facility for disposal. • Preparation of a Waste Management Plan in consultation with Mid-Coast Council.
Cumulative Impacts • The <i>Cumulative Impact Assessment Guidelines for State Significant Projects</i> applied to the project to assess the potential cumulative impacts. Results identified there are currently no other proposed energy projects in the Mid-Coast LGA. • The Proponent has undertaken a cumulative impact assessment that considers potential impacts on traffic, noise, visual amenity, biodiversity, land-use compatibility, and demand on accommodation, facilities, goods and services. • The SMC and the Duralie Coal Mine would be undergoing closure works in parallel with the construction and operation of the project. Cumulative impacts are expected to be minor given the low-intensity of closure works. • Traffic and transport cumulative impacts with the project's peak construction vehicle traffic and the expected forecast cumulative traffic (accounting for SMC closure works and background growth) have	• Addressed through implementation of committed mitigation measures and recommended conditions.

Findings and conclusions

Recommended conditions

been appropriately considered in the Proponent's TIA. The Department considers that any cumulative traffic impacts would be limited to the immediate vicinity of the site and would be temporary in nature.

- The Department has recommended conditions that require consideration of potential cumulative impacts, including the preparation of an Accommodation and Employment Strategy and Traffic Management Plan.
- The Department considers that any residual cumulative impacts associated with the project and surrounding operations would be adequately managed through the proposed mitigation measures and conditions of approval.

Transmission Connection

- The existing single circuit 132 kV Transgrid transmission line can accommodate approximately 131 MW (~44% of the pumped hydro scheme's potential capacity). Upgrades to the existing transmission line to a double-circuit would be required at Stroud Road substation and Tomago, and would be subject to a separate approvals process.
- The Proponent has undertaken a strategic assessment of the potential impacts associated with the transmission line options in the EIS. The assessment concluded that potential upgrades to the existing transmission network is unlikely to have significant environmental impacts.
- The existing 132 kV transmission line within the project footprint would require realignment around the lower reservoir. The realignment works and construction of a new on-site substation, with ownership of these assets expected to transfer to the network operator (i.e. Transgrid).
- The Department considers that the upgrade of the transmission line is both reasonable and feasible. The Proponent would be required to undertake an assessment of the transmission line to secure approvals before it upgrades the line, or if the transmission line is to be upgraded by a public authority, rely on the relevant public authority to conduct the assessment.

- No recommended conditions.

Project Decommissioning

- The operational life of the pumped hydro component is likely to range between 50 to 100 years and the solar component is likely to range between 20 to 30 years. However, operational lifetime may be extended as the solar panels are upgraded over time.
- Decommission project infrastructure within 3 years of the cessation of operations.

Findings and conclusions

Pumped Hydro

- The Proponent has committed to decommissioning the pumped hydro component of the project, including:
 - dewatering of the upper reservoir;
 - removing the upper reservoir dam wall and reconfiguration of the lower reservoir to a flow-through system (subject to water quality);
 - removing powerhouse equipment and filling the powerhouse silo;
 - filling the waterway tunnel and vertical shaft where required to mitigate future subsidence impacts;
 - removing and revegetating hardstand areas and the upper reservoir; and
 - Implementing ongoing rehabilitation controls.
- The Department has recommended a range of performance measures relating to the decommissioning and rehabilitation of the project, requiring that the final land-uses would be generally consistent with pre-disturbance land-uses.
- The Department considers that the project infrastructure is capable of being suitably decommissioned and, where relevant, rehabilitated to a standard that would allow the ongoing use of the land.

Solar

- *The Large-Scale Solar Energy Guideline* identifies four key principles for decommissioning and rehabilitation, including removing project infrastructure, returning the land to its pre-existing use (and restoring the pre-existing LCS Class where relevant), and ensuring the project owner or operator is responsible for decommissioning through an agreement with the host landowner(s). With objective-based conditions and monitoring requirements in place, the Department considers that the solar farm would be appropriately decommissioned at the end of the project life, or within 3 years if operations cease unexpectedly, and that the site can be appropriately rehabilitated.

Recommended conditions

- Rehabilitate the site, and minimise the total disturbance area exposed at any time.
- Comply with a number of rehabilitation objectives, including removing redundant aboveground infrastructure, restoring rural land capability and vegetation, ensuring public safety and ensuring the site is maintained in a safe, stable and non-polluting condition.

7 Evaluation

The Stratford Pumped Hydro and Solar project is critical for energy security and reliability in NSW as there is an increasing need for storage, including pumped hydro to firm renewable energy sources, as the State rebuilds the energy system. Consequently, the Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure.

The project would play an essential role in supporting the transformation from a long-standing reliance on coal-fired power stations to renewable energy. It is also consistent with AEMO's roadmap for the NEM, the Integrated System Plan, and relevant strategic NSW planning and policy documents, including the Electricity Strategy, and, more broadly, *the Climate Change Policy Framework and Net Zero Stage 1: 2020-2030* and objectives of the EII Act.

It would also deliver significant economic benefits to NSW, including \$1.8 billion in capital investment and the creation of 350 construction jobs.

Overall, the Department considers that the project has been strategically selected and designed in a way that avoids and minimises social and environmental impacts as far as practicable. The Department has carefully considered the residual potential impacts of the project on the environment. The Department has worked closely with key government agencies to prepare a comprehensive framework of recommended conditions of approval, requiring a range of controls and measures to minimise the impacts of the project.

The Department has carried out a detailed assessment of the merits of the project in accordance with all relevant NSW legislation, policies and guidelines. It consulted widely with the community and key government agencies, and closely considered the issues they have raised during this consultation in its assessment.

The Department considered the key impacts to be energy transition, biodiversity, and water management. The Department has also considered a range of other impacts in its assessment, including heritage, land use, hazards, noise, air quality, social, economic, and cumulative impacts. These impacts could be appropriately mitigated and/or offset in accordance with NSW government statutory requirements, guidelines and policy requirements.

The Department has carefully weighed the impacts of the project against its benefits. The project would have long-term benefits for electricity generation in NSW and would support the rebuild of the State's energy system and a beneficial post-mining land use outcome of a former mine site.

On balance, the Department considers that the project's benefits to energy security and reliability outweigh its costs, and that it is in the public interest and approvable, subject to strict conditions.

8 Recommendation

It is recommended that the **Minister for Planning and Public Spaces:**

- **considers** the findings and recommendations of this report
- **accepts and adopts** the findings and recommendations in this report as the reasons for making the decision to grant approval to the application
- **considers** any advice provided by the Minister having portfolio responsibility for the project
- **agrees** with the key reasons for approval/refusal listed in the notice of decision
- **grants approval** for the application in respect of Stratford Pumped Hydro and Solar (SSI 73368213) as amended, subject to the conditions in the attached infrastructure approval
- **signs** the attached infrastructure approval/instrument of refusal (**Appendix E**).

Prepared by:

Anthony Ko, Team Leader

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Emma-Rose Cooper, Senior Environmental Assessment Officer

Amy Alessi, Environmental Assessment Officer

Recommended by:



Nicole Brewer
Director
Energy Assessments
30 June 2026



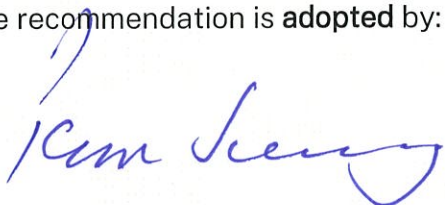
Chris Ritchie
Executive Director
Energy, Resources and Industry
2 July 2026



Anthea Sargeant
A/Deputy Secretary
Development Assessment and Sustainability
3 July 2026

9 Determination

The recommendation is adopted by:

A handwritten signature in blue ink, appearing to read 'Paul Scully', written over the printed name.

The Hon Paul Scully MP

Minister for Planning and Public Spaces

10/7/2026

Appendices

Appendix A – Environmental Impact Statement

Appendix B – Submissions and government agency advice

Appendix C – Submissions Report

Appendix D – Additional Information

Appendix E – Recommended Instrument of Approval

Appendices A to E are available at: <https://www.planningportal.nsw.gov.au/major-projects/projects/stratford-pumped-hydro-and-solar-0>

Appendix F – Statutory considerations

Objects of the EP&A Act

The Department's consideration of the relevant objects (found in section 1.3 of the EP&A Act at the time of exhibition of the EIS) are provided in Table I-1 below.

Table I-1 | Objects of the EP&A Act and how they have been considered

Summary

Objects of the EP&A Act

The objects of most relevance to the approval authority's decision on whether to approve the project are found in section 1.3(a), (b), (c), (e), (f), (g), (h), (i) and (j) of the EP&A Act.

The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project:

- is a permissible land use on the subject land;
- is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard;

- would contribute to a more diverse local industry, thereby supporting the local economy and community;
- would not fragment or alienate resource lands in the LGAs;
- promotes the beneficial reuse of a post-mining landscape; and
- is consistent with the goals of NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020-2030* and *Implementation update (2022)* and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions.

Ecologically Sustainable Development (ESD) (Object 1.3(b)) has been considered in the Department's assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences.

In addition, the Department considers that appropriately designed renewable energy generation projects, in and of themselves, are consistent with many of the principles of ESD. The Proponent has also considered the project against the principles of ESD. Consideration of the key principles of ESD is detailed below.

Precautionary Principle

The Department has considered the Precautionary Principle and assessed the project's potential direct and indirect environmental impacts, and considers that there is sufficient scientific certainty regarding environmental impacts and residual risks to enable determination of the application. The EIS contains a number of specialist environmental impact assessments and design and operational measures to mitigate, remediate, or offset potential impacts. The Department has also recommended conditions of approval that further mitigate potential residual impacts of the project, such as limits on clearing, measures to protect key habitat features and requiring the Proponent to retire biodiversity offsets. The Department considers that the recommended conditions can provide an appropriate level of protection to environmental values in the region.

Inter-generational equity

The Department recognises that the NSW energy market is transitioning from one dominated by coal-fired power stations to a renewable energy mix. Increased diversity in generation methods, including long-duration dispatchable energy will play a crucial role in the transition of the energy market. The Department recognises that climate change and the reduction of greenhouse gas emissions are key considerations for intergenerational equity. It considers that the project contributes to reducing potential climate impacts by linking new renewable generation to the energy market.

Conservation of biological diversity and ecological integrity

The project's potential impacts on biodiversity were an important consideration in the Department's assessment. As described in **Section 6.3** and **Appendix G**, the Department considers that direct and indirect impacts on biodiversity and on EPBC Act listed matters, including the likely impacts on listed threatened species and communities, can be minimised through proposed mitigation measures and offsets.

Improved valuation, pricing and incentive

This principle of ESD emphasises the internalisation of environmental costs in the pricing of assets and services. The Department's assessment has applied the 'polluter pays principle', by requiring the Proponent to offset or remediate potential environmental impacts. This includes offsetting biodiversity impacts, managing wastewater during construction and operation, and operating under an Environment Protection Licence administered by the NSW EPA.

As such, the Department considers that the project could be carried out in a manner that is consistent with the principles of ESD.

Consideration of environmental protection (**Object 1.3(e)**) is provided in **section 6** of this report. The Department considers that the project could be undertaken in a manner that would maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department is also satisfied that any residual biodiversity impacts can be managed and/or mitigated by imposing appropriate conditions, retiring the required biodiversity offset credits. Consideration of the sustainable management of built and cultural heritage (**Object 1.3(f)**) is provided in **section 6** of this report. The Department considers that the project would not significantly impact the built or cultural heritage of the locality, and any residual impacts can be managed and/or mitigated by imposing appropriate conditions.

Consideration of good design and the amenity of the built environment (**Object 1.3(g)**) is provided in **section 6** of this report. The Department recognises that, while the project, in particular the solar component and upper reservoir, would change the local landscape, this would not alter the prevailing character and nature of the surrounding environment. Nonetheless, the proposed mitigation measures and conditions would require the Proponent to implement appropriate visual impact mitigation measures, such as landscaping and/or vegetation screening along The Bucketts Way and to progressively rehabilitate work areas.

The Department has considered the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants (**Object 1.3(h)**) and consider the mitigation measures for fire safety and minimise bushfire risks would provide acceptable levels of protection for the health and safety of employees during construction and operation of the project, the overall

project area and surrounding residents. The Department has also imposed conditions requiring the finalisation of an emergency plan and construction and demolition conditions to ensure the structural adequacy of the buildings and the safe demolition of temporary facilities at the end of the construction period.

The Department notified and consulted with Port Stephens and Mid-Coast councils, and NSW government authorities (including further discussion of key issues with CPHR, TfNSW and the EPA), and the Australian Government (DCCEEW) under the EPBC Act throughout the assessment of the project and carefully considered all responses in its assessment.

The Department gave the community the opportunity to participate in the environmental planning and assessment process (**Object 1.3(j)**) by publicly exhibiting the application and EIS and by making all relevant documents publicly available on its website (see **section 5** of this report). Both the Proponent and the Department reviewed and considered all matters raised in public submissions during the assessment process.

Appendix G – Assessment of Matters of National Environmental Significance

In accordance with the Bilateral Agreement between the Australian Government and NSW Government, the Department provides the following additional information required by the Commonwealth Minister, in deciding whether to approve a proposed action (i.e. the project) under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the Environmental Impact Statement (EIS), Submissions Report, revised Biodiversity Development Assessment Report (BDAR) and additional information provided during the assessment process, public submissions, and advice provided by the CPHR, other NSW government agencies, the Panel and the Australian Government DCCEEW (AG DCCEEW).

This Appendix is supplementary to, and should be read in conjunction with, the assessment included in Section 6 of this report, and includes consideration of impacts to and mitigation and offsetting measures for Matters of National Environmental Significance (MNES).

Controlled Action Decision – EPBC 2023/09733

On 11 April 2024, the Stratford Pumped Hydro and Solar project was determined to be a Controlled Action by the AG DCCEEW for the controlling provisions for listed threatened species and communities. The Commonwealth Referral Decision (EPBC 2023/09733) (Referral Decision) was based on likely significant impacts to:

- Scrub Turpentine (*Rhodamnia rubescens*) – critically endangered;
 - Craven Grey Box (*Eucalyptus largeana*) – endangered;
 - Koala (*Phascolarctos cinereus* combined populations of Qld, NSW, and the ACT) – endangered;
 - Spotted-tailed Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus* (SE mainland population)) – endangered;
 - Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions Threatened Ecological Community – endangered; and
 - White-throated Needletail (*Hirundapus caudacutus*) – vulnerable and migratory.
- Additionally, the AG DCCEEW identified that there was some risk that there may be significant impacts on the following matters:
- Lowland Rainforest of subtropical Australia – critically endangered;
 - New Holland Mouse (*Pseudomys novaehollandiae*) – vulnerable;
 - Long-nosed Potoroo (northern) (*Potorous tridactylus tridactylus*) – vulnerable;

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – vulnerable;
- Large-eared Pied Bat (*Chalinolobus dwyeri*) – endangered;
- South-eastern Glossy Black Cockatoo (*Calyptrorhynchus lathami lathami*) – vulnerable;
- White-throated Needletail (*Hirundapus caudacutus*) – vulnerable, migratory;
- Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*) – vulnerable; and
- Stuttering Frog, Southern Barred Frog (*Mixophyes balbus*) – vulnerable.

EPBC Listed Threatened Species and Communities

The Department notes that all entities that were identified as requiring an assessment of significance were assessed (in particular Section 7 and Appendix N of the BDAR). The Proponent also undertook searches of the EPBC Act Protected Matters Search Tool (PMST) as part of the assessment and identified additional MNES entities with the potential to be impacted by the project. Table 10 provides a summary of the impacts on MNES entities recorded within the project site. Table 11 provides a detailed review of whether the assessment documentation (i.e. the EIS, Submissions Report and BDAR) includes all relevant required information. Table 11 also summarises CPHR's advice to the Department on EPBC Act listed threatened species and communities.

Impact on EPBC Listed migratory species

Six listed migratory species under the EPBC Act were recorded within the project site or considered likely to occur– Latham's Snipe, Spectacled Monarch, Black-faced Monarch, Satin Flycatcher, Rufous Fantail and White-throated Needletail.

The Proponent's assessment of significance for migratory species concluded that the project is unlikely to result in a significant impact on migratory species as the area does not contain important habitat for these species and it would not disrupt the life cycle of an ecologically significant proportion of any population.

Table 10 | Impacts on MNES entities recorded within the project site

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
Threatened Ecological Communities				
Lowland Rainforest of Subtropical Australia	Critically endangered	• Approved Conservation Advice for the Lowland Rainforest of Subtropical Australia – Critically Endangered Ecological Community (DSEWPaC 2011); • Recovery plan not required; and • No threat abatement plan has been identified as being relevant for this ecological community.	• Direct impact on 6.14 ha of the CEEC; • The primary extent of the CEEC occurs within the upper reservoir footprint which could not be avoided; • All habitat for this community in and adjacent to the development footprint that meets the minimum condition criteria is considered critical to the survival of this ecological community; • Impacts on this ecological community will predominantly occur within the upper reservoir footprint, with a small patch also proposed to be impacted within the lower reservoir, adjacent to the Stratford East Dam. The Project has the potential to indirectly impact patches of the community that occur adjacent to the study area, particularly in unnamed tributary 1 and to a lesser extent tributary 2, through changed hydrological regimes and fragmentation (see BDAR Figure 3.1 - GHD 2026). The presence of this TEC in	• Impacts would be offset by: – retirement of 229 ecosystem credits (PCT 3086). • Lowland Rainforest monitoring along the unnamed tributary between the upper reservoir and lower reservoir would be complemented by surface water monitoring (flow and quality) and adaptively managed based on a performance measure of no material change in distribution and composition of the Lowland Rainforest to be determined via baseline and ongoing monitoring.

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
			these offsite tributaries has not been field verified. - The BDAR concluded that the project is likely to have a significant impact on this community; and - CPHR considered that the project would have a significant adverse residual impact on the community.	
Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions	Endangered	- Approved Conservation Advice for the Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions (DCCEEW 2022); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for this ecological community.	- Direct impact on 19.53 ha (5.42 ha in moderate condition and 14.42 ha in low condition); - The BDAR concluded that the project is likely to have a significant impact on this community; - CPHR considered that the project would have a significant adverse residual impact on the community; and - Prescribed impacts on this TEC associated with hydrological processes are expected to be maintained by flood waters from Avondale Creek and Dog Trap Creek.	- Impacts would be offset and mitigated by: - retirement of 690 ecosystem credits (PCTs 3329 and 4042); - Mitigation measures include: - rehabilitation of temporary disturbance areas; and - management of indirect impacts to surrounding communities via the implementation of sediment controls and weed control, to be detailed in a biodiversity management plan.
Threatened Flora Species				

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
Craven Grey Box <i>Eucalyptus largeana</i>	Endangered	- Conservation Advice for <i>Eucalyptus largeana</i> (TSSC, 2018); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for this species.	- Direct removal of 46 individuals and 52.56 ha of suitable habitat; - The BDAR concluded that the project is likely to have a significant impact on this entity; and - CPHR considered that the project would have a significant adverse residual impact on the entity.	- Impacts would be offset by retirement of 92 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP) , protection of areas outside the development footprint, implementation of pathogen hygiene protocols, weed management, pre-clearing flora surveys to enable seed collection and rehabilitation of disturbed areas following construction.
Native Guava <i>Rhodomyrtus psidioides</i>	Critically endangered	- Conservation Advice for <i>Rhodomyrtus psidioides</i> (TSSC, 2019); - Species Management Plan for Myrtle Rust Species (Forestry Corporation of NSW, 2021); - Recovery plan not required; and	- Direct impact on 2.08 ha of suitable habitat (assumed present due to inaccessibility during field surveys); - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the low likelihood of occurrence on the project site and the	- Impacts would be offset by retirement of 116 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP) ,

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		No threat abatement plan has been identified as being relevant for this species.	presence of suitable habitat outside of the development footprint; and CPHR considered that the project would have a significant adverse residual impact on the entity.	which will document suitable measures including implementation of pathogen hygiene protocols, protection of areas outside the development footprint, weed management, and rehabilitation of disturbed areas following construction.
Scrub Turpentine <i>Rhodamnia rubescens</i>	Critically endangered	- Conservation Advice for <i>Rhodamnia rubescens</i> (TSSC, 2020a); - Species Management Plan for Myrtle Rust Species (Forestry Corporation of NSW, 2021); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for this species.	- Direct impact on 224 individuals and 145.08 ha of suitable habitat; - The BDAR concluded that the project is likely to have a significant impact on this entity; and - CPHR considered that the project would have a significant adverse residual impact on the entity.	- Impacts would be offset and mitigated by retirement of 672 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP) which will document suitable measures including implementation of pathogen hygiene protocols, protection of areas outside the development footprint, weed management, pre-clearing flora surveys to

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
				enable seed or tissue collection and rehabilitation of disturbed areas following construction.
Trailing Woodruff <i>Asperula asthenes</i>	Vulnerable	• Approved Conservation Advice for <i>Asperula asthenes</i> (DotE, 2016); • Recovery plan not required; and • No threat abatement plan has been identified as being relevant for this species.	• Direct impact to 20.9 ha of suitable habitat; • The BDAR concluded that the project would potentially have a significant impact on this entity; and • CPHR considered that the project would have a significant adverse residual impact on the entity.	• Impacts would be offset by retirement of 585 species credits for assessment based on assumed presence. Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP) which will document suitable measures including implementation of pathogen hygiene protocols, protection of areas outside the development footprint, weed management, and rehabilitation of disturbed areas following construction.

Threatened Fauna Species

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
Glossy Black-cockatoo <i>Calyptorhynchus lathami lathami</i>	Vulnerable	- Conservation Advice for <i>Calyptorhynchus lathami</i> (Cwlth DCCEEW, 2022c); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for this species.	- Direct impact to 112.84 ha of suitable foraging habitat and 36.5 ha of suitable nesting habitat; - The BDAR concluded that the project is likely to have a significant impact on this entity; and - CPHR did not provide comment on whether the project would have a significant adverse residual impact on the entity.	- Impacts would be offset by retirement of 1269 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP), which will document measures for vegetation clearing, weed and pathogen management, hollow-bearing tree felling, fauna management and relocation, habitat feature salvage and rehabilitation/stabilisation of cleared areas.
Koala <i>Phascolarctos cinereus</i>	Endangered	- National Recovery Plan for the Koala; - No conservation advice has been identified as being relevant for this species; and	- Direct impact to 106.5 ha of critical habitat; - The BDAR concluded that the project is likely to have a significant impact on this entity; and - CPHR considered that the project would have a significant adverse residual impact on the entity.	- Impacts would be offset by retirement of 3452 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		No threat abatement plan has been identified as being relevant for species.		Management Plan (CEMP), which will document measures for vegetation clearing, weed and pathogen management, fauna management and relocation, habitat feature salvage and rehabilitation/stabilisation of cleared areas.
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	Endangered	- National recovery plan for <i>Chalinolobus dwyeri</i> (DERM, 2011); - No conservation advice has been identified as being relevant for this species; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 118.7 ha of foraging habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given there is no impact to suitable breeding habitat; and - CPHR considered that the project is unlikely to have a significant impact on this entity.	- Impacts would be offset by retirement of 5091 species credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP), which will document measures for vegetation clearing, weed and pathogen management, fauna management and relocation, habitat feature salvage and

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
				rehabilitation/stabilisation of cleared areas.
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	Endangered	- No conservation advice has been identified as being relevant for this species; - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 132.15 ha of potential habitat suitable for breeding, denning and / or foraging; - The BDAR concluded that the project is likely to have a significant impact on this entity; and - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	- Impacts would be offset by retirement of 3230 ecosystem credits. - Impacts are proposed to be mitigated through implementation of a Construction Environmental Management Plan (CEMP), which will document measures for vegetation clearing, weed and pathogen management, fauna management and relocation, habitat feature salvage and rehabilitation/stabilisation of cleared areas.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	Vulnerable	- SPRAT profile for <i>Pteropus poliocephalus</i> (DoE, 2024b); - Draft National Recovery Plan for Grey-headed Flying-fox (DECCW, 2009); and	- Direct impact to 112.84 ha of potential habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the presence of large areas of native vegetation, and	N/A

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		No threat abatement plan has been identified as being relevant for species.	potential habitat for the species in proximity to the development footprint; and CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	
Long-nosed Potoroo (northern) <i>Potorous tridactylus tridactylus</i>	Vulnerable	- Conservation Advice for <i>Potorous tridactylus tridactylus</i> (DAWE, 2022c); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 90.3 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the fragmentation and low quality of the existing vegetation; and - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A
New Holland Mouse <i>Pseudomys novaehollandiae</i>	Vulnerable	- Conservation Advice for <i>Pseudomys novaehollandiae</i> (Cwlth DCCEEW, 2024h); - Conservation Advice for <i>Pseudomys novaehollandiae</i> (DEWHA, 2010c); - Consultation on Species Listing Eligibility and Conservation Actions (DAWE, 2021c);	- Direct impact to 96.85 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the presence of large areas of native vegetation, and potential habitat for the species, are connected to the development footprint; and	N/A

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		- National Recovery Plan (Cwlth DCCEW, 2024g); and - No threat abatement plan has been identified as being relevant for species.	CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	
Parma Wallaby <i>Notamacropus parma</i>	Vulnerable	- Conservation Advice for <i>Notamacropus parma</i> (DCCEW, 2022b); - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 113.4 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given a large portion of the suitable habitat is fragmented and degraded, and the high quality habitat in the upper reservoir footprint border a large contiguous patch of forest that will not be isolated/fragmented as part of the project; and - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A
Yellow-bellied Glider <i>Petaurus australis</i>	Vulnerable	- Conservation Advice for <i>Petaurus australis australis</i> (DAWE, 2022a); - Recovery plan not required; and	The BDAR concluded that the project is unlikely to lead to a long-term decrease in the size of an important population and is unlikely to have a significant impact on this entity; and	N/A

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		No threat abatement plan has been identified as being relevant for species.	CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	
Latham's Snipe <i>Gallinago hardwickii</i>	Vulnerable and migratory	- No conservation advice has been identified as being relevant for this species; - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- The BDAR concluded that the project is unlikely to have a significant impact on this entity given the low likelihood of suitable habitat; and - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A
White-throated Needletail <i>Hirundapus caudacutus</i>	Vulnerable and migratory	- Conservation Advice for <i>Hirundapus caudacutus</i> (NSW TSSC, 2019) - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 145.08 ha of suitable foraging habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the lack of impact to breeding habitat; and - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A
Rufous Fantail <i>Rhipidura rufifrons</i>	Migratory	- No conservation advice has been identified as being relevant for this species; - Recovery plan not required; and	- Direct impact to 112.5 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the minimal impact to	N/A

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
		No threat abatement plan has been identified as being relevant for species.	- habitat in the core range of this species; - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	
Black-faced Monarch <i>Monarcha melanopsis</i>	Migratory	- No conservation advice has been identified as being relevant for this species; - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 112.5 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the minimal impact to habitat in the core range of this species; - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A
Spectacled Monarch <i>Symposiachrus trivirgatus</i>	Migratory	- No conservation advice has been identified as being relevant for this species; - Recovery plan not required; and - No threat abatement plan has been identified as being relevant for species.	- Direct impact to 112.5 ha of suitable habitat; - The BDAR concluded that the project is unlikely to have a significant impact on this entity given the minimal impact to habitat in the core range of this species; - CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A

Entity	Conservation Status	Relevant Conservation Advice, Recovery Plans and Threat Abatement Plans	Assessment of Impacts	Mitigation and Offsets
Satin Flycatcher <i>Myiagra cyanoleuca</i>	Migratory	• No conservation advice has been identified as being relevant for this species; • Recovery plan not required; and • No threat abatement plan has been identified as being relevant for species.	• Direct impact to 112.5 ha of suitable habitat; • The BDAR concluded that the project is unlikely to have a significant impact on this entity given the minimal impact to habitat in the core range of this species; • CPHR considered that the project is unlikely to have a significant adverse residual impact on the entity.	N/A

Table 11 | CPHR's advice to the Department on EPBC Act listed threatened species and communities

TABLE 1: CPHR OFFICER PROJECT ADVICE TO DCCEEW ON EPBC ACT LISTED THREATENED SPECIES AND COMMUNITIES

Requirement	Information	Reference (BAM / BLA ¹)
Background & Description of Action	Does the EIS/BDAR²: ☒ clearly show how operational and construction footprints, including clearing boundaries, structures to be built and elements of the action are situated with regard to MNES ☒ depict stages and timing of the action that may impact on MNES ☒ provide a map(s) of the subject land boundary showing the final proposal/disturbance footprint with respect to location of MNES, including GIS shape files Include references to where this detail is provided.	BAM Chapters 3, 4, 5 and 8
	Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements: Project description The BDAR (4 March 2026) describes the Stratford Renewable Energy Hub (the Project), which proposes to repurpose the former Stratford Mining Complex into a combined pumped-hydro energy storage and solar generation facility. Key components include: • Pumped hydro-electric works, using the site's existing mine dams as a lower reservoir and constructing a new upper reservoir, supported by tunneled water conveyance, intake and outlet structures, and associated hydraulic infrastructure. • An underground power station, including turbine-generator units, transformer hall, access tunnels, ventilation adits, and operational support structures. • A 320–330 MW solar farm, located on rehabilitated or previously disturbed mining land, providing energy to recharge the pumped hydro system. • Transmission connection infrastructure to link the Project to the existing 132 kV TransGrid line near the site. • Ancillary development, including access roads, laydown areas, utilities, construction compounds, and spoil or material management areas. The Project is located on and adjacent to the former Stratford Mining Complex, approximately 95 km north of Newcastle. The subject land boundary and proposed disturbance footprint are shown in Figure 1-3 of the BDAR. Project Background The BDAR describes the project as occurring in the Gloucester Valley (Karuah Manning IBRA subregion), and located to the west of The Glen Nature Reserve. It identifies the development footprint, which includes the proposed upper reservoir, augmentation of the existing Stratford East Dam as the lower reservoir, waterway tunnels, an underground powerhouse, transmission line realignment, and a solar farm across the lower paddock areas. The disturbance footprint described in the BDAR includes 145.08 ha of native vegetation and threatened species habitat.	

	Overall, the BDAR provides a clear summary of the project area, key infrastructure, and the areas of native vegetation and habitat that will be disturbed. Matters of National Environmental Significance (MNES) relevant to the Project. The locations of recorded MNES in relation to the project footprint are provided in Figure 7-1 figures and Section 7 of the BDAR. This includes the mapping of: • Lowland Rainforest of Subtropical Australia (CEEC) • Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (EEC) • Craven Grey Box (<i>Eucalyptus largeana</i>) • Scrub Turpentine (<i>Rhodamnia rubescens</i>) • Spotted-tailed Quoll (SE mainland population) (<i>Dasyurus maculatus maculatus</i>) • Koala (combined populations of Qld, NSW and the ACT) (<i>Phascolarctos cinereus</i>) • South-eastern Glossy Black-cockatoo (<i>Calyptorhynchus lathami lathami</i>) • White-throated Needletail (<i>Hirundapus caudacutus</i>) • Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>) • Parma Wallaby (<i>Notamacropus parma</i>) • Long-nosed Potoroo (northern) (<i>Potorous tridactylus tridactylus</i>) • Ecosystem credit species that are threatened nationally Yellow-bellied Glider (south-eastern) (<i>Petaurus australis australis</i>), New Holland Mouse (<i>Pseudomys novaehollandiae</i>), Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) • Nationally listed Migratory Species Latham's Snipe (<i>Gallinago hardwickii</i>), White-throated Needletail (<i>Hirundapus caudacutus</i>), Rufous Fantail (<i>Rhipidura rufifrons</i>), Black-faced Monarch (<i>Monarcha melanopsis</i>) and Spectacled Monarch (<i>Symphysichrus trivirgatus</i>) Trailing Woodruff (<i>Asperula asthenes</i>) and Native Guava (<i>Rhodomyrtus psidioides</i>) and Satin Flycatcher (<i>Myiagra cyanoleuca</i>) were not recorded within the project footprint. A data package has been provided with the shapefiles. No additional information requirements are identified.	
Landscape Context of the MNES	Provide advice on the adequacy of the landscape context information and identify any additional information requirements: Section 4 of the BDAR provides details on the project landscape context. It includes an overview of the landscape context of the project within the Karuah-Manning IBRA subregion, describing the surrounding landforms, vegetation communities and connectivity to areas of similar vegetation in the surrounding locality including The Glen Nature Reserve. It is acknowledged in the BDAR that the site supports extensive areas of intact native vegetation and functions as a key corridor for regional fauna movement, but this is largely confined to the upper reservoir. It is noted that there will be an impact to habitat connectivity while stating that impacts from post construction operational surfaces can be circumnavigated. The information presented is adequate in describing the landscape context.	BAM Section 3.1 BLA clause 7.4

EPBC Act Listed Threatened Species & Communities	Verify that the EIS/BDAR includes relevant information on the identification of all EPBC Act listed threatened species and communities on the site or in the vicinity¹ via: ☒ field based survey effort ☒ published peer reviewed literature ☒ local data ☒ supporting databases (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results) ☒ Verify that the EIS/BDAR includes appropriate mapping of all EPBC Act listed threatened species and communities in accordance with the relevant Commonwealth Listing Advice. The EIS/BDAR should include important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans. Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements: <i>If any species and communities identified in the referral documentation have been ruled out because they do not occur on or near the site, verify that there is robust analysis and justification for why these species can be ruled out. Provide advice on whether there are any other MNES species or communities that are missing from the assessment based on CPHR knowledge and experience.</i> Field Based Survey Effort Survey of native vegetation (vegetation mapping and vegetation integrity plots) are documented in Section 5 of the BDAR and were completed between 2022 and 2024. Targeted surveys for candidate threatened species are documented in Section 6.2 of the BDAR and were completed between 2022 and 2024. <i>Confirm that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species.</i> Published peer reviewed literature Local Data No alternative local data was used for benchmark assessment. Supporting Databases The following databases were used for the MNES assessment: • Commonwealth DCCEEW Protected Matters Search Tool (PMST) Database • BioNet Atlas of NSW Wildlife • Threatened Biodiversity Data Collection (TBDC) • Vegetation Information System Classification Database • Commonwealth Species Profile and Threats Database	BAM Chapters 4 and 5
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	Appropriate mapping of all EPBC Act-listed species and communities in accordance with relevant Commonwealth Listing Advice Mapping has been provided for <i>Lowland Rainforest of Subtropical Australia</i> (CEEC) and <i>Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions</i> (EEC) in Figure 7-1. The mapping has been prepared in accordance with the Approved Conservation Advice (DSEWPaC 2011) and (Cwlth DCCEEW 2022a) respectively. Confirm that all EPBC listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species. The BDAR identifies the following EPBC Act-listed entities with habitat occurring within the project area. <u>Threatened Ecological Communities (TECs)</u> • Lowland Rainforest of Subtropical Australia – the proposal would impact 6.02 ha of this TEC which is associated with PCT 3086 - Lower North Hinterland Riparian Dry Rainforest. • Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions – the proposal would impact 19.53 ha of this TEC which is associated with PCT 3329 - Northern Hinterland Valleys Red Gum Grassy Forest and PCT 4042 - Lower North Hinterland River Oak Forest. <u>Threatened Flora</u> • Trailing Woodruff (<i>Asperula asthenes</i>) • Craven Grey Box (<i>Eucalyptus largeana</i>) • Scrub Turpentine (<i>Rhodamnia rubescens</i>) • Native Guava (<i>Rhodomyrtus psidioides</i>) <u>Threatened Fauna</u> • Spotted-tailed Quoll (SE mainland population) (<i>Dasyurus maculatus maculatus</i>) • Koala (combined populations of Qld, NSW and the ACT) (<i>Phascolarctos cinereus</i>) • South-eastern Glossy Black-cockatoo (<i>Calyptorhynchus lathami lathami</i>) • White-throated Needle-tail (<i>Hirundapus caudacutus</i>) • Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>) • Parma Wallaby (<i>Notamacropus parma</i>) • Yellow-bellied Glider (south-eastern) (<i>Petaurus australis australis</i>) • Long-nosed Potoroo (northern) (<i>Potorous tridactylus tridactylus</i>) • New Holland Mouse (<i>Pseudomys novaehollandiae</i>) • Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	
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	<u>Listed Migratory Species</u> • Latham's Snipe (<i>Gallinago hardwickii</i>) • White-throated Needletail (<i>Hirundapus caudacutus</i>) • Rufous Fantail (<i>Rhipidura rufifrons</i>) • Black-faced Monarch (<i>Monarcha melanopsis</i>) • Spectacled Monarch (<i>Symposiachrus trivirgatus</i>) • Satin Flycatcher (<i>Myiagra cyanoleuca</i>) The BDAR identifies relevant MNES and provides appropriate mapping for the species observed. No additional information requirements are identified.	
	Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list (if applicable): The EPBC Act-listed threatened species and ecological communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS. The BDAR provides appropriate justification for the exclusion of several EPBC Act-listed species. From the information provided, there are no other MNES species or ecological communities that are missing from the assessment. The assessor has provided appropriate justification and supporting evidence to exclude many of the predicted threatened entities identified for further assessment based on either a lack of suitable habitat on site, geographic limitations and/or having not been detected on the subject land following targeted survey. This is consistent with the Biodiversity Assessment Method 2020.	
Avoidance, Minimisation, Mitigation & Management	Verify that the EIS/BDAR demonstrates all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including an analysis of alternative: ☒ designs and engineering solutions ☒ modes or technologies ☒ routes and locations of facilities ☒ sites within the subject site ☒ Verify that the EIS/BDAR identifies any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc). Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including: ☒ techniques, timing, frequency and responsibility ☒ identify measures for which there is risk of failure ☒ evaluate the risk and consequence of any residual impacts ☒ any adaptive management strategy proposed to monitor and respond to impacts.	BAM Chapters 6, 7 and 8 BLA clause 7.1

	Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified. A range of avoidance and mitigation measures to manage potential impacts on MNES are outlined in the BDAR, including iterative design changes, staged clearing, pre-clearing surveys, buffers and exclusion zones, weed and pathogen management, pest and predator control, erosion and sediment control, rehabilitation and restoration measures and traffic and dust controls. The potential for residual significant impacts for several MNES are identified in the BDAR, including Lowland Rainforest of Subtropical Australia, Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions, Trailing Woodruff, Craven Grey Box, Scrub Turpentine, Native Guava, Spotted-tailed Quoll and Koala. CPHR agree that residual impacts to these species are likely to be significant.	
Impact Assessment	Verify that the EIS/BDAR: ☒ identifies the residual adverse impacts likely to occur to each EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account ☒ provides adequate justification and evidence for the predicted level of impact, with reference to the: • Commonwealth's Significant Impact Guideline: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/neg-guidelines_1.pdf • DPIE Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SII): (https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/neg-guidelines_1.pdf)	BAM Chapters 8 and 9 BLA clauses 6.2(b)(i)-(ii) and 7.1

	Complete the following information for each EPBC Act listed threatened species and/or community (add/remove rows as necessary): • EPBC Act listed threatened species and/or community • nature and consequences of impacts (i.e. direct and indirect) • duration of impact (e.g. construction, operation, life of project) • quantum of impact • consequences of impacts on the species, the population and / or extent of the community at local, state and national scales Confirm the level of predicted impact (cross appropriate): ☒ high risk of impact (requiring offsets)# or SAIL ☒ Low risk of impact (not requiring offsets) #For purposes of EPBC approval, as a minimum, significant adverse residual impacts must be offset (significant impact can be evaluated with reference to the significance impact guidelines) Provide advice on whether adequate justification and evidence is provided for species and communities that have been identified as being at low risk of impact. Offsets are required for all threatened species being impacted by the project as detailed in Table 2. Offsets are not proposed for listed Migratory Species including Rufous Fantail, Black-faced Monarch, Spectacled Monarch and Satin Flycatcher. Section 7.5 of the BDAR notes that habitat in the development footprint is not likely to support an ecologically significant proportion of the population of any of the migratory species recorded or be of critical importance to the species at particular life-cycle stages. The project footprint is not located at the limit of any of the species' range, and/or located within an area where the species is declining, and as such, potential habitat in the study area is not 'important habitat' for any of these species.	
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Offsets	Verify that the EIS/BDAR: ☒ identifies any MNES that haven't been offset using the BAM ☒ identifies how impacts requiring offsets correlate to MNES impacts ☒ identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES ☒ identifies threatened species requiring offset and the number of species credits required for impacts to MNES ☒ correctly uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity ☒ identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting ☒ if known, identifies any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures#. #In accordance the BAM there is no longer a requirement to define the offsetting approach at EIS stage. Complete the Impacts and Offsets Summary table below (Table 2) The BDAR lists the type and number of biodiversity credits required to offset the impacts of the proposal on threatened entities listed under the EPBC Act (Refer to Section 11.3 and Attachment M - Biodiversity Credit Reports in the BDAR).	BAM Chapter 10 BLA clauses 7.1 and 7.2
	Verify if any relevant Commonwealth guidelines and policy statements are applicable to the action and listed threatened species and/or community, including but not limited to: ☒ International environmental obligations ☒ Recovery Plans ☒ Approved Conservation Advice ☒ Threat Abatement Plans <i>The relevant Commonwealth guidelines and policy statements for each species and community are available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</i>	
	For each EPBC Act listed threatened species and/or community, provide advice on whether the assessment has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans. Relevant conservation advice, recovery plans, threat abatement plans, wildlife conservation plans or strategic assessments for individual MNES have mostly been referenced and discussed in the BDAR. The assessment appears to have been adequately informed by relevant Commonwealth guidelines and Threatened Species Scientific Committee Listing and Conservation Advice. The documents which have informed assessment for each MNES entity are listed below: Lowland Rainforest of Subtropical Australia DSEWPac 2011 – Commonwealth Approved Conservation Advice	

	Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions DCCEEW (2022) – Commonwealth Approved Conservation Advice Trailing Woodruff (<i>Asperula asthenes</i>) DotE (2016) – Approved Conservation Advice for <i>Asperula asthenes</i> Craven Grey Box (<i>Eucalyptus largeana</i>) TSSC (2018) – Conservation Advice for <i>Eucalyptus largeana</i> Scrub Turpentine (<i>Rhodamnia rubescens</i>) TSSC (2020a) – Conservation Advice for <i>Rhodamnia rubescens</i> Forestry Corporation of NSW (2021) - Species Management Plan for Myrtle Rust Species Native Guava (<i>Rhodomyrtus psidioides</i>) TSSC (2019) – Conservation Advice for <i>Rhodomyrtus psidioides</i> Forestry Corporation of NSW (2021) - Species Management Plan for Myrtle Rust Species Spotted-tailed Quoll (SE mainland population) (<i>Dasyurus maculatus maculatus</i>) N/A Koala (combined populations of Qld, NSW and the ACT) (<i>Phascolarctos cinereus</i>) DAWE (2022b) – National Recovery Plan for the Koala South-eastern Glossy Black-cockatoo (<i>Calyptorhynchus lathami lathami</i>) Cwlth DCCEEW (2022c) – Conservation Advice for <i>Calyptorhynchus lathami lathami</i> White-throated Needletail (<i>Hirundapus caudacutus</i>) NSW TSSC (2019) – Conservation Advice for <i>Hirundapus caudacutus</i> Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>) DERM (2011) – National recovery plan for <i>Chalinolobus dwyeri</i> Parma Wallaby (<i>Notamacropus parma</i>) DCCEEW (2022b) – Conservation Advice for <i>Notamacropus parma</i> Yellow-bellied Glider (south-eastern) (<i>Petaurus australis australis</i>) DAWE (2022a) – Conservation Advice for <i>Petaurus australis australis</i> Long-nosed Potoroo (northern) (<i>Potorous tridactylus tridactylus</i>) DAWE (2022c) – Conservation Advice for <i>Potorous tridactylus tridactylus</i>	
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	New Holland Mouse (<i>Pseudomys novaehollandiae</i>) Cwlth DCCEEW (2024g) – National Recovery Plan Cwlth DCCEEW (2024h) – Conservation Advice for <i>Pseudomys novaehollandiae</i> DAWE (2021c) – Consultation on Species Listing Eligibility and Conservation Actions DEWHA (2010c) – Conservation Advice for <i>Pseudomys novaehollandiae</i> Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) DECCW (2009) – Draft National Recovery Plan for Grey-headed Flying-fox DoE (2024b) – SPRAT profile for <i>Pteropus poliocephalus</i> Latham's Snipe (<i>Gallinago hardwickii</i>) None applicable Rufous Fantail (<i>Rhipidura rufifrons</i>) None applicable Black-faced Monarch (<i>Monarcha melanopsis</i>) None applicable Spectacled Monarch (<i>Symposiachrus trivirgatus</i>) None applicable Satin Flycatcher (<i>Myiagra cyanoleuca</i>) None applicable	
Recommended Conditions	Provide advice on any recommended conditions and reasons for imposing the conditions: The BDAR conforms to BAM requirements with no additional assessment required for MNES. CPHR has separately reviewed draft conditions of consent and had no further recommended conditions.	BLA clause 6.2(c)(iii)

TABLE 2: MNES IMPACT AND OFFSET SUMMARY

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS, BDAR)

Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	PCT 3329, 4042	19.53 ha	690	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.9
Lowland Rainforest of Subtropical Australia	PCT 3086	6.02 ha	229	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.9
Craven Grey Box <i>Eucalyptus largeana</i>	PCT 3086, 3244	46 individuals	92	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Native Guava <i>Rhodomyrtus psidioides</i>	PCT 3086	2.08 ha	116	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Scrub Turpentine <i>Rhodamnia rubescens</i>	PCT 3086, 3170, 3241, 3244, 3252	224 individuals	672	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Trailing Woodruff <i>Asperula asthenes</i>	PCT 3086, 3241, 3244, 3251, 3252, 3446	20.9 ha	585	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Glossy Black-cockatoo <i>Calyptorhynchus lathami lathami</i>	PCT 3086, 3170, 3241, 3244, 3251, 3252	36.5 ha	1269	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Koala <i>Phascolarctos cinereus</i>	PCT 3170, 3241, 3244, 3251, 3252, 3254, 3329, 3446, 4042	106.5 ha	3452	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7

Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	PCT 3086, 3170, 3241, 3244, 3251, 3252, 3254, 3329, 3446, 4042	118.7 ha	5091	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.7
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	3086, 3170, 3241, 3244, 3251, 3252, 3254, 3329, 3446, 4042	132.15 ha	N/A	Meet offset obligations in accordance with the Biodiversity Conservation Regulation	Table 11.8

Additional EPBC Act Considerations

Table 12 contains the additional mandatory considerations, factors to be taken into account and factors to have regard under the EPBC Act, in addition to those already discussed.

Table 12 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act section	Considerations	Conclusions
<i>Mandatory considerations</i>		
136(1)(b)	Social and economic matters are discussed in Section 6.5 of the assessment report	The proposed project would provide long-duration, large-scale energy storage and would be capable of supplying electricity on demand. This would help to firm the electricity grid and support the transition away from energy supplied by fossil fuels. The project would also result in a range of economic benefits for the local and regional economy.
<i>Factors to be taken into account</i>		
3A, 391(2)	Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, in particular: - the long-term and short-term economic, environmental, social and equitable considerations that are relevant to this decision; - conditions that restrict environmental impacts and impose monitoring and adaptive management, reduce any lack of certainty related to the potential impacts of the project; - conditions requiring the project to be delivered and operated in a sustainable way to protect the environment for future generations and conserving the relevant matters of national environmental significance; - advice provided within this report reflects the importance of conserving biological diversity, ecological and cultural integrity in relation to all of the controlling provisions for this project; and - mitigation measures to be implemented which reflect improved valuation, pricing and incentive mechanisms are promoted by placing	The Department considers that the project, if undertaken in accordance with the recommended conditions of approval, would be consistent with the principles of ESD.

EPBC Act section	Considerations	Conclusions
	a financial cost on the Proponent to mitigate the environmental impacts of the project.	
136(2)(e)	Other information on the relevant impacts of the proposed action on MNES.	The Department considers that all information relevant to the impacts of the project has been taken into account in this recommendation.
<i>Factors to have regard to</i>		
176(5)	Bioregional plans	There is no relevant bioregional plan.
<i>Considerations on deciding on conditions</i>		
134(4)	Must consider: - information provided by the person proposing to take the action or by the designated proponent of the action; and - the desirability of ensuring as far as practicable that the condition is a cost effective means for the Commonwealth and the person taking the action to achieve the object of the condition.	All project related documentation is available from the Department's website www.majorprojects.planning.nsw.gov.au. The Department considers that the conditions at Appendix E are a cost effective means of achieving their purpose. The conditions are based on the material provided by the Proponent and were prepared in consultation with the Department and DCCEEW.

Conclusions on controlling provisions

For the reasons set out in the assessment report and this appendix, the Department recommends that the impacts of the action on threatened species and communities would be acceptable, subject to the avoidance, mitigation measures described in the EIS and by the submissions report (**Appendix C**) and additional information (**Appendix D**) and the requirements of recommended instrument of approval (**Appendix E**).

Conclusion on MNES

The Department considers that the recommended conditions would provide suitable protection for MNES under the EPBC Act. The Department notes that, if approved by the NSW Minister for Planning and Public Spaces, the project would be referred to the Commonwealth Minister for determination under the EPBC Act.

Appendix H – Independent Advisory Panel on Energy Transition Advice

INDEPENDENT EXPERT ADVISORY PANEL FOR ENERGY TRANSITION

Stratford Renewable Energy Hub – Interim Advice

**Interim advice on serious and irreversible impacts to
Scrub Turpentine (*Rhodamnia rubescens*)**

14 January 2025

Report No: IEAPET 2025-01

EXECUTIVE SUMMARY

The NSW Department of Planning, Housing and Infrastructure (the Department) has requested advice from the Independent Expert Advisory Panel for Energy Transition (IEAPET) (the Panel) in relation to the proposed Stratford Renewable Energy Hub (the Project).

This interim advice has been prepared to assist the Department to consider any additional information required or provided after the Response to Submissions (RTS) stage of the assessment. The Panel's advice will be finalised following the assessment stage.

The Project's proponent is Gloucester Coal Ltd (Gloucester Coal), which is a wholly owned subsidiary of Yancoal. The application is for the construction and operation of a 300 megawatt (MW) pumped hydro energy storage and 320 MW solar farm on the site of the former Stratford Mining Complex. The Project has been declared to be critical state significant infrastructure, which means that it will be determined by the Minister for Planning and Public Spaces, under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979*.

In its request for advice, the Department noted that one of the key technical biodiversity issues for the Project is potential serious and irreversible impact (SAII) on the critically endangered species (NSW and Commonwealth) Scrub Turpentine (*Rhodamnia rubescens*). Scrub Turpentine is a small rainforest tree/shrub with a wide range across eastern NSW and south-eastern Qld (extent of occurrence, 14 734 000 ha) and an area of suitable habitat where the species has been recorded within this geographical range of 336 000 ha (area of occupancy). The Project's impact would arise from the proposed clearing of native vegetation for an upper reservoir, removing at least 217 stems and 145 hectares (ha) of suitable habitat.

The Department sought advice on:

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 reason that Scrub Turpentine is critically endangered is the presence of an introduced fungus that causes Myrtle Rust disease. This disease is causing a rapid decline of the species across its wide range. Extensive monitoring across the State confirms that Myrtle Rust is ubiquitous and that only a small proportion of individuals remain that are apparently resistant.

A NSW government recovery program led by Department of Climate Change Energy Environment and Water (DCCEE), "Saving our Species" (SoS) has collected samples of the plants showing resistance, which are being protected in an ex situ collection and being bred and trialled as a potential basis for re-establishment in the wild. This recovery program is showing signs of potential success, but is constrained by limited resources and the rapid pace of the disease's impacts.

The Panel advises that:

- a) The Project, if approved, is unlikely to contribute significantly to the risk of extinction of Scrub Turpentine in NSW. Neither avoidance of impact by refusal of the Project, nor proceeding with the Project 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 recovery 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 currently viable 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.

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1.0 INTRODUCTION AND SCOPE OF WORK

The NSW Department of Planning, Housing and Infrastructure (the Department) has established the Independent Expert Advisory Panel for Energy Transition (the IEAPET). The Panel's purpose is to provide access to world's best scientific advice when assessing renewable energy transition Projects under the *Environmental Planning and Assessment Act 1979* (EP&A Act).

On 19 November 2024, the Department requested advice from the IEAPET in relation to the proposed Stratford Renewable Energy Hub (the Project). The Project's proponent is Gloucester Coal Ltd (referred to as Gloucester Coal in this report), which is a wholly owned subsidiary of Yancoal. The application is for the construction and operation of a 300 megawatt (MW) pumped hydro energy storage (with a generating capacity of 3.6 gigawatt-hours (Gwh), a 320 MW solar farm and associated supporting infrastructure on the site of the former Stratford Mining Complex. The site is located in the Gloucester Valley, approximately 95 kilometres (km) north of Newcastle.

In its request for advice, the Department noted that one of the key technical biodiversity issues for the Project is potential serious and irreversible impact (SAII) on the critically endangered species (NSW¹ and Commonwealth²) Scrub Turpentine (*Rhodamnia rubescens*) arising from the proposed clearing of native vegetation for the upper reservoir of the pumped hydro energy storage. The Project Biodiversity Development Assessment Report (BDAR) prepared by the appropriately engaged DCCEEW-accredited ecologist concludes that the Project will result in the removal of 217 stems (BDAR Pg. 176) and 145.08 hectares (ha) of suitable habitat for the species (BDAR Pg. 99).

In its Environmental Impact Statement (EIS), (EIS Pg. 42), Gloucester Coal had identified that the species as a whole is currently threatened by the effects of the exotic fungus Myrtle Rust (*Austropuccinia psidii*) and subsequent onset of the Myrtle Rust disease, which is projected to reduce the global population of Scrub Turpentine by >80% over three generations or 10 years (BDAR Pg. 283, Table 10.2).

Gloucester Coal has proposed to undertake two actions (EIS Pg. 42) that would contribute to the survival of the species, including:

- providing the Saving our Species (SoS) program with germplasm material of potentially resistant individuals of the Scrub Turpentine within the development footprint to aid in establishment or augmentation of ex situ collections of genetically variable and potentially somewhat resistant individuals of the species; and
- contributing \$250,000 for independent research to produce positive outcomes for the species.

The Department requested that the Panel provide advice to inform the Department's assessment of the following:

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

This document constitutes the Panel's interim advice on these questions.

¹ Biodiversity Conservation Act 2016

² Environment Protection and Biodiversity Conservation Act 1999

1.1. METHOD OF OPERATION

A Panel of four members was convened by the Panel Chair to prepare the advice.

The Panel members were Simon Smith (Chair) (BA Hons), Emeritus Professor Nick Reid (FRSN, BSc Hons PhD), Nathan Garvey (FEIANZ, BSc) and Terry Bailey (reviewer) (BSc MBA, MPPM). All members confirmed that they were unaware of any potential for a perceived or actual conflict of interest in connection with the Project. Further information on each Panel member is at Appendix C.

Each member was appointed to lead and/or assist in one or more sections or aspects of the report and all members reviewed and contributed to the finalisation of the whole document.

The Panel received administrative support from Secretariat staff provided by the Department.

The Panel was briefed by staff from relevant government departments and Gloucester Coal, but conducted its work independently. Panel members also consulted with relevant expert researchers.

The Department asked the Panel to provide interim advice to inform the RTS stage of the assessment process, with final advice to be provided later, just prior to the completion of the assessment stage.

The Panel prepared this interim advice between 16 December 2024 and 13 January 2025.

1.2. KEY DOCUMENTS

Several documents were provided through the Department to support the Panel in preparing this interim advice, which are listed below. Other documents cited in the advice are referenced in footnotes.

Table 1: Key documents provided to the Panel.

Document Reference	Document Name
Documents provided by DPHI	Stratford Renewable Energy Hub Environmental Impact Statement, Gloucester Coal, September 2024 and the associated appendices: • Appendix D – Biodiversity Development Assessment Report
Agency Advice	Agency advice – DCCEEW Biodiversity Conservation Science Division (BCS) – dated 13 December 2024
Additional documents	• IEAPET Presentation - provided by Gloucester Coal • Scrub Turpentine Sites Map - provided by Gloucester Coal • Operational Response Plan MR Species – provided by BCS – dated May 2021 • SoS report <i>Rhodamnia</i> and <i>Rodomyrtus</i> – provided by BCS – dated March 2022 • SoS conservation Strategy – Scrub Turpentine Fact Sheet – published by DCCEEW (March 2022) • Guidance to assist a decisionmaker to determine a serious and irreversible impact – published by DCCEEW (2019)

	• Letter from Gloucester Coal – Response to request for information (dated 20 December 2024) • Also see cited references at Section 6.0
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1.3. SITE VISIT AND MEETINGS

Three Panel members visited the proposed Project site on 16 December 2024.

Panel meetings were convened on multiple occasions by videoconference during the preparation of this advice.

Table 2: Schedule of formal meetings involving the Panel.

Meeting Date	Meeting Information
16 December 2024	Site Visit
17 December 2024	Internal Panel discussion on report drafting strategy
18 December 2024	Panel meeting with DCCEEW Saving our Species staff working on Scrub Turpentine
18 December 2024	Panel meeting with Gloucester Coal
18 December 2024	Panel meeting with DPHI Energy and Resource Assessments
23 December 2024	Internal Panel discussion on interim report

2.0 DEVELOPMENT ASSESSMENT AND DETERMINATION FRAMEWORK

This section describes the development assessment context for this interim advice.

The Minister for Planning and Public Spaces has declared the Project to be critical state significant infrastructure (CSSI), which means that it will be assessed, and determined by the Minister, pursuant to Section 5.13 of Part 5, Division 5.2, Subdivision 1 of the EP&A Act.

The Project proposes direct impacts on threatened species, so the assessment under the EP&A Act is also subject to Section 7.9 of the *Biodiversity Conservation Act 2016* (BC Act), which requires the preparation of a Biodiversity Development Assessment Report (BDAR) for Projects assessed under Division 5.2 of the EP&A Act. BDARs must be prepared in conformance with the *Biodiversity Assessment Method* (BAM), by a DCCEEW-accredited ecologist.

Critical context for this advice is the specific requirement within Section 6.5 of the BC Act for the BDAR to identify threatened species and communities at risk of a serious and irreversible impact (SAII) and evaluate the extent and severity of the impact on an entity at risk of an SAII.

Whether a Project will result in an SAII is determined by the decision maker; i.e., not by the proponent or the accredited assessor preparing the BDAR. In considering whether a Project will result in SAII the penultimate test is established by Section 6.7(2) of the BC Regulation:

“it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct . . .”

Scrub Turpentine (*Rhodamnia rubescens*) has been identified by DCCEEW as a species at risk of SAI (NSW Department of Planning and Environment, 2024).

This interim advice considers whether the Project proposes an impact on Scrub Turpentine that would be SAI (if approved), based on the information available at this stage of the assessment process, prior to a response to submissions (RTS) being provided by Gloucester Coal that may provide additional information regarding the proposed impact of the Project on Scrub Turpentine.

Further discussion of development assessment and determination framework is contained in Appendix D.

3.0 SCRUB TURPENTINE AND MYRTLE RUST

This section provides an overview of Scrub Turpentine, how it came to be listed as Critically Endangered in both NSW and by the Commonwealth in 2019 and 2020, respectively, as a result of its susceptibility to the invasive fungal pathogen, Myrtle Rust, and the collaborative recovery efforts for Scrub Turpentine as part of the NSW Government’s ‘Saving our Species’ program, led by DCCEEW.

3.1. FORM, FEATURES, HABITAT AND RANGE OF SCRUB TURPENTINE

Scrub Turpentine (*Rhodamnia rubescens*, syn. *R. trinervia*, Myrtaceae), also known as brush turpentine, scrub stringybark and brown malletwood, can be a tree to 30 m with a stem diameter of 80 cm (Francis 1951, Floyd 2008), but is more commonly an evergreen small tree (5–7 m) or tall shrub (2–5 m; Nicholson and Nicholson 2001, Costermans 2009). It was formerly common along the subtropical east coast of Australia and adjacent Great Dividing Range up to 600 m a.s.l., from Batemans Bay on the South Coast of NSW to near Childers, inland of Bundaberg, Qld (NSW OEH 2022; Figure 1). It occurred chiefly in warmer rainforest, rainforest margins and moist sites in wet sclerophyll forest communities and regrowth, with a mean annual rainfall of 1000–1600 mm.

The extent of occurrence of Scrub Turpentine records (Figure 1) from south-eastern Qld to the South Coast of NSW is 14 734 000 ha. This is the area of the minimum convex polygon enclosing all reliable records of the species (NSW TSSC 2019). Within this geographical range, the area of occupancy (AOO) where the species has been recorded in suitable habitat is 336 000 ha, based on the number of 2 km × 2 km grid cells in which the species has been reliably recorded (NSW TSSC 2019). This is the method for assessing AOO recommended by IUCN (2024).

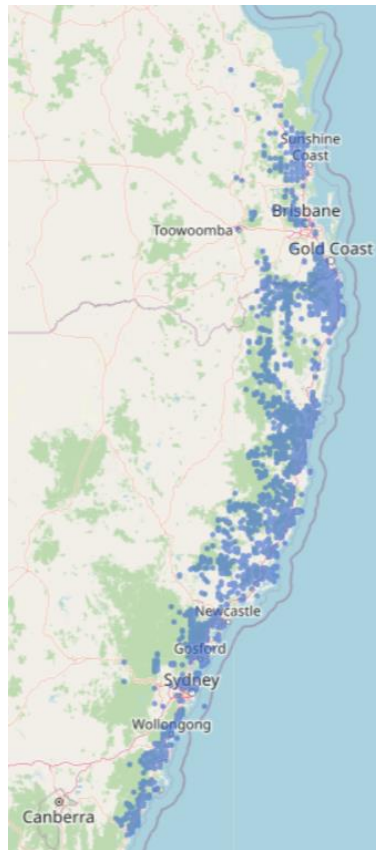


Figure 1: Distribution of records (blue dots) of Scrub Turpentine (*Rhodamnia rubescens*) in coastal and subcoastal eastern Australia, from near Childers, Qld, in the north, to Batemans Bay, NSW, in the south (Atlas of Living Australia 2025).

The leaves of Scrub Turpentine are opposite, shortly petiolate, ovate to elliptic, 4–12 cm in length and shortly acuminate, with three distinct veins (midvein and two marginal veins). The inflorescences of white open flowers with numerous stamens, about 0.8–1 cm across, appear in spring, 1–3 per axil and each usually 3-flowered. The fruits ripen in summer, the globose berries being 4–8 mm in diameter, containing several seeds and turning red, then glossy black (Cronin 2000; Wilson 2002). The fruit are eaten and seeds dispersed by rainforest frugivorous birds, including Brown Cuckoo-Dove, Southern Figbird, Green Catbird (Floyd 2008), Regent Bowerbird and Satin Bowerbird (Church 1997).

3.2. LISTING OF THE SPECIES AS THREATENED UNDER LEGISLATION

Scrub Turpentine, a species in the family Myrtaceae, was listed as Critically Endangered in NSW under the *Biodiversity Conservation Act 2016* (BC Act) on 1 February 2019 (NSW OEH 2022). The species is highly to extremely susceptible to infection by Myrtle Rust, an exotic microfungal pathogen of Myrtaceae. Myrtle Rust was first detected in Australia in a commercial nursery on the Central Coast of NSW in April 2010 and subsequently at other business premises in the ensuing months (Carnegie and Cooper 2011). Within six months, it was detected in adjacent bushland, and subsequently invaded natural ecosystems throughout coastal NSW and south-east Qld.

Myrtle Rust affects all the above-ground parts (leaves, stems, flowers and fruits) of infected plants of Scrub Turpentine. Infection by Myrtle Rust has led to the precipitous decline of the species throughout its range by killing plants of all ages and suppressing vegetative resprouting and seedling recruitment. The NSW Threatened Species Committee (2018) observed that Scrub Turpentine is unlikely to have soil-stored seed banks, meaning the survival of the species in the

wild is dependent on the production of viable seed-containing fruit by healthy plants and their subsequent dispersal.

The NSW Threatened Species Scientific Committee (2019) observed in its Final Determination to list the species as Critically Endangered, that:

- a) Infection of Scrub Turpentine by Myrtle Rust is widespread and severe through the species' entire range (Figure 1);
- b) In a survey of 43 sites between Batemans Bay, NSW, and Gympie, Qld (Carnegie et al. 2016), Myrtle Rust-infected plants were present at all sites, all age classes of tree were similarly affected, and disease incidence was greater on immature leaves than on mature foliage;
- c) Where local populations have been revisited and surveyed after a period of a year or more, mortality has generally increased;
- d) Seedlings and vegetative suckers of Scrub Turpentine are killed by Myrtle Rust, and so the continued decline of mature plants and the lack of successful regeneration threaten the species' long-term viability;
- e) No effective or practical chemical, biological or management control is available for protecting populations of Scrub Turpentine in natural ecosystems from Myrtle Rust infection;
- f) In the absence of an effective control strategy for Myrtle Rust, further rapid declines of Scrub Turpentine are highly likely;
- g) It is also suspected that, in the past, some populations of Scrub Turpentine underwent significant decline due to land clearing, fragmentation of populations, and weed invasion;
- h) Under documented rates of decline due to Myrtle Rust, Scrub Turpentine is likely to undergo a 96–99% reduction in population size across its range within three generations (i.e. ~100 years);
- i) Scrub Turpentine is facing an extremely high risk of extinction in the immediate future due to Myrtle Rust infection.

The panel noted that Gloucester Coal's EIS (BDAR) represented the projected population size reduction as >80% over three generations or 10 years, which accords with the NSW TSSC's (2019) Final Determination that "the species is projected to experience a population reduction of > 80% ([Critically Endangered] threshold) over three generations or 10 years due to the effects of introduced ... pathogens ..."

The NSW Threatened Species Scientific Committee in its preliminary Conservation Assessment (NSW TSSC 2018) earlier observed that relatively healthy individual Scrub Turpentine plants have been detected in some sites, and these should be further investigated.

Following NSW's listing decision, the Commonwealth listed Scrub Turpentine as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* on 11 December 2020. The Commonwealth's Threatened Species Scientific Committee's (2020) advice was based on the NSW Government's assessment and determination. The Commonwealth did not require a Recovery Plan to be developed, stating that the Approved Conservation Advice provided sufficient direction to implement priority actions and mitigate against key threats.

For broader context, in September 2024, the Qld Government reviewed its threatened species listings and also reclassified Scrub Turpentine as Critically Endangered (Qld Government 2024).

3.3. IMPACTS OF MYRTLE RUST

Myrtle Rust is a fungus from South America that affects trees and shrubs in the family Myrtaceae, which includes Scrub Turpentine. It infects leaves, stems, flower buds and fruits,

with varying impact. Some species of Myrtaceae experience only mild symptoms, such as leaf spots, while others, such as Native Guava (*Rhodomyrtus psidioides*) is highly susceptible and near extinct in the wild (Invasive Species Council 2024). Individuals of some affected species of Myrtaceae vary in their susceptibility to the disease. Still other Myrtaceae are not recorded as exhibiting any overt symptoms of infection, even under inoculation screening conditions optimal for the pathogen; these species may be fully resistant (SoS 2021). Symptom-less species are not considered to be host species of Myrtle Rust.

Myrtle Rust spores are spread by wind, water, insects, other animals, as well as being carried on infected plants and on tools, vehicles and clothing (Invasive Species Council 2024). The spores can move large distances and infect plants many kilometres away.

Since its detection in 2010 at a cut flower growing business near Gosford, NSW, Myrtle Rust has spread rapidly, establishing itself across eastern and northern Australia, from Tasmania to the Torres Strait islands, and west to the Kimberley (Invasive Species Council 2024). Myrtle Rust is best suited to the tropical and subtropical rainforest environments of eastern Qld and NSW. Although present in Victoria and Tasmania, colder climates as well as dry regions limit its spread.

The NSW Government gazetted the '*Introduction and establishment of Exotic Rust Fungi of the order Austropucciniales pathogenic on plants of the family Myrtaceae*' as a Key Threatening Process (KTP) on 15 April 2011, and the KTP was transitioned onto Schedule 4 of the BC Act. The NSW Scientific Committee's (2011) final determination for the KTP listing stated:

- a) Exotic disease-causing rusts (basidiomycete fungi of the order Pucciniales) like Myrtle Rust are a major threat to native Australian species of Myrtaceae.
- b) Australia, including its offshore island territories, has 88 genera and about 2,253 native species of plant belonging to the family Myrtaceae, representing around 10% of Australia's native flora.
- c) Myrtaceous plants are ecologically important, often being a frequent or dominant floristic and structural element in many Australian terrestrial ecological communities (e.g. eucalypt forests, woodlands and mallee).
- d) Of 83 native Australian species of Myrtaceae from 19 genera tested for susceptibility to Myrtle Rust, 73 species from 16 genera showed some degree of susceptibility in more than 30% of sample plants. The taxa showing infectability – in the wild, in cultivation, or in the laboratory – represent 13 of the 17 tribes currently recognised in the family, suggesting a broad taxonomic range of potential hosts and an existing broad base of capability for Myrtle Rust to infect new host species.
- e) When Myrtle Rust was first identified on the Central Coast of NSW in 2010, the extent of infection at another bushland site suggests the disease may have already been present in Australia for about two years.
- f) Initially mainly found on cultivated plants in horticultural situations, the disease was detected on wild plants in bushland sites in the same region from late October 2010.
- g) By March 2011, Myrtle Rust had been found on more than 40 species of cultivated and wild Australian native plants at many sites along the NSW coast north from Ulladulla, in south-east Qld, and in the Cairns region of north Qld.
- h) Wet and windy conditions through much of 2010 are thought to have been conducive to reproduction and spread, as well as human transportation of infected material.
- i) Myrtle Rust manifests initially on its host plants as purple or grey to brown lesions (spots) on leaves and sometimes on buds and young stems, developing into pustules with yellow powdery masses of spores, or less conspicuous brownish spore-producing pustules.
- j) Myrtle Rust attacks young growing leaves and shoots, which may become stunted, distorted, or necrotic, and heavy infection may affect the habit and viability of the host plant.
- k) The asexual life cycle can be completed in as little as 10 days.

- l) Spores of Myrtle Rust can be dispersed by wind, water-splash, on plant material including seed, on people and their clothing and equipment, and by insects including honeybees (*Apis mellifera*) which work the spore masses. Transport of domestic bee hives is a potential vector for long-distance dispersal.
- m) Spores are thought to be able to remain viable for up to 90 days on plant material and in the environment.
- n) Myrtle Rust is known to infect a wide range of Australian Myrtaceae under field and/or laboratory conditions, including genera that are ecologically important in Australian ecological communities such as *Angophora*, *Callistemon*, *Corymbia*, *Eucalyptus*, *Kunzea*, *Melaleuca*, *Syncarpia* and *Syzygium*.
- o) The susceptibility or resistance of myrtaceous plants to Myrtle Rust infection, and the severity of the resulting disease symptoms, varies with rust biotype, host species, host provenance within species, and host stage of growth.
- p) Myrtle Rust is unlikely to establish in arid and semi-arid regions due to its need for high humidity for germination.
- q) Preliminary bioclimatic modelling of areas of Australia likely to be at high risk of Myrtle Rust establishment predict, as a minimum, that most of the eastern seaboard and the eastern fall of the Great Dividing Range, and coastal areas in the Top End of the Northern Territory, are climatically suitable, assuming the presence of suitable host species and microhabitat. A zone of lower risk extends onto the western slopes of the Divide.
- r) The area of highest risk in NSW is the coastal zone from the Illawarra north to the Qld border. This latter area includes a large proportion of the NSW conservation reserve system, many Myrtaceae-dominated communities of heath, woodland and forest, and most of the NSW component of Australia's World Heritage-listed rainforest, which has a high proportion of myrtaceous species.
- s) Alternative bioclimatic modelling to define climatic habitat likely to be suitable for the rust for only some years per decade, extends the lower-risk area well west of the Divide in northern and southern Qld.
- t) Large differences in resistance to Myrtle Rust infection have been observed within and between species of Myrtaceae and between seedlots of the same provenance. Intraspecific variability of hosts in disease reaction may be an important factor in determining the severity and impact of the disease as it naturalises and spreads in Australia. Host species or genotypes with low disease severity may nevertheless act as reservoirs of the rust organism and support its spread.

The Commonwealth included Myrtle Rust in the Key Threatening Process, 'Novel biota and their impact on biodiversity', listed on 26 February 2013 under the EPBC Act. The Threatened Species Scientific Committee (2013) noted in its advice to the Commonwealth Minister at the time that:

- a) Myrtle Rust posed a potentially serious threat to native species of Myrtaceae.
- b) The impact of Myrtle Rust on native species was still unclear.
- c) The National Myrtle Rust Coordination group was coordinating ongoing actions to respond to Myrtle Rust focusing on mitigating its impact on the natural environment, including threatened and endangered species, and on industries that rely on myrtaceous species.

By 2017, the Invasive Species Council (2017), a not-for-profit organisation, reported that more than 350 native species (more than 10% of native Myrtaceae) were susceptible to Myrtle Rust (in the laboratory or wild). About 20% of the susceptible species in the wild were 'highly' or 'extremely' susceptible, including 48 Qld native species. Myrtaceae species listed as threatened (under state or Commonwealth legislation) that were susceptible included angle-stemmed myrtle (*Gossia gonoclada*, endangered, Cwth, and critically endangered, Qld), peach myrtle (*Uromyrtus australis*, endangered, Cwth and NSW), narrow-leaved malletwood (*Rhodamnia angustifolia*, critically endangered, Cwth and Qld), *Backhousia oligantha* (endangered, Qld), giant ironwood (*Choricarpia subargentea*, endangered, NSW) and sweet myrtle (*Gossia fragrantissima*, endangered, Cwth and NSW). The conservation status of Scrub Turpentine and

native guava (*Rhodomyrtus psidioides*) were not of concern prior to 2010 but they both were now recognised to be at risk of regional or global extinction, both subsequently being listed as critically endangered in NSW and Qld and by the Commonwealth.

By 2020, the same year as the release of the *Myrtle Rust National Action Plan* (Makinson et al. 2020), the number of Myrtaceae species susceptible to infection had increased to 382 native species or subspecies. Sixteen species were recommended for the most urgent conservation action, five of them on an ‘emergency’ basis by 2023–2025. Scrub Turpentine is one of the five emergency species. The rationale for the recommendations is that minimisation of declines and extinctions and at least partial species and ecosystem recovery involving the species is possible, if options are secured as quickly as possible. Time is of the essence because the most susceptible species, including Scrub Turpentine, have lost a large percentage of their populations already, reducing the neutral genetic diversity among often a few remaining survivors and greatly increasing the risk of extinction due to inbreeding depression, let alone Myrtle Rust infection (Chen et al. 2024). The reduction in the global population of Scrub Turpentine has been so precipitous since 2010 that the species’ effective extinction in the wild is precited within 5–10 years in the absence of rescue efforts (SoS 2021).

In the *Operational Response Plan* for Scrub Turpentine’s recovery in the wild, SoS (2021) made the following salient observations about current understanding of the impact of Myrtle Rust on Scrub Turpentine:

- a) There are no pathogen-free ‘refugia’: the entire range of Scrub Turpentine is within the east coast distribution of Myrtle Rust.
- b) It is possible that some Scrub Turpentine individuals possess alleles conveying some tolerance of Myrtle Rust infection. The fact that some mildly symptomatic infected individuals still survive in the wild in the presence of dead and almost-dead conspecifics suggests that these individuals possess some genetic resistance to infection.
- c) Scrub Turpentine has declined across its entire range due to Myrtle Rust infection with many sub-populations lost and others greatly reduced in plant health and density.
- d) Most large plants are now dead. Scrub Turpentine survives mainly as mid-sized shrubs (3–4 m). These are subject to seasonal attack by Myrtle Rust, with reduced growth rates, very little fruit and seed production, and continuing mortality.
- e) Scrub Turpentine has largely stopped producing flowers and fruits, and hence seed, in most years over most of its range. The leaves of any seedlings that do germinate are ideal new growth for infection by Myrtle Rust and the seedlings usually fail to establish.
- f) Scrub Turpentine has seed that is evolved to germinate rapidly when mature; there is no reservoir of older seed stored in the soil.
- g) The declining density of adult plants and the reduction in flowering in most years means that pollen is less likely to be transferred between individuals, decreasing the rate of out-crossing, increasing the rate of selfing and inbreeding, and likely reducing the genetic health and fitness of any viable seed.
- h) Given the documented decline of Scrub Turpentine due to Myrtle Rust infection across the whole of its range since 2010, effective extinction in the wild (decline to negligible levels of occurrence, or a total lack of recruitment) is likely within the next 5–10 years.
- i) The conservation of Scrub Turpentine and its genetic diversity and any eventual reintroduction of rust-resistant genotypes into the wild, rests on the implementation of short-term emergency actions, and targeted research and development over the medium and longer terms.

3.4. RECOVERY EFFORTS FOR SCRUB TURPENTINE

The *Myrtle Rust National Action Plan* (Makinson et al. 2020) proposes actions for the recovery of susceptible native Myrtaceae under two overarching recommendations and five themes, for immediate implementation to minimise extinctions of native plant species and the consequent

social, environmental and economic impacts. The recommendations and themes are listed in Table 3.

Table 3: The overarching recommendations, themes, objectives and actions advocated for implementation over the period 2023–2025 in *Myrtle Rust in Australia: a National Action Plan* (Makinson et al. 2020).

a) Overarching recommendation 1: Establish momentum, funding and leadership for a coordinated national environmental response to Myrtle Rust a. Theme 1: Enabling the response i. Establish and resource leadership 1. Establish and resource a steering committee ii. Establish a collaborative response 1. Secure engagement and commitment from key stakeholders iii. Establish funding arrangements 1. Identify funding needs and options iv. Expedite legislative mechanisms 1. Expedite listing of species and ecological communities at serious risk from Myrtle Rust 2. Consider expedited instruments to focus on the threat of Myrtle Rust (because legislative or policy recognition of ‘key threatening processes’ is not provided for in all jurisdictions) b. Theme 2: Awareness and engagement i. Maximise social commitment to and participation in response 1. Raise awareness of Myrtle Rust and actions required 2. Engage other key non-government stakeholders in the response (NGOs, NRM professionals, environmentalists, volunteers, etc.) 3. Seek Indigenous stakeholder input and participation (employing appropriate protocols and ‘right-way science’) b) Overarching recommendation 2: Adopt a coordinated and long-term national environmental response to Myrtle Rust a. Theme 3: Impact assessment i. Establish information hub and data validation protocols 1. Establish Myrtle Rust data hub and information repository ii. Assessment of Myrtle Rust impact on priority species 1. Standardise the impact assessment methods and monitoring protocols 2. Identify the most effective potential monitoring sites 3. Undertake rapid field surveys 4. Undertake quantified field impact studies iii. Assess Myrtle Rust impact on ecological communities and function 1. Continue and expand research programs in priority ecosystems b. Theme 4: Towards recovery i. Capture germplasm 1. Secure future options for species in current or Projected decline through germplasm capture 2. Enable seed storage research, and determine alternative germplasm storage options for storage-intolerant species 3. Inventory priority Myrtaceae species in botanic gardens and other collections 4. Scope potential locations for ex-situ and inter-situ live plant collections and/or seed production areas ii. Improve understanding of affected species 1. Assemble host life history profiles for priority species 2. Develop online atlas of authenticated Myrtaceae seedling images iii. Explore resistance and control 1. Assess selected species for variation in levels of resistance and tolerance 2. Augment knowledge of phylogenetic relationships within Myrtaceae
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- 3. Review and identify priorities for resistance research
 - 4. Review and identify priorities for silvicultural selection and breeding for resistance
 - 5. Explore novel Myrtle Rust controls through reviews and scoping studies
 - iv. Explore reinforcement and reintroduction strategies for affected species
 - 1. Explore recovery options for species and ecosystems in decline
 - c. Theme 5: Biosecurity
 - i. Prevention of arrival of new strains of Myrtle Rust
 - 1. Continue pre-border and border vigilance for all strains of Myrtle Rust
 - 2. Review potential pathways of entry of different strains of Myrtle Rust into Australia
 - 3. Establish an Asia–Pacific Myrtle Rust network
 - 4. Promote and contribute to coordinated international Myrtle Rust collaborative biosecurity and biological research network
 - ii. Maintain domestic quarantine
 - 1. Vigorously maintain current quarantine arrangements for Western Australia and South Australia
 - 2. Ongoing review and identification of potential risk pathways for entry of Myrtle Rust to WA and SA
 - iii. Monitor for changes in pathogen population
 - 1. Develop strategies to monitor for changes in the Australian and regional Myrtle Rust populations
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The specific threat posed by Myrtle Rust infection to the survival of Scrub Turpentine is the decline in health, death of plants and lack of seed-based recruitment or vegetative regeneration of the species (NSW OEH 2022). A targeted strategy for managing the rescue and recovery of Scrub Turpentine in the face of the Myrtle Rust threat has been developed by the NSW Government (DCCEEW) “Saving our Species” program (SoS 2021). Part of the vision for the eventual recovery of Scrub Turpentine in the wild is the identification of genotypes or traits that confer greater rust-tolerance (more resistance) or optimally full rust-resistance. At this stage of the program, it is understood that either outcome may be achievable. Both offer potential for the species’ recovery in the wild.

The vision for the species’ recovery effort is shown in Figure 2, and the short-term, medium-term and long-term priorities for action are detailed in Appendix B, Table B.1.



Figure 2: Vision for the long-term recovery of Scrub Turpentine in the wild (SoS 2021). Since the SoS's (2021) development of the *Operational Response Plan* for Scrub Turpentine and the other two species, the SoS Project team, led by DCCEEW and including researchers at the Research Centre for Ecosystem Resilience at the Botanic Gardens of Sydney (Sydney), the Australian PlantBank at the Botanic Gardens of Sydney (Mt Annan), Booderee Botanic Gardens (Jervis Bay), the University of New South Wales, Australian National University, and University of Sydney have achieved some of the short and medium-term priorities outlined in Appendix B, Table B.1 for Scrub Turpentine.

The work they have completed to date is summarised by Chen et al. (2024):

- a) Ex situ collections of Scrub Turpentine have been augmented with the goal of preserving remaining genetic variation in the species.
- b) Genetic diversity in Scrub Turpentine is distributed along a latitudinal gradient across the range of the species, with relatively high levels of genetic connectivity across the landscape, little evidence of strong differentiation and no conspicuous barriers to gene flow (Figure B.1, Appendix B). Therefore, there are unlikely to be genetic compatibility problems with mixing germplasm from widespread collection sites. Given the massive contraction in effective population size of Scrub Turpentine due to Myrtle Rust, it might be advantageous to promote genetic mixing for the recovery effort, although the broad latitudinal genotypic gradient could suggest some regional adaptation to environmental conditions in different parts of the range. Whole genome sequencing of Scrub Turpentine revealed a large historical effective population size (>100,000) with substantial gene flow across the landscape, and little evidence of deleterious genetic load hitherto. However, the large population contraction since 2010 suggests the risk of inbreeding depression, which future work should avoid.

- c) Some 297 plants in ex situ collections at Mount Annan and Booderee Botanic Gardens were exposed experimentally to Myrtle Rust, some 55% displaying varying levels of resistance to infection. However, of 14 resistant individuals planted at experimental sites in northern NSW, only two were unaffected by rust with no dieback after two years; 10 plants developed substantial infection (severe dieback) and some died.

The team of researchers noted above is now working quickly on collecting further germplasm from remaining individuals in the wild, screening them genetically, growing up seedlings from controlled pollinations, further genetic assays of the progeny and the planting out of potentially resistant individuals in further field experiments (S. Yap & C. Stehn, pers. comm, December 2024). Time is of the essence with this work while surviving individuals remain in the wild that can be collected to augment ex situ germplasm collections.

What this collaborative R&D program demonstrates is that:

- (1) there are tangible pathways to recovery for species that are highly susceptible to Myrtle Rust via a genetically informed breeding program, and
- (2) there is a critical need to act quickly before the large amount of neutral genetic diversity in populations of rust-susceptible species throughout their natural range is lost.

The current recovery strategy for Scrub Turpentine in NSW (NSW Department of Planning and Environment, 2024) is designed to counter the decline and death of much of the global population in eastern Australia, and the lack of clonal regeneration or seed-based recruitment due to Myrtle Rust infection. The overarching strategy to secure the species' survival in the wild in the long term is to protect and preserve as much of the remaining genetic diversity as possible in ex situ collections and other methods of germplasm storage, while the breeding work continues to improve disease resistance, for eventual translocation of rust tolerant and/or resistant, climate-ready plants back into the wild throughout the species' range. The core of the current strategy is summarised in the seven actions in Table B.2, Appendix B.

The Commonwealth Threatened Species Scientific Committee (2020) identified acquiring resources for genetic and physiological research into the resistance and susceptibility of Scrub Turpentine to Myrtle Rust as a key conservation priority, and the Scrub Turpentine SoS Project team, (C. Stehn pers. comm, December 2024) identified capacity constraints at Mount Annan Botanic Gardens in maintaining the ex situ living collections of Scrub Turpentine and other Myrtaceae susceptible to Myrtle Rust. Funds are limited, the breeding resistance program having spent perhaps \$1 million in recent years. The team (S. Yap pers. comm., December 2024) highlighted the desirability of being able to expand the recovery program for Scrub Turpentine and other susceptible Myrtaceae by:

- having more sites for ex situ collections to spread the risk (in case a site is lost) and increase the amount of experimental material to work with;
- developing seed production areas to increase production of resistant plant stocks; and
- having more staff and budget for field work (monitoring of wild populations, germplasm collection, planting out trials, etc.), maintaining the ex situ collections and carrying out resistance assays and controlled pollinations to increase living plant stocks; and the conservation genomics work (genetic sequencing, resistance screening, etc.) in the laboratory.

More details of the NSW and Commonwealth plans of action for species recovery and a map showing the genetic variability of the specimens stored in ex-situ germplasm collections is attached in Appendix B.

4.0 THE PROJECT AND ITS IMPACTS ON SCRUB TURPENTINE

4.1. THE PROPOSED PROJECT

Gloucester Coal proposes to redevelop a recently closed coal mine to construct a 300 MW x 12 hour pumped hydro electricity generation and energy storage facility. The facility would comprise a modified existing lower water storage and a new upper water storage, connected by an underground tunnel and serving a combined underground generation and pumping facility.

Gloucester Coal also proposes to construct a 320 MW solar farm, to supply electricity to help pump water back up hill within the hydro facility.

The purpose, benefits and anticipated impacts of the Project are set out in the EIS published on the NSW Major Projects website.

4.2. PROPOSED DIRECT IMPACTS ON THE SCRUB TURPENTINE

The Panel has been asked to provide advice on the potential impacts on Scrub Turpentine. This interim advice has been prepared to inform the RTS stage of the assessment process when further studies and consideration are typically undertaken.

The proposed impact of the Project on this species arises because the proposed upper reservoir would be located in an area of native vegetation that includes Scrub Turpentine. The flora surveys conducted for the Project's EIS identify the presence of 217 stems within an area of proposed disturbance of 145 ha of land that is habitat for the species (Figure 3). These would all be lost if the upper reservoir is constructed as proposed.

The Panel observed that the survey area is steep and difficult to traverse, and most examples of the species are very small with limited foliage and hard to locate. Further, the surveys undertaken by Gloucester Coal and their consultant were not able to access some areas. There are also some proposed impact areas not marked as inaccessible that have not yet been surveyed. Hence it is likely that there would be more stems than reported, although some reported stems may have already died.

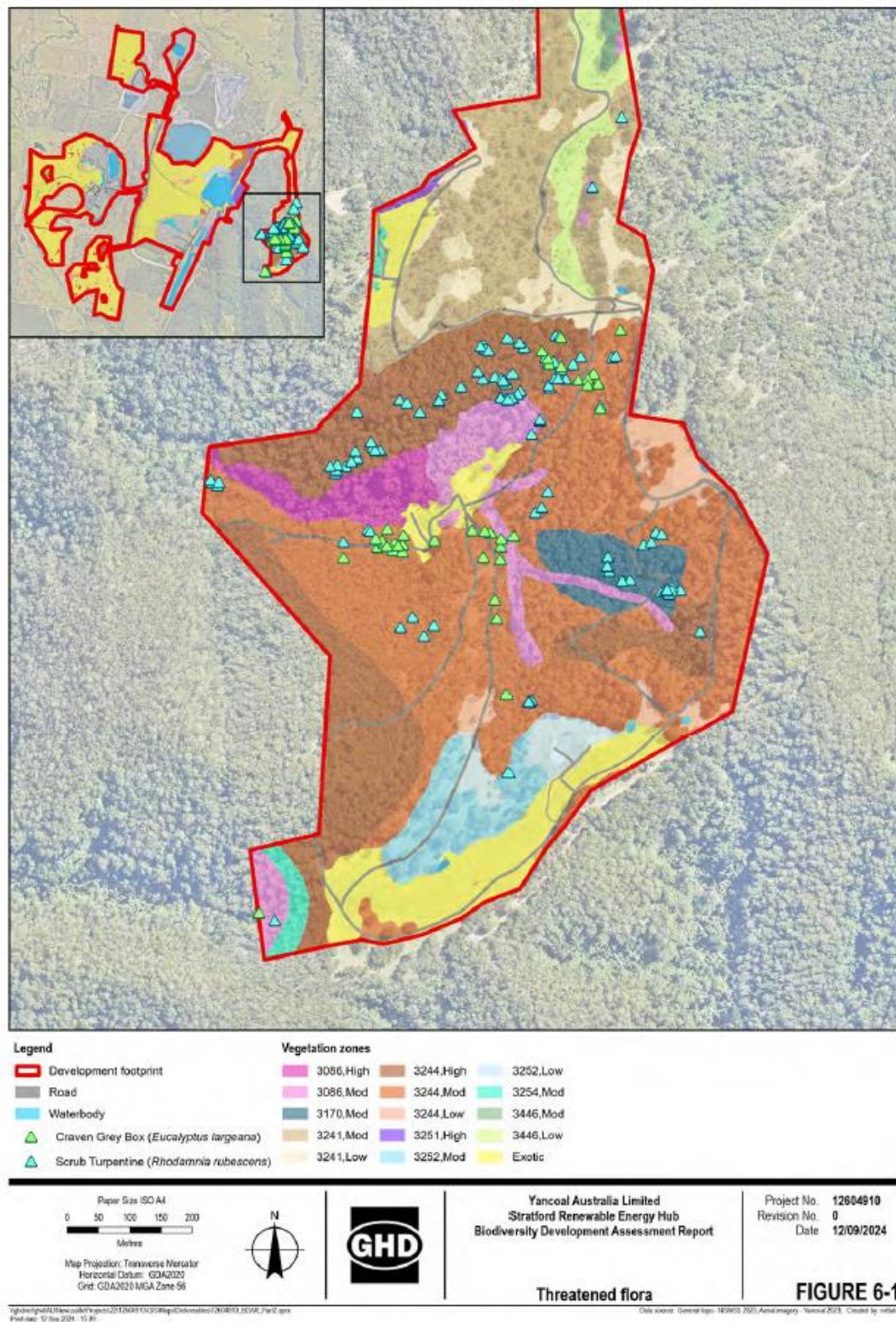


Figure 3: Scrub Turpentine records in the upper reservoir (Figure 6.1 of GHD 2024).

The BDAR flora survey reports that the population of the species is ‘afflicted with Myrtle Rust disease’. It further reports that most examples presented as ‘young suckers or saplings’, rather than as ‘healthy canopy/sub canopy trees’. It reported that there were some individuals with no visible signs of infection at the time of survey. These observations are consistent with the Panel’s understanding of conditions across the species’ range. At its site visit, the Panel observed these

impacts, with all observed specimens showing signs of infection, stunted size and lack of vigour. The Panel was unable to locate individuals at the site of some survey records, suggesting that wider patterns of local population loss are replicated at some parts of the site.

In its advice dated 13 December 2024, DCCEEW noted the following:

- BCS considers the surveyed Scrub Turpentine to be an underestimate as the assessor has not adequately surveyed for the species and the survey completed did not cover all areas of known habitat within the site.
- Gloucester Coal should be requested to undertake further survey to be able to determine the extent of the impacts for Scrub Turpentine.

4.3. THE LOCAL EXTENT AND TRAJECTORY OF THE SPECIES

The EIS and Appendix D (the BDAR) only include survey data for the proposed areas of impact. During the site visit, Gloucester Coal advised that it had conducted additional surveys nearby on the proponent's own land and in The Glen Nature Reserve, looking in sheltered gully locations, near the access road, likely to be suitable habitat for the species. The results, shown below (Figure 4), are by no means comprehensive but they do show that there is a relatively wide local distribution of Scrub Turpentine.

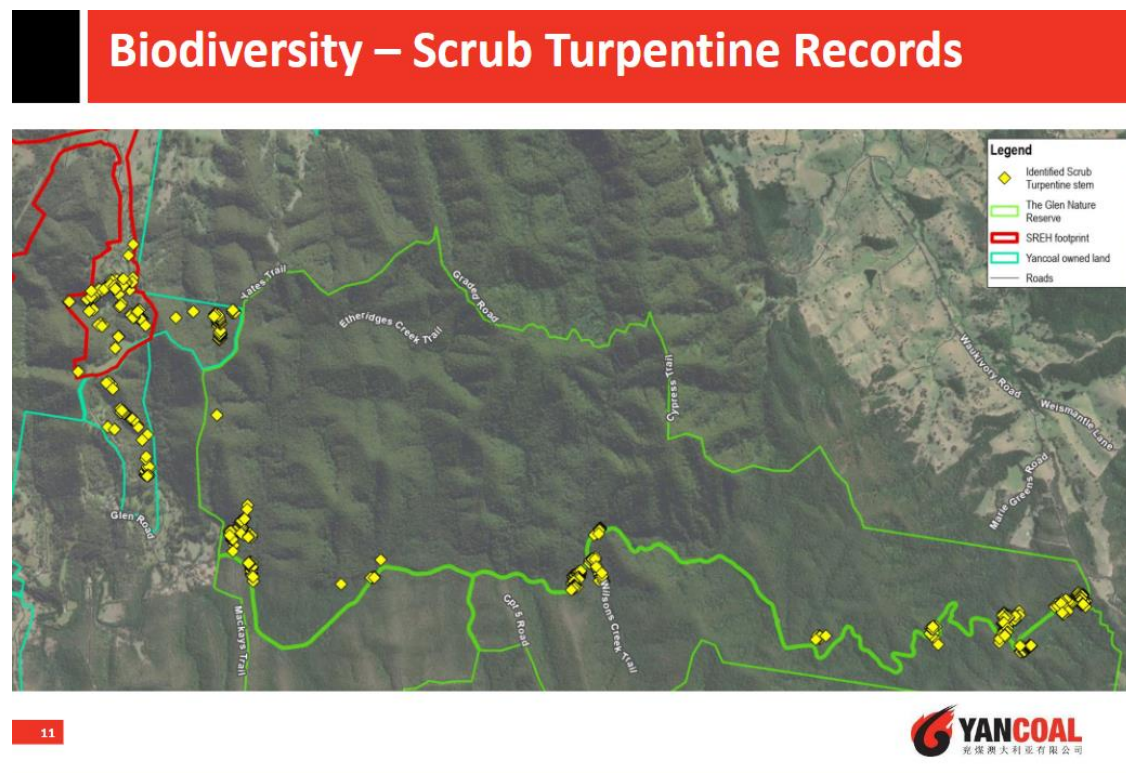


Figure 4: Scrub Turpentine records in proximity to the Project, including land owned by Gloucester Coal and in readily accessible parts of The Glenn Nature Reserve.

The likelihood of additional plants of Scrub Turpentine occurring on land owned by Gloucester Coal and other nearby public and private landowners is supported by Maxent modelling of Scrub Turpentine habitat suitability in eastern NSW, undertaken by Kavanagh et al. (2021) for the NSW Natural Resource Commission. Figure 5 shows a large area of forested suitable habitat, 30 × 15 km, stretching between Stratford in the north and Myall River and Bulahdelah in the south (Figure 5).

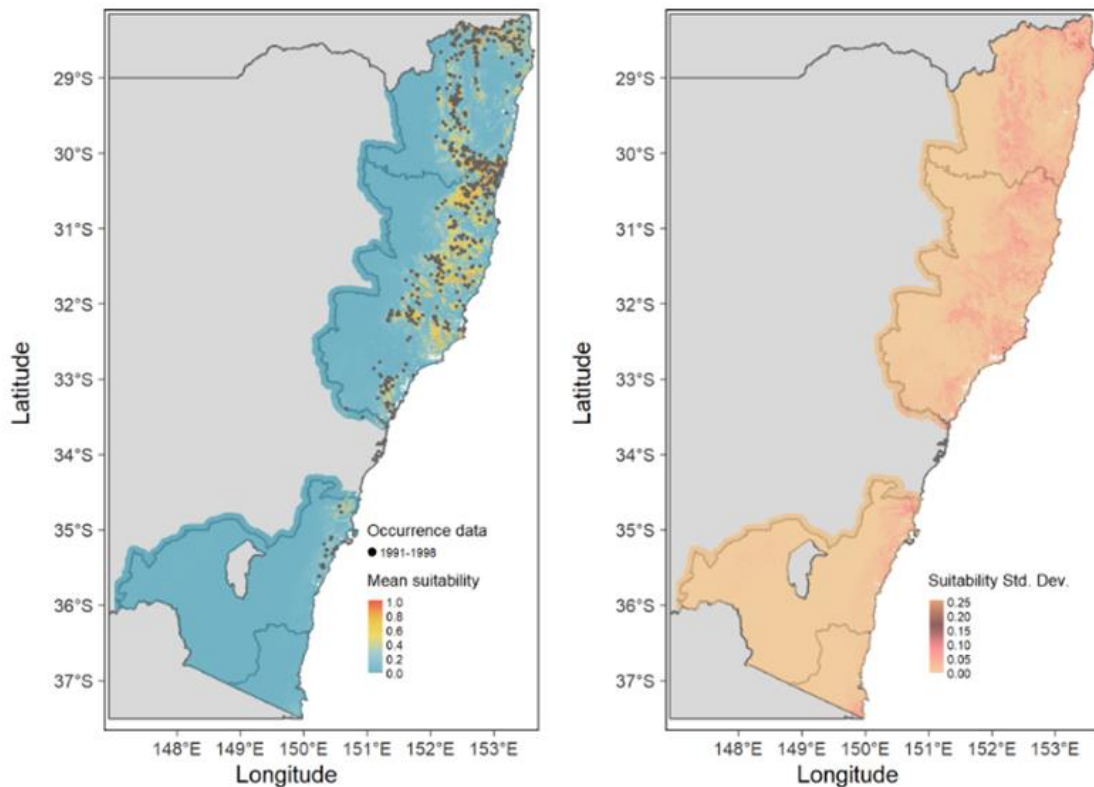


Figure 5: (a) Predicted mean habitat suitability (left) and (b) the standard deviation of habitat suitability for Scrub Turpentine (right), based on ten model runs of Maxent. The occurrence data span 1987–2000 for systematic survey data and 1991–1998 for presence-only data extracted from the Atlas of Living Australia (Kavanagh et al. 2021).

Moreover, Scrub Turpentine occurs as a single interconnected population across the species’ range without major disjunctions (Saving our Species DCCEEW, pers. comm. December 2024; Figure B.1, Appendix B).

The survey records and the Panel’s observations on site suggest that the pattern of distribution, infection and loss due to Myrtle Rust are similar in the area assessed by Gloucester Coal as is occurring across the range of the species. The Panel is not aware of any evidence that the area of proposed impact has any unusually favourable features conducive to survival of the species although the BDAR (GHD 2024) notes observations of young suckers and even larger stems to 3 m with no visible signs of infection. This suggests a possibility that there could be a small percentage of individual plants that are tolerant or resistant to Myrtle Rust, as appears to be the case across the species’ range. The value of collecting samples of such individuals for inclusion in the recovery breeding program should be explored in consultation with the scientists who are leading the program.

5.0 INTERIM ADVICE

The Panel has been asked to provide very specific interim advice to be used by assessors and decision-makers when considering a much wider range of potential impacts and benefits arising from the proposal. The Panel’s advice will be finalised following the assessment stage.

Advice on the two questions we have been asked is set out below.

5.1. THE EXTENT TO WHICH THE PROJECT IS LIKELY TO CONTRIBUTE SIGNIFICANTLY TO THE RISK OF EXTINCTION

- a) 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. The rust has led to a rapid reduction in population numbers across the species' wide range.
- b) Clearing of habitat as proposed in this Project is not a factor adding to the risk of extinction. The proposed impacts represent an immaterial proportion of the range of the species and the likely number of extant individuals.
- c) Refusing the Project to prevent the loss of 217 stems as reported would not increase the prospect of the species' survival. The stems observed by the panel on the site were heavily impacted by the disease and are very unlikely to be able to flower and reproduce to sustain the local population on-site or nearby. It is unlikely that there would be a viable seed bank in the soil on the site, as the species produces a fleshy fruit that does not persist in the soil.
- d) The Panel noted that the surveys for Scrub Turpentine within the upper reservoir footprint and development zone are incomplete and that additional individuals are likely to be present and to be impacted. On the other hand, some previously surveyed individuals may already be lost. Additional survey may locate individuals resistant to Myrtle Rust that could potentially be used to contribute to the recovery program. These potential variations in further survey outcomes do not change our advice in a) or b) above.

5.2. THE APPROPRIATENESS OF GLOUCESTER COAL'S PROPOSED ACTIONS TO CONTRIBUTE TO THE SURVIVAL OF THE SPECIES

- a) The NSW Government-led (DCCEEW) Save our Species program has established a research and recovery program that appears to employ the only credible strategy for preventing the extinction of Scrub Turpentine in the wild. This is to find and reproduce genetic variants of the species that are tolerant or resistant to the disease.
- b) The program has collected samples and researched the genetic features of the species. It has examined the patterns of genetic diversity within the species across NSW and acquired what it believes is a sufficiently diverse collection to begin a selective breeding program. It has established an ex situ collection to preserve living individuals under controlled conditions and is now screening and trialling potentially resistant individuals in the field to determine their resilience. If these are successful, the final step for recovery will be to breed, distribute and plant resistant individuals across the species' range in the wild.
- c) Gloucester Coal has offered to provide additional genetic material from suitable specimens within its proposed development site. The BDAR references the existence of some healthy individuals and these may be suitable candidates for addition to the ex-situ collection (and more may be located if additional surveys are undertaken). The priority of utilising these additional samples should be determined by the researchers, in the context of their priority needs, available resources, and the findings of the genetic analysis that they have already completed.
- d) The scale of the research and recovery program is constrained by limited resources, whereas the need for action is urgent and important. Available public sector funding is limited and the \$0.25 million that Gloucester Coal has proposed to contribute would be a valuable addition in the context. The offered additional funding would enable screening and reproduction of more candidate individuals and trialling them at a wider range of sites more quickly. If the trials are successful, there will be a need for further

expanded resources to produce large volumes of resistant individuals to be distributed across the species' range for replanting on suitable public and private landholdings.

- e) Section 391 (2) of the EBPC Act requires the Commonwealth Minister to take into account the precautionary principle. In this context the Panel notes that while the Project proposes to cause the loss of 217 or more stems, it is unlikely to contribute to the risk of extinction. The Panel considers that the lack of full scientific certainty should not be used as a reason for postponing the proposed measures, namely the financial and (if requested) genetic material contributions to the Save our Species program. This is 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 in the wild.
- f) Conventional land-based offsets would not be an effective strategy for this species. This is because there are no practical management options that could increase the health or longevity of existing populations affected by Myrtle Rust in the wild.
- g) A commitment from Gloucester Coal to participate as a host for replanting resistant germplasm of the species and overseeing ongoing management of the field experiments would be an additional useful contribution.

5.3. SUMMARY OF ADVICE

The Panel advises the following:

- 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 DCCEE-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 DCCEE (BCS) in their advice to the Department (dated December 2024), subject to any alternative arrangements made between Gloucester Coal and DCCEE that could efficiently further reduce the risk of extinction.

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APPENDIX A – DPHI PLANNING ASSESSMENTS REQUEST FOR ADVICE

Department of Planning, Housing and Infrastructure



Request for Advice

Our ref: (SSI-73368213)

Mr Simon Smith

Chair, Independent Expert Advisory Panel for Energy Transition

By email: smithsaysay4@gmail.com

19 November 2024

Subject: Request for Advice – Stratford Renewable Energy Hub – Serious and Irreversible Impacts to Scrub Turpentine (*Rhodamnia Rubescens*)

Dear Simon,

I am writing to you to request advice from the Independent Expert Advisory Panel for Energy Transition (the Panel) in relation to the Stratford Renewable Energy Hub (SSI-73368213).

Gloucester Coal Ltd (a wholly owned subsidiary of Yancoal) is seeking approval for the construction and operation of a 300 megawatt (MW) pumped hydro energy storage, 320 MW solar farm and associated supporting infrastructure on the site of the Stratford Mining Complex, a former open-cut coal mining operation in the upper Hunter region of NSW (the project).

The Environmental Impact Statement (EIS) was exhibited from 2 October to 29 October 2024 and the Department is now coordinating its whole-of-government assessment of the project.

The Department considers that one of the key technical biodiversity issues for the project is the potential serious and irreversible impact (SAIL) to the Scrub Turpentine (*Rhodamnia Rubescens*) due to the proposed clearing of remnant vegetation for the upper reservoir of the pumped hydro energy storage. The project proposes the removal of 217 stems and 145.08 ha of suitable habitat for the species.

The Department understands that it is the decision maker's role to determine whether or not a proposal is likely to result in a SAIL. An impact is regarded as serious and irreversible if it is likely to contribute significantly to the risk of a species becoming extinct based on the four principles set out in Clause 6.7 of the *Biodiversity Conservation Regulation 2017* (BC Regulation). Scrub Turpentine is listed as an entity at risk of SAIL on the basis of principles 1 and 4 in the BC Regulation. These principles are:

Major Projects Advisory

Principle 1: "It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or""

Principle 4: "The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable."

The Department notes Clause 7.6(2) of the BC Regulation, which states that that "an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct". Neither this phrase nor the individual words are defined within the *Biodiversity Conservation Act 2016* or BC Regulation. Whether a project would cause SAIL to a specific ecological community or species is a matter of fact and degree, and there is no simple 'rule' or 'formula' that can be applied to all ecological communities and species. However, the Department considers that the above phrase should be interpreted to mean a real chance or possibility that the development would be an important or significant contributor to the chance or possibility that one of the relevant species or communities will become extinct. Further, the Department notes that none of the relevant statutory documents relating to SAIL state that 'any loss' of a species or ecological community would necessarily contribute significantly to the risk of extinction.

The Department understands that Yancoal's Biodiversity Development Assessment Report (BDAR), which was lodged as part of the EIS, made the following observations regarding potentially serious and irreversible impacts to Scrub Turpentine from the project:

- the loss of 217 stems due to the project would represent a reduction of 1.22% in the 17,843 stems previously recorded within NSW;
- the loss of 145.08 ha of suitable habitat due to the project would represent a 0.04% reduction in the 3,360 km² area of occupancy and no reduction in the 147,340 km² extent of occurrence for the species within NSW;
- the species as a whole is projected to experience a population reduction of >80% over three generations or 10 years, largely due to the effects of the exotic fungus *Austropuccinia psidii* and subsequent onset of myrtle rust disease. The population of Scrub Turpentine within the project disturbance footprint is already impacted by myrtle rust disease from *Austropuccinia psidii* infection and is unlikely to remain viable long-term; and
- notwithstanding the long-term impacts from myrtle rust disease, the population of Scrub Turpentine is considered likely to occur and persist in retained vegetation adjoining the project disturbance footprint.

Yancoal has also committed to undertaking several actions that would contribute to the survival of the species, including:

- providing the Saving our Species (SoS) program with germplasm material of potentially resistant individuals of the Scrub Turpentine within the development footprint to aid in the establishment of ex situ collections that capture the genetic variation of the species; and
- contributing \$250,000 to independent research programs that aim to produce positive outcomes for the species – this could include contribution to relevant PhD candidates research or otherwise that specifically aim to increase the understanding of myrtle rust on the species and/or potential management strategies.

With consideration of the above, and the additional details provided in Yancoal's EIS and BDAR and advice from BCS, the Department is seeking advice from the Panel to inform the Department's assessment of the following:

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 Yancoal's proposed actions to contribute to the survival of the species.

The Panel should not commence advice preparation until the Department has provided the advice from BCS and confirms this request, and should feel free to provide any other advice it considers would assist the Department in its deliberations regarding potential SAI from the project.

To assist the Panel, relevant documentation, including the EIS and BDAR, can be downloaded from the Department's Major Projects website: <https://www.planningportal.nsw.gov.au/major-projects/projects/stratford-pumped-hydro-and-solar-0>

It would be appreciated if the Panel can prepare initial advice within 21 days of receiving the BCS advice, and then prepare final advice following the preparation of a Response to Submissions by the Proponent.

Please contact me on (02) 9274 6374 or email Nicole.brewer@planning.nsw.gov.au if you have any questions or require additional information for your review.

Yours sincerely



Nicole Brewer
Director
Energy Assessments

APPENDIX B – EXHIBITS FROM NSW AND COMMONWEALTH RECOVERY PROGRAMS

Table B.1 The NSW short-term emergency actions and medium and longer-term targeted research and development required to rescue the genetic diversity of Scrub Turpentine, native guava and *Lenwebbia* sp. ‘Main Range’ and eventually return rust-resistant individuals to the wild (SoS 2021).

Short-Term Priorities (Years 1 – 2)

Action Type	Action Description
Field Surveys and Monitoring	Active field survey for plants or populations exhibiting unusual levels of tolerance of the rust.
Germplasm Collections and Management	Capture and ex situ storage of genetically representative germplasm of all three species. Establish dispersed collection framework.
Research	Identify level of genetic structuring within the target species in relation to natural population clusters.
Resourcing	Establish on-going support and resourcing for medium- and long-term actions.
Communications	Develop an education and engagement strategy about the distribution and management requirements of the species.

Medium-Term Priorities (Years 3 – 5)

Action Type	Action Description
Germplasm Collections and Management	Develop and maintain documented collections of genetically diverse live plants suitable for research and breeding purposes, preserving the full range of adaptive potential.
Research	Research on ex situ collections and wild populations to identify rust-tolerant lineages, genetic and physiological bases of resistance and susceptibility, and heritability of resistance-related traits. Continue research on seed storage requirements of target species.
Communications	Initiate scoping studies and community engagement for potential contentious issues of long-term recovery strategy, including use of selective breeding, wild-genotype reinforcement, and augmentation /reintroduction to the wild.

Long-Term Priorities (Years 5-10+)

Action Type	Action Description
Reinforce and Reintroduce	Selective breeding for rust resistance, and/or resistance-trait transfer. Deployment of reinforced wild-types for augmentation or reintroduction in the wild.

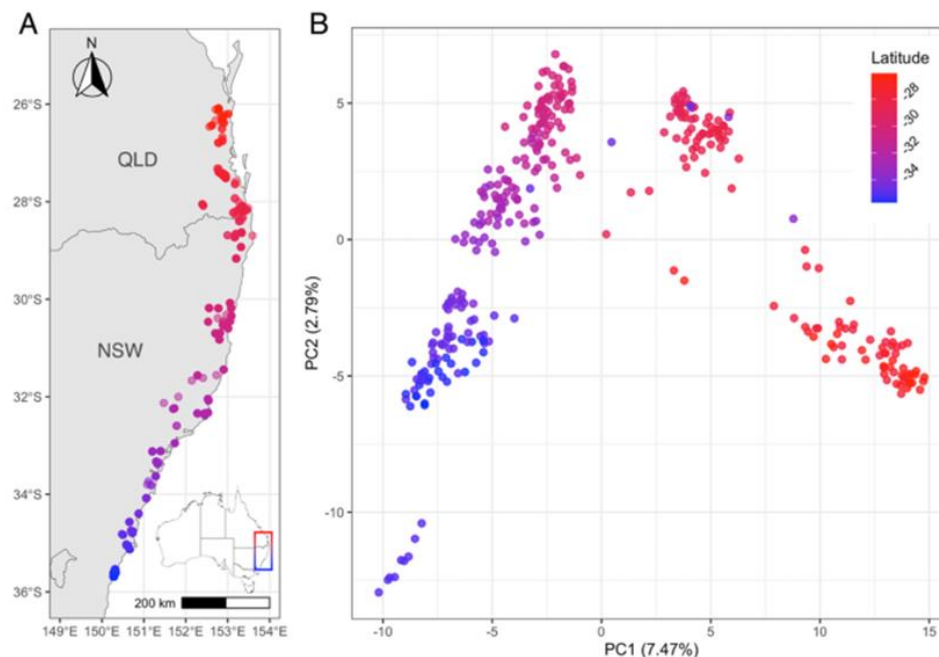


Figure B.1. Distribution of genetic variability in individual plants stored in ex situ germplasm collections of the Critically Endangered Scrub Turpentine along a latitudinal gradient (from Chen et al. 2024). (A) Comprehensively sampled distribution in coastal and subcoastal eastern Australia, and (B) ordination of genotyped individuals against axes 1 and 2 from a principal components analysis of single nucleotide polymorphism data, with points coloured by latitude.

Table B.2 Summary of actions proposed by the NSW Government's 'Saving our Species' program to mitigate the threat posed by Myrtle Rust to the survival of Scrub Turpentine in the wild. The actions purport to mitigate the decline in health and loss of mature plants, as well as the lack of seed-based recruitment and vegetative resprouting due to Myrtle Rust infection (NSW DCCEEW 2024).

No.	Action
1	Continue field surveys across species' range to determine species distribution and rust impact, identify rust-resistant populations, sites or individuals. Maintain monitoring using standardised protocols or recording Myrtle Rust incidence, severity and demographic impacts
2	Continue to augment ex-situ collection, targeting sites that have not been previously collected from, and prioritising collections from individuals showing phenotypic resistance
3	Identify rust-tolerant lineages from wild plants and ex situ collections of this species as well as other closely related species. Investigate reproductive biology of the species as an aid to resistance breeding. Work towards an eventual translocation-based recovery program proposal, including via liaison with other stakeholders
4	Liaise with relevant state and Commonwealth departments to share information and complementary management strategies
5	Maintain existing safe custody ex-situ living collections. Maintain genetically representative core collections to supply dispersed collections. Maintain and develop partnerships with other botanic gardens, non-government organisations and nurseries to establish and maintain dispersed collections
6	Maintain stratified monitoring sites to monitor ongoing Myrtle Rust incidence, severity and symptomology over time. If possible, choose sites with pre-Myrtle Rust baseline data and with co-occurring myrtaceous species. This is conducted as part of the overarching management of the Myrtle Rust Key Threatening Process
7	Support Traditional Owner groups to better identify and manage the impacts of Myrtle Rust

APPENDIX C – PANEL MEMBER PROFILES

Simon Smith (Chair) (BA Hons)

Simon has over 20 years' experience in regulation, program delivery and policy development in connection with environment, energy and economic development. He served in NSW as Secretary of the Department of Industry and as deputy in the Premiers Department and in Environment. Early in his career he had extensive involvement in developing frameworks and tools to better quantify environmental impacts to support objective decision-making on impact avoidance, mitigation, offsetting and management measures. He left the public sector in 2018 and then worked in the private sector in consulting and for a technology firm. He also currently serves as a Director of RACE for 2030, a Cooperative Research Centre established to help Australia make a successful transition to renewable, affordable and clean energy. He was appointed as a part time Commissioner of the NSW Independent Planning Commission in November 2024.

Em. Prof. Nick Reid (FRSN, BSc Hons, PhD)

Nick has 45 years' experience in academia and as an environmental consultant. He specialises in terrestrial ecology, sustainable land and vegetation management, ecological restoration, biodiversity conservation and managing flora, fauna, fire, pests and weeds in agricultural and wild land environments. Nick is a Fellow of the Royal Society of NSW. He is also an Emeritus Professor in ecosystem management and the former head of the School of Environmental and Rural Science at the University of New England (UNE). Nick is a former chair of the Scientific and Technical Advisory Committee of the Gondwana Rainforests of Australia World Heritage Area. His current consultancies and research Projects are funded by Agrifutures Australia and the National Environmental Science Program's Resilient Landscapes Hub. Nick recently completed work for the NSW Natural Resources Commission. He chairs the board of Southern New England Landcare Ltd and is a director of the New England Landcare Network Inc. Nick was the principal editor of the 2024 book *Managing Biodiversity in Agricultural Landscapes: Conservation, Restoration and Rewilding*.

Nathan Garvey (FEIANZ, BSc)

Nathan is an experienced ecologist with over 20 years' practice in biodiversity assessment and approvals across eastern Australia. Nathan holds a Bachelor of Science and Graduate Diploma in Biological Science from the University of NSW and is a Certified Environmental Practitioner and a Biodiversity Assessment Method accredited assessor under the Biodiversity Conservation Act. Nathan is also a Fellow of the Environment Institute of Australian and New Zealand for his contribution to the field of environmental science and management.

Nathan has experience across a diverse range of sectors including mining, oil and gas, linear infrastructure, renewable energy and residential development, including biodiversity assessment for major projects, offsetting and Environment Protection and Biodiversity Conservation Act referrals. He has strong expertise and experience in the assessment of impacts to biodiversity arising from subsidence, as well as impacts to groundwater dependent ecosystems arising from groundwater drawdown. He is one of NSW's leading experts in biodiversity approvals and offsetting.

Terry Bailey (BSc, MBA, MPPA)

Terry is an experienced public policy and Project delivery practitioner in the fields of heritage, environment, tourism, government and public administration. Terry has over 35 years of relevant experience including roles across different government jurisdictions including as Chief Executive of the Office of Environment and Heritage, senior roles in National Parks and Wildlife Services and the Commonwealth Environment Department's reviews and new environmental legislation in NSW and the Commonwealth. Terry holds several tertiary qualifications including a Bachelor of Applied Science (Environmental Assessment and Land Use Policy), a Master of Business Administration and a Master of Public Policy and Management.

Terry is currently the Executive Dean, College of Sciences and Engineering University of Tasmania and a former Executive Director of the Institute for Marine and Antarctic Studies. He has led significant public policy development such as new coastal legislation, new biodiversity conservation legislation, heritage legislation and new climate change policy for NSW. Terry is also recognised as one of Australia's leading world heritage experts, engaged by Western Australia, South Australia and Queensland and has extensive experience working with First Nations Peoples in conversation, resource management, and economic development.

APPENDIX D – DECISION-MAKING CONTEXT

Critical state significant infrastructure

The critical state significant infrastructure (CSSI) provisions of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) allow the Minister for Planning to determine that a Project is essential for the State for economic, environmental or social reasons. In addition to the normal provisions for State Significant Infrastructure (SSI) Projects, the CSSI provisions of the EP&A Act have the effect of ‘turning off’ certain aspects of the EP&A Act and other NSW legislation, including:

- a) development control orders cannot be issued for CSSI Projects;
- b) certain directions, orders or notices cannot be made or given so as to prevent or interfere with the carrying out of an approved CSSI Project;
- c) third-party appeal provisions do not apply to breaches of the EP&A Act, a breach of conditions of approval or breaches of other Acts.

A CSSI Project must be determined by the Minister for Planning and Public Spaces and cannot be delegated to other parties.

On 19 June 2024, the Minister for Planning and Public Spaces declared the Project to be CSSI, citing:

- a) the contribution of the Project to the NSW Government’s pipeline of up to 3 gigawatts (GW) of pumped hydro Projects;
- b) the assistance the Project would provide in meeting NSW’s target of net zero by 2025;
- c) injection of capital expenditure into the region;
- d) the benefits of the NSW Government’s Electricity Infrastructure Roadmap.

CSSI Projects are assessed under Part 5, Division 5.2 of the EP&A Act. This requires the preparation of an EIS in accordance with Secretary’s Environmental Assessment Requirements (SEARs) and approval of the Project NSW Minister for Planning and Public Spaces.

Threatened species, key threatening processes and recovery

Threatened species are species of plants or animals, native to the state of NSW or known to periodically or occasionally migrate to NSW which, in the opinion of the NSW Threatened Species Scientific Committee (Scientific Committee) are at risk of extinction. Threatened species can be listed as critically endangered, endangered or vulnerable depending on the level of risk of extinction.

Division 4.1 of the Biodiversity Conservation Regulation 2017 (BC Regulation) sets out the eligibility criteria for determinations by the Scientific Committee of threatened species listings. Threatened species are listed in Schedule 1 of the BC Act.

Scrub Turpentine was listed as critically endangered under the BC Act on 1 February 2019. The Scientific Committee (TSSC 2019) determined the species was eligible for listing as critically endangered because it is Projected to experience a population reduction of greater than 80% over three generations or 10 years due to the effects of Myrtle Rust.

The legislation (as did the preceding *Threatened Species Conservation Act – (TSC Act)*) also provides for listing of key threatening processes (KTPs) which, in the opinion of the Scientific Committee, adversely affect threatened species or ecological communities or could cause species

or ecological communities that are not threatened to become threatened. KTPs are listed in Schedule 4 of the BC Act. The Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae was listed as a KTP under the TSC Act on 15 April 2011. The Scientific Committee (TSSC 2011) determined that exotic disease-causing rusts, such as Myrtle Rust, constitute a major threat to native Australian plants in the family Myrtaceae.

Assessment of biodiversity impacts

Assessment under the EP&A Act is subject to Part 7 of the BC Act. This part sets out the process for biodiversity assessment and approval under the EP&A Act. Section 7.9 of the BC Act requires the preparation of a Biodiversity Development Assessment Report (BDAR) for SSI Projects assessed under Division 5.2 of the EP&A Act.

The BDAR must assess the biodiversity values and potential impacts to those values in accordance with the Biodiversity Assessment Method (BAM) (DPIE 2020), outline measures to avoid or minimise these impacts and specify the number and class of biodiversity credits required to offset the residual impact of the Project (after all measures to avoid and minimise impacts).

In determining the Project, the Minister must take into consideration the likely impact of the Project on biodiversity values. If the Minister decides to grant approval, the conditions of the approval may require a proponent to retire biodiversity credits to offset any residual impact of the Project, as set out in the BDAR or another number and class. The Minister may also require additional measures to avoid and minimise impacts.

Strategies for avoiding, minimising or offsetting impacts generally

The requirement to avoid and minimise impacts is established by Section 6.12(c) of the BC Act, which requires a BDAR to set out the measures that a proponent will take to avoid or minimise impacts on biodiversity values. As set out above, the Minister must take this into account when determining a Project and may require additional measures.

Guidance on avoiding and minimising impacts on biodiversity values is set out in Section 7 of the BAM (DPIE 2020) with additional measures to mitigate impacts set out in Section 8.4 of the BAM.

Serious and irreversible impacts

SAII are impacts that are likely to contribute significantly the risk of a threatened species or ecological communities becoming extinct. Under Section 6.5 of the BC Act, a determination of whether a Project will result in a SAII is to be made in accordance with the four principles prescribed in Section 6.7 of the BC Regulation:

- a) it will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
- b) it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or
- c) it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or

- d) the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

These principles broadly align with the criteria established by the International Union for the Conservation of Nature (IUCN) (IUCN 2017, Keith et al. 2013) to assess the extinction risk of species and ecological communities.

The BAM (DPIE 2020) requires the BDAR to identify threatened species and communities at risk of a SAI and evaluate the extent and severity of the impact on an entity at risk of a SAI in accordance with the criteria set out in Section 9.1.1 of the BAM for impacts on threatened communities and in Section 9.1.2 of the BAM for impacts on threatened species. The NSW Threatened Biodiversity Data Collection is used by accredited assessors to determine whether a threatened species or community is at risk of SAI.

Whether a Project will result in a SAI is determined by the decision maker; not by the proponent or the accredited assessor preparing the BDAR. In considering whether a Project will result in SAI the penultimate test is established by Section 6.7(2) of the BC Regulation:

“it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct . . .”

Under Section 7.16 of the BC Act, if the Minister decides that a Project is likely to have a SAI on biodiversity values, the Minister must take those impacts into consideration and is required to determine whether there are any additional and appropriate measures that will minimise those impacts.

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

A delegate of the Commonwealth Minister determined on 11 April 2024 that the Project is a “controlled action” and, therefore, the Project also requires approval under the EPBC Act.

The Project is to be assessed pursuant to the Assessment Bilateral Agreement with the NSW Government. Therefore, the Project EIS provides an assessment of potential impacts on the following controlling provisions under the EPBC Act considered by the Commonwealth Minister (or delegate) to be relevant to the Action:

- threatened species and communities (sections 18 and 18A); and
- migratory species (sections 20 and 20A).

Section 391 (2) of the EPBC Act requires the Commonwealth Minister to take into account the precautionary principle when making decisions that could impact the environment. The precautionary principle states that when there is a risk of serious or irreversible environmental damage, a lack of scientific certainty should not be used as a reason to delay action.

26 March 2026

IEAPET Ref: 2026-03-L1

Nicole Brewer
Director Wind & Transmission Assessments
Department of Planning, Housing and Infrastructure
Email: via IEAPET Secretariat

Stratford Renewable Energy Hub – Finalisation of Panel advice

On 14 January 2025, the Independent Expert Advisory Panel for Energy Transition (IEAPET, ‘the Panel’) provided interim advice to the NSW Department of Planning, Housing and Infrastructure (DPHI) on the potential serious and irreversible impact (SAII) on Scrub Turpentine (*Rhodamnia rubescens*) associated with the Stratford Renewable Energy Hub project (the project). Specifically, DPHI sought advice on:

- a) *The extent to which the project is likely to contribute significantly to the risk of Scrub Turpentine becoming extinct; and*
- b) *The appropriateness of the Proponent’s proposed actions to contribute to the survival of the species.*

The Panel’s advice concluded that:

- 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) *The Proponent’s proposed actions to contribute money and (if requested) genetic material to the NSW Department of Climate Change, Environment, Energy and Water (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, the Proponent 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 in its advice to DPHI (dated December 2024), subject to any alternative arrangements made between the Proponent and DCCEEW that could efficiently further reduce the risk of extinction.*

As part of the Proponent’s Response to Submissions and provision of additional information following the interim advice, it revised the Biodiversity Development Assessment Report to account for Scrub Turpentine that may be present in unsurveyed areas of the project site. The proponent also committed to undertaking actions that would contribute to the survival of the species, including:

- a) providing the Saving our Species (SoS) program with germplasm material of potentially resistant individuals of the Scrub Turpentine within the development footprint, to aid in the establishment of ex situ collections that capture the genetic variation of the species; and
- b) contributing to independent research programs that aim to produce positive outcomes for the species – this could include contribution to relevant PhD candidates research or otherwise that specifically aim to increase the understanding of myrtle rust on the species and/or potential management strategies.

On 25 July 2025, the Proponent confirmed that its financial offer to fund a recognised species research and / or recovery program for Scrub Turpentine was \$500,000. The Proponent proposes that this financial

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contribution would be made in lieu of offsetting the residual impacts of the project on Scrub Turpentine by purchasing credits or paying into the Biodiversity Conservation Fund.

The Proponent also maintained its commitment to provide germplasm material as described in their EIS.

On 31 October 2025, DPHI confirmed no further advice was required from the Panel, as DCCEEW had advised DPHI that it also considers the impacts associated with the project are unlikely to be SAIL.

Given that the interim advice stated:

This interim advice has been prepared to assist the Department to consider any additional information required or provided after the Response to Submissions (RTS) stage of the assessment. The Panel's advice will be finalised following the assessment stage,

The Panel confirms its advice on this project is finalised, and that no amendments are required to the interim advice.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Simon A Y Smith'.

Simon A Y Smith

Chair, IEAPET