



Addendum to Scoping Report

Oven Mountain Pumped Hydro Energy Storage Project

OMPS Pty Limited
April 2022





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Addendum to Scoping Report - Oven Mountain Pumped Hydro Energy Storage Project

Prepared for OMPS Pty Ltd
April 2022

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Addendum - Oven Mountain Pumped Hydro Energy Storage Project

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5 April 2022

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1 Introduction

OMPS Pty Ltd (OMPS) is developing the Oven Mountain Pumped Hydro Energy Storage Project (the Project), an off-river pumped hydro-electric scheme located approximately half-way between Kempsey and Armidale in northern New South Wales (NSW). The Project is located within the Armidale Regional Local Government Area (LGA), proximate to its border with Kempsey Shire LGA. Figure 1.1 and Figure 1.2 provide the regional and local context of the Project respectively.

The Project would provide utility scale, deep energy storage and flexible, dispatchable generation to serve NSW's energy reliability needs and the objectives of the NSW Government's *Electricity Infrastructure Roadmap* and the NSW *Electricity Infrastructure Investment Act 2020* (EII Act). The Project would provide network benefits and services directly to the transmission backbone in the New England area, a newly enacted renewable energy zone (REZ). The New England REZ was formally declared by the NSW Minister for Energy and Environment on 17 December 2021 and is inclusive of the area associated with the Project.

The Project has been declared by NSW Government to be critical State significant infrastructure (CSSI). Infrastructure projects are declared to be CSSI if, in the opinion of the NSW Minister for Planning, they are essential for the State for economic, environmental, or social reasons. Under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), projects declared to be CSSI require approval from the NSW Minister for Planning under Division 5.2 of Part 5 of the Act. Applications to the Minister must be accompanied by an environmental impact statement (EIS) which addresses the Secretary's environmental assessment requirements (SEARs).

EMM Consulting Pty Ltd (EMM), on behalf of OMPS, submitted a scoping report for the Project to the NSW Department of Planning and Environment (DPE) on 29 January 2021 (EMM 2021), referred to as 'the scoping report' hereafter. The scoping report was prepared in accordance with the draft *Environmental Impact Assessment Guidance Series* (June 2017) and set out details about the Project and the local environment on which the Project sits (the Project area), and the assessments that would be undertaken and documented in the EIS to describe the likely impacts that Project would have on the Project area and its surrounds. In response, DPE published SEARs for the EIS on 19 February 2021.

The scoping report and SEARs for the Project can be found on DPE's major projects website at <https://www.planningportal.nsw.gov.au/major-projects/projects/oven-mountain-pumped-hydro-energy-storage-project>.

The Project requires a connection to an existing 132 kilovolt (kV) transmission line that runs between Kempsey and Armidale – known as TransGrid Line 965 (Line 965). The existing 965 line itself will need to be upgraded to accommodate the Project, however this upgrade does not form part of this addendum. The scoping report indicated that this transmission connection would be subject to a separate application under Division 5.2 of Part 5 of the EP&A Act, and therefore subject to a separate scoping report.

Since the scoping report for the Project was prepared and the SEARs issued, the Project has been amended to include:

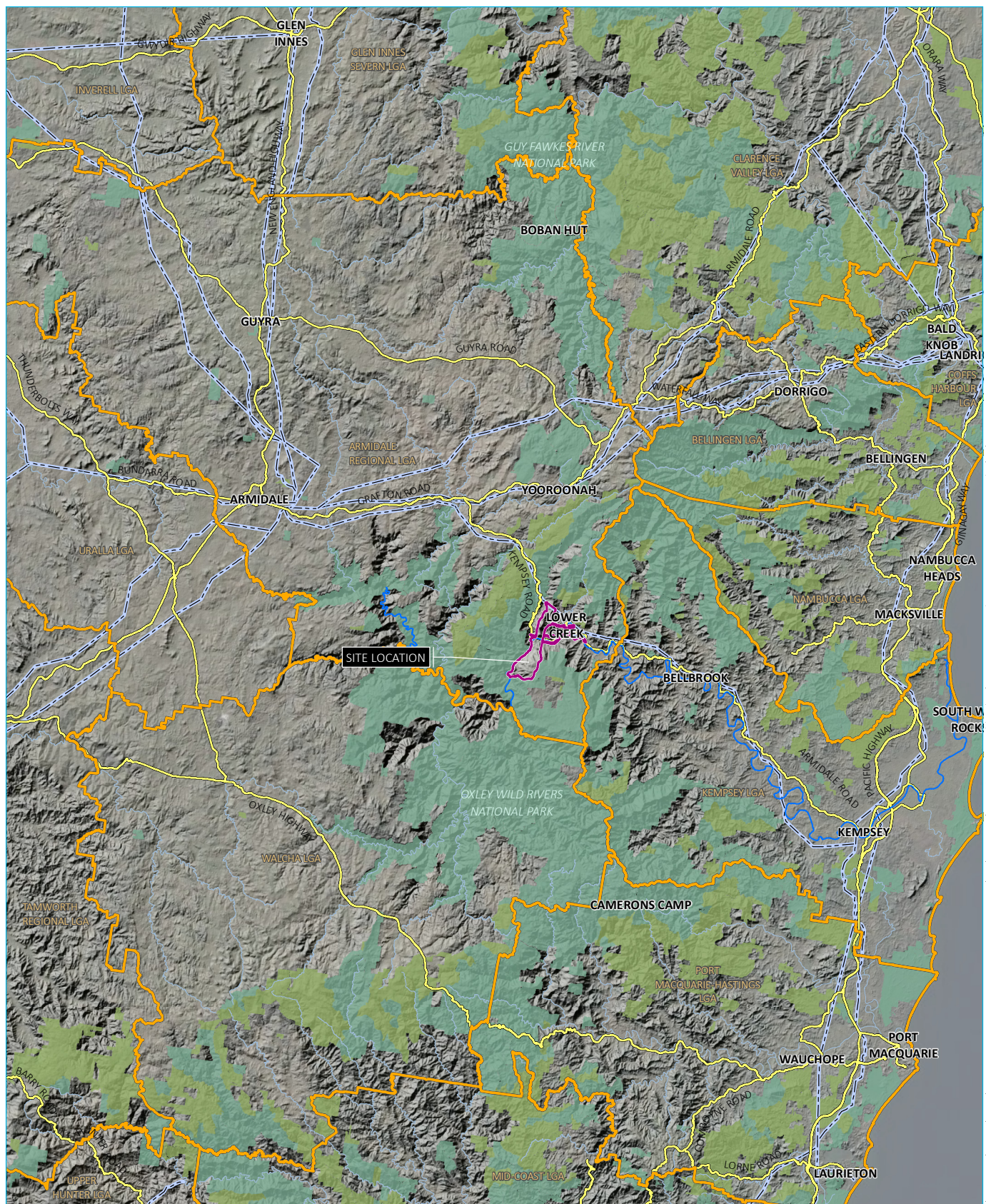
- the transmission connection to the Line 965, including construction of a substation, associated connection infrastructure and transmission lines rated up to 330 kV;
- an alternative access road to connect to the Project area to the Kempsey Road, referred to as the Eastern Access Road (EAR); and

- increase the maximum power output of the pumped hydro-electric power station from 600 megawatts (MW) up to 900 MW.

This report is an addendum to the scoping report. The purpose of this addendum is to provide details on the amendments to the Project to enable DPE to determine if the SEARs for the EIS need to be amended.

In addition, the Project has been declared to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and therefore requires an approval by the Commonwealth Minister for the Environment. The relevant controlling provisions under the EPBC Act relate to world heritage properties, national heritage places and listed threatened species and communities. Under an assessment bilateral agreement between the Commonwealth and NSW governments, DPE will undertake the assessment of the potential impacts of the Project on the controlling provisions on behalf of the Commonwealth Department of Agriculture, Water and the Environment (DAWE).

Under section 156 of the EPBC Act, a proponent of a Project can request to vary an action prior to its determination. Accordingly, OMPS will apply to DAWE to vary the Project to incorporate the transmission connection works, the alternative access road and uprating of the power output of the pumped hydro-electric power station.

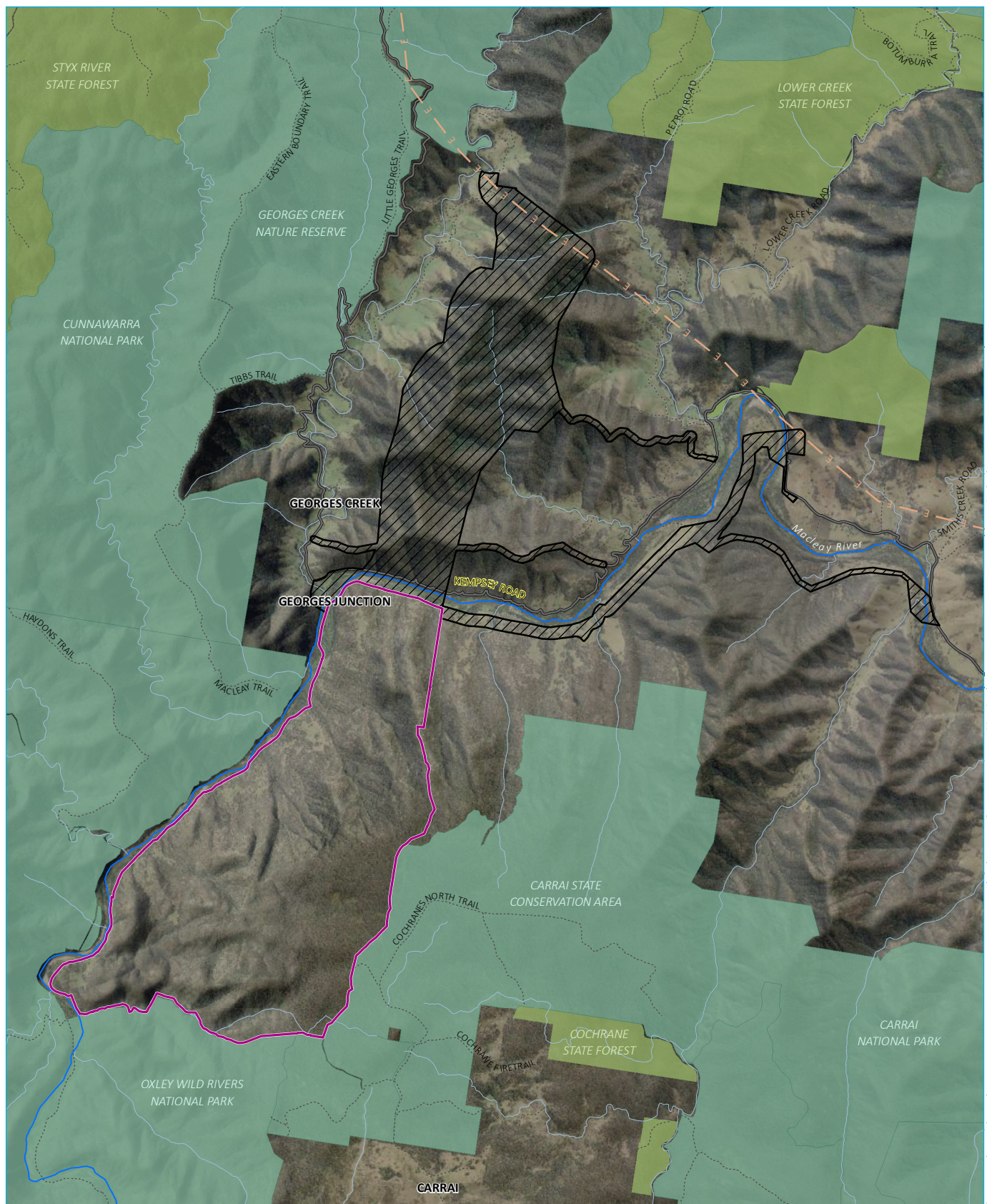


KEY

- Project area
- Existing environment
- Macleay River
- Transmission line
- Watercourse/drainage line
- Major road
- NPWS reserve
- State forest
- Local government area

Regional location

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Figure 1.1



KEY

- Additional project area
- Original project area
- Existing environment
- Macleay River
- Watercourse/drainage line
- Road
- Track
- Existing transmission line
- NPWS reserve
- State forest

Revised project area

Oven Mountain Pumped Hydro Energy Storage Project
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Figure 1.2

2 Project amendments

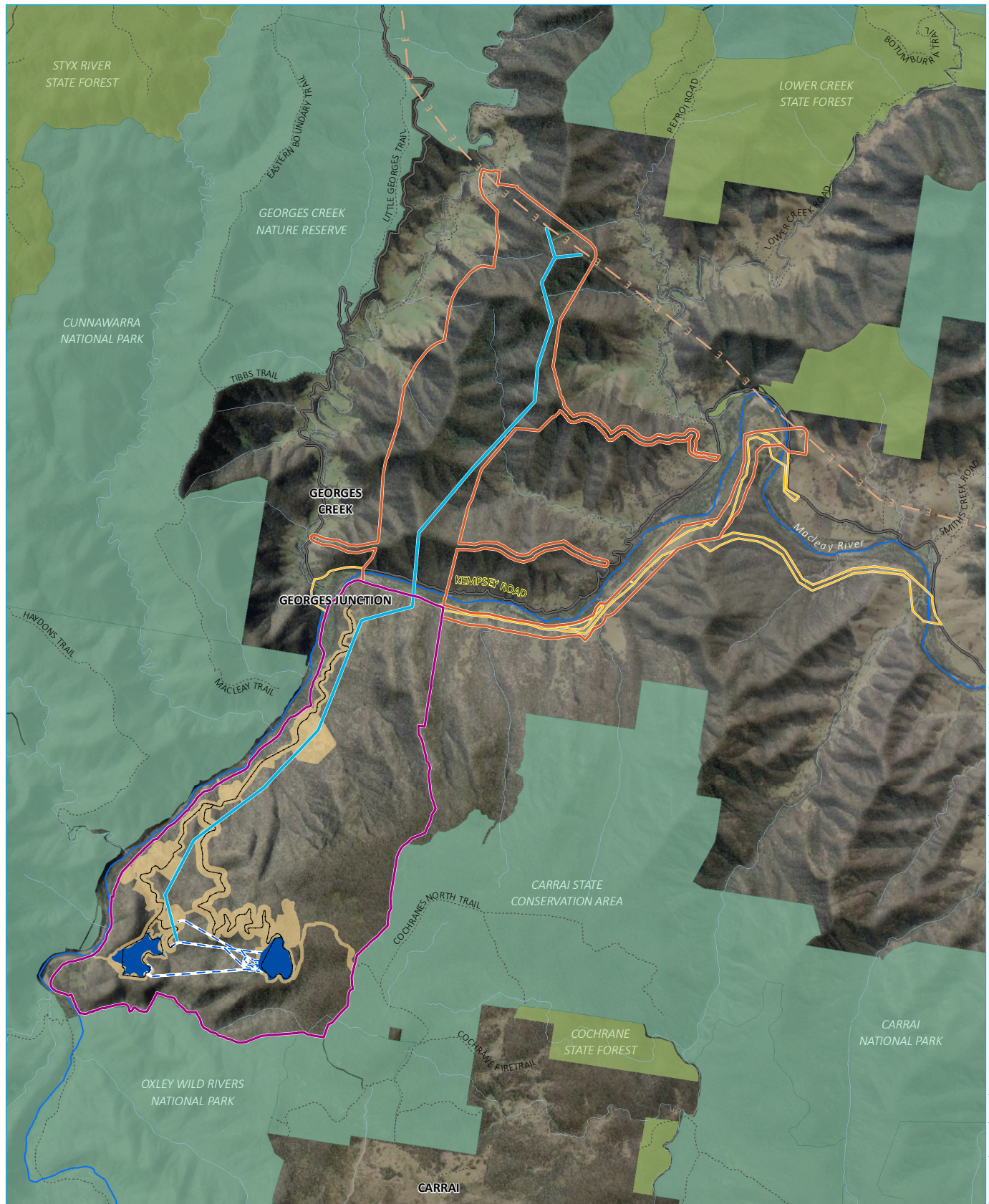
2.1 Project overview

Broadly, the Project includes three key components:

- **Pumped hydro-electric and generation works** – including new upper and lower water storage dams and reservoirs, a new underground pumped hydro-electric power station, water and access tunnels, surge tank, intake and outlet structures.
- **Transmission connection works** – including new electricity transmission lines to connect the pumped hydro-electric and generation works to the existing electricity transmission network, new electricity transmission infrastructure, communications infrastructure and the construction and operation of a new substation.
- **Ancillary development** – including, but not limited to, access roads, on-site quarry and related infrastructure, utilities and communications infrastructure, construction accommodation, construction office compounds, concrete batching plant(s), pumping infrastructure and construction power supply.

Details on the pumped hydro-electric and generation works (PHGW) and the majority of the ancillary development required for the delivery of these works were provided in the scoping report (EMM 2021).

Figure 2.1 provides an overview of the amendments to the Project. The additional footprint associated with the inclusion of the transmission connection works (TCW) and the EAR are highlighted in orange and yellow respectively. Details on amendments to the Project, including the TCW, the EAR and increase in power output is provided below.



Source: EMM (2020); DFSI (2017); GA (2011); ASGC (2006)

0 1 2 km
GDA 1994 MGA Zone 56

KEY

- | | |
|--|--------------------------------------|
| — Northern transmission alignment (preferred option) | — Access options under investigation |
| — Indicative site layout | — Existing environment |
| — Indicative tunnel and power station | — Macleay River |
| — Indicative access road | — Watercourse/drainage line |
| — Indicative reservoir location | — Road |
| — Indicative generation component disturbance area | — Track |
| — Project investigation areas | — Existing transmission line |
| — Pumped hydro generation component | — NPWS reserve |
| — Transmission investigation area | — State forest |

Revised project footprint

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Figure 2.1

2.2 Project amendments

2.2.1 Transmission connection works

TCW are required to connect the PHGW to the upgraded existing electricity transmission network. Since the inception of the Project, various options for connecting to the grid have been investigated and assessed in terms of overall viability.

The key elements of the TCW include:

- double circuit 330 kV and single circuit 132 kV overhead transmission lines, linking the hydro-electric power station to Line 965. The transmission lines would include the construction of new towers to support the transmission lines;
- a new substation of up to 330 kV which forms a connection between the TCW and Line 965;
- construction of new access and maintenance tracks, and upgrades to existing tracks along the proposed transmission alignment which would be used during the construction and installation of the towers and transmission lines, and for maintenance during the operational stage of the Project;
- construction of new communications infrastructure including radiocommunications towers, control room, access, communications and power supplies; and
- establishment of temporary sites that are required to support the construction of the infrastructure mentioned above, including office pads, material and equipment laydown areas, crane pads, helipads, accommodation pads and other areas that may be required during the stringing and tensioning of the overhead components.

i Alignments

As seen in Figure 2.1, two alignments for the TCW are currently being considered. One option is a northern directed option that runs north-south from the site of the PHGW, connecting to Line 965 approximately 1.5 km to the south-east of Georges Creek. The northern alignment is the preferred alignment and is shown in Figure 2.1. A second options is an eastern directed option that connects to Line 965 near Lower Creek.

The northern alignment would extend approximately 14.5 km, and the eastern alignment would extend approximately 15.5 km.

Based on the current design, the northern alignment would require around 26 towers per line, and the eastern alignment would require around 33 towers per line.

ii Substation

To support the connection to the existing power network at Line 965, a substation of up to a 330 kV (and associated connection infrastructure) is required. Several options for the location of the substation are currently being investigated.

iii Access tracks

Access tracks would be required for the construction of the TCW, including access tracks to the towers and the substation. Where possible, existing tracks would be utilised and upgraded.

Should the eastern alignment be constructed, the proposed EAR being considered (see Section 2.2.2 below) would predominantly be used to provide access for construction of the towers.

Where necessary existing access tracks would be upgrade to a standard that allows for safe access for vehicles throughout the construction period of the Project. All track upgrades would be completed in coordination with the relevant asset owner, and the final specifications of the road for maintenance would be determined in consultation with the key stakeholders.

iv Communications

Radiocommunications are required to provide redundancy to the power line hosted communications infrastructure. This would likely include the construction of a communications tower on the Project area.

Studies will be undertaken to size and site the communications tower considering such factors as line of sight to candidate receivers, signal resilience, communications benefits to the broader project and stakeholders including the NSW Rural Fire Service (RFS) and the NSW National Parks and Wildlife Service (NPWS).

The communications tower would require access for vehicles, a control and facilities building and power supply.

v Ancillary development

Various ancillary components would be required to support the construction and operation of the TCW. These ancillary components would include material laydown areas, pads for offices and workshops, concrete batching plant(s), helicopter pads and other construction related compounds.

2.2.2 Eastern access road

A new access road, known as the EAR, is being considered to facilitate vehicle access to the PHGW from the Kempsey Road. The EAR would provide access for workers, heavy and light vehicles, plant, machinery, including movements of over-size-over-mass (OSOM) loads during both the construction and operational phases. As discussed above, should the eastern alignment for the TCW be adopted, it would also provide construction access for these works.

The key elements of the EAR Include:

- a minimum of one new low-level bridge over the Macleay River. Three locations are currently being investigated for the location of the bridge, in line with the road alignments that are being assessed; and
- a new two-lane unsealed road connection along the southern side of the Macleay River between Georges Junction and Smiths Bluff or Green Point.

i Alignment

The scoping report (EMM 2021) identified Georges Junction as the preferred location for vehicle access to the Project from the Kempsey Road. However, this access point presents challenges related to the condition of the road between Georges Junction and Lower Creek which has a narrow and constrained road alignment and a number of tight turns. This section of the road is also geotechnically unstable and subject to regular landslips.

Preliminary cost estimates to upgrade the road in this section to provide safe and reliable access are estimated to be in excess of \$250 million. In addition, there is a high probability that these sections would be impacted by further landslips during the construction phase of the Project, which would effectively close down access for an extended period. Access for the Project at Georges Junction as still considered a viable option; however, is less preferred to the EAR at this point in time.

Given the high costs to improve the Kempsey Road near the Project site and the high risk of further slippages occurring, an EAR that connects east of Lower Creek has been developed. As seen in Figure 2.2, two main alignment options and access points for the EAR have been developed. The first option would join the Kempsey Road proximate to Georges Junction and the second option would join the Kempsey Armidale Road near Green Point or Smiths Bluff. The Green Point alignment would be approximately 9.5 km in length while the Smiths Bluff alignment would be around 11 km in length.

The EAR would be an unsealed two-lane road similar to the better unsealed sections of the Kempsey Road.

ii Bridge

The Macleay River crossing would provide a similar level of flood immunity to several existing bridges across the Macleay River nearby (eg Toorooka Road near Willawarrin). The deck level of the bridge would be a few metres above normal water levels and see flood closures on average once or twice per year. Closures due to flooding would typically have a duration of hours or days depending on the flood event.



Source: EMM (2020); DFSI (2017); GA (2011); ASGC (2006)

KEY

- | | |
|---|---|
| Access options under investigation | — Existing environment |
| — Indicative access road | — Macleay River |
| Indicative generation component disturbance area | — Watercourse/drainage line |
| Project investigation areas | |
| Pumped hydro generation component | — Road |
| Transmission investigation area | - - - Track |
| | — Existing transmission line |
| | NPWS reserve |
| | State forest |

EAR options overview

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Figure 2.2

2.2.3 Power output

Following discussions with the Energy Corporation of NSW (Energy Corp or EnCo), TransGrid and other key agencies, OMPS are proposing to uprate the power output of the pumped hydro-electric power station from 600 MW as previously indicated up to 900 MW.

Upgrading the power output would require design changes to the underground pumped hydro-electric power station. However, no changes to other aspects of the pumped hydro-electric and generation works are likely to be required, including the size and volume of the dams and reservoirs.

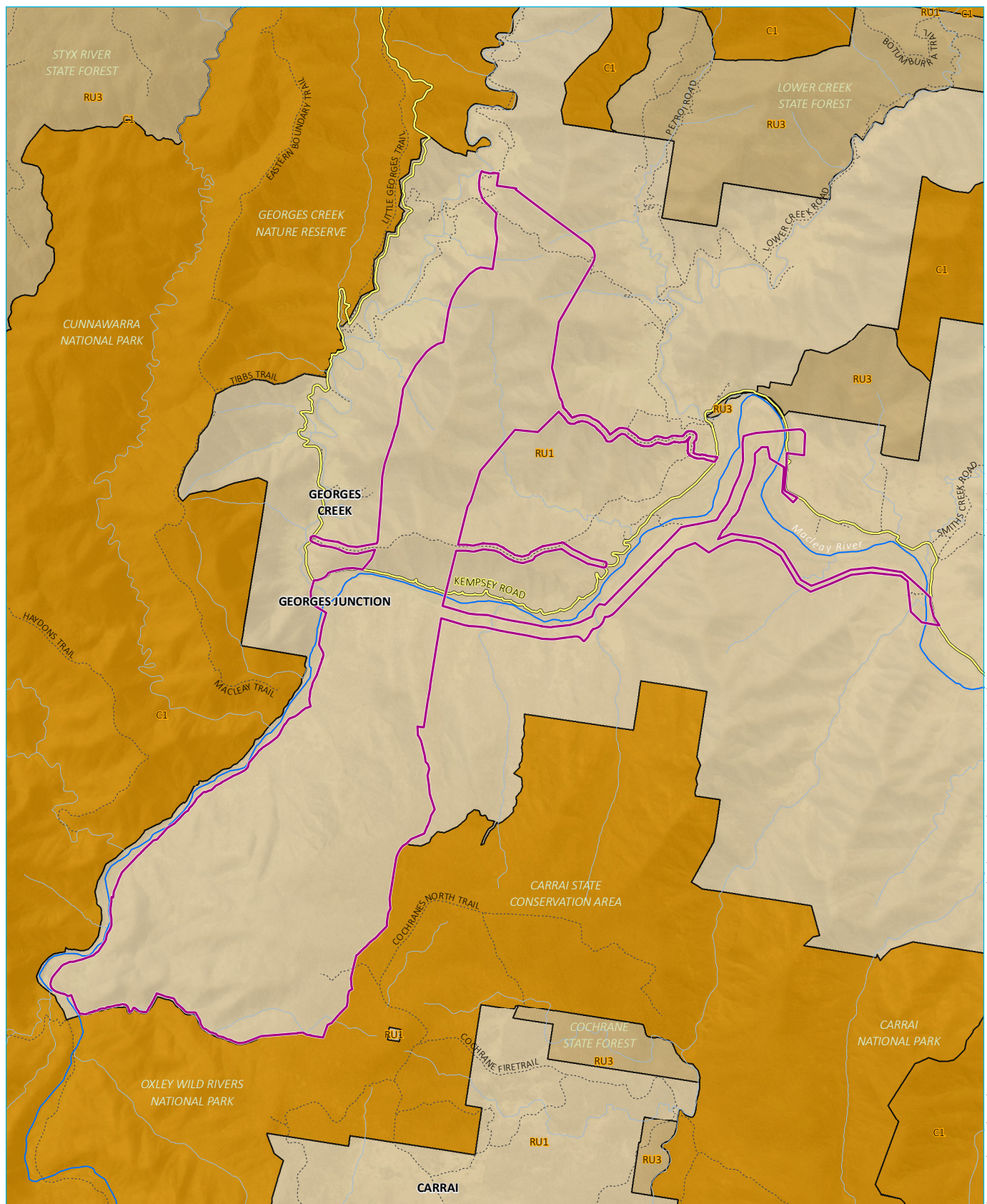
Discussions are on-going around the optimal power output rating, however there are recognised significant benefits to the existing transmission network, to the National Electricity Market (NEM) and to the New England REZ with a power rating of up to 900 MW. These include increased REZ hosting capacity, lower REZ infrastructure costs and greater network resilience.

2.3 Project details

The revised Project area is shown in Figure 1.2 and includes all of the construction and operational elements of the additional components. Other details on the revised Project area are provided in Table 2.1 and shown in Figure 2.3 - Figure 2.4.

Table 2.1 Revised project details

Aspect	
Project area	Approximately 3,720 hectares (ha)
Land zoning	RU1 Primary Production
Identification of Biophysical Strategic Agricultural Land (BSAL)	BSAL has been identified along Kempsey Road.
Access to ports	Broader transport logistics options are still under consideration; however, the preferred main transport route is from the Port of Newcastle.



Source: EMM (2020); DPIE (2020); DFSI (2017); GA (2011); ASGC (2006)

KEY

Project area

Land zoning

C1 National Parks and Nature Reserves

RU1 Primary Production

RU3 Forestry

Existing environment

Macleay River

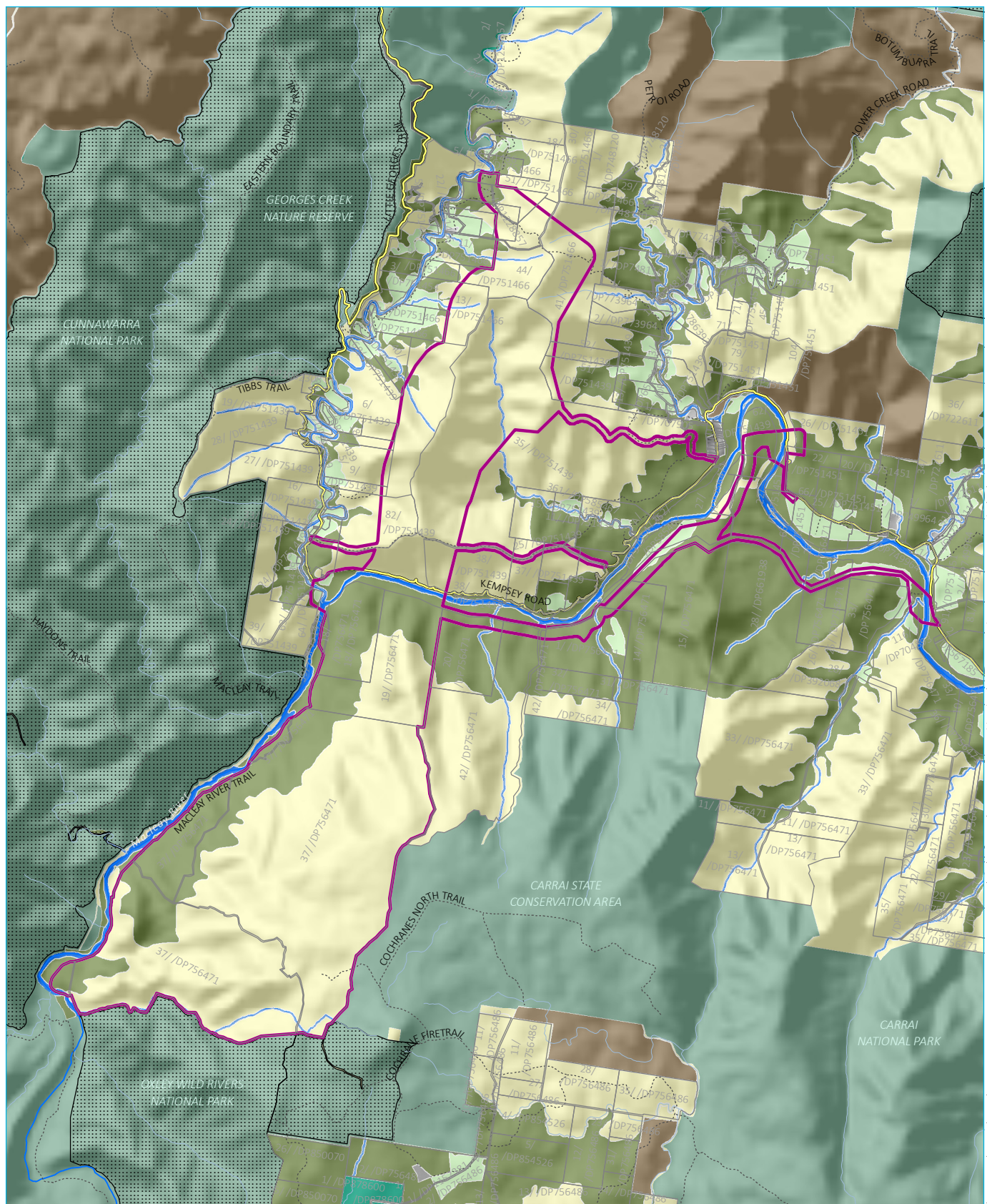
Watercourse/drainage line

Road

Track

Land zoning

Oven Mountain Pumped Hydro Energy Storage Project
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Figure 2.3



2.4 Revised key elements

The key elements table provided in the scoping report (EMM 2021) has been revised and updated to include the TCW, EAR and increased power output. The updated key elements are detailed within Table 2.2.

Table 2.2 Updated key elements table

Project component	Description
Key project elements – operational infrastructure	<ul style="list-style-type: none"> • an underground pumped hydro-electric power station complex; • lower reservoir and intake; • upper reservoir and intake; • spillways; • power waterway tunnels, chambers and shafts; • access tunnels; • new and upgraded roads to allow ongoing access and maintenance; • power and communication infrastructure; • bridges; • substation; and • transmission towers, powerlines and easements.
To support the construction of operational infrastructure, the following elements and activities are needed and are referred to as construction elements, and include:	<ul style="list-style-type: none"> • construction water infrastructure and supply including: <ul style="list-style-type: none"> – a temporary water store such as a turkey's nest or similar for construction activities; – the ability to fill and maintain temporary water stores such as via surface water, bores, and/or extraction from the Macleay River; – associated infrastructure such as pumps and pipes; • an on-site borrow pit or quarry; • an on-site concrete batching plant(s); • establishment and removal of temporary structures including coffer dams; • management of cleared vegetation, soils and overburden; • construction compounds including laydown and logistics yards within the Project area boundaries; • supporting services infrastructure including: <ul style="list-style-type: none"> – construction power supply; – potable water supplies; – waste and wastewater management; – communications infrastructure; – site control infrastructure; – accommodation camps; • emergency infrastructure including: <ul style="list-style-type: none"> – water tanks for fire control; and – helicopter access.

2.5 Stakeholder engagement

Open and ongoing stakeholder engagement is critical to the success of the Project. Since the lodgement of the scoping report, OMPS have continued to engage closely with local and regional stakeholders, including directly impacted landowners, traditional custodians, community members, government agencies, and environmental groups.

This work builds on OMPS's Stakeholder Engagement Framework (Community and Stakeholder Management Plan), as well as consultation dating to August 2017.

2.5.1 Engagement on design work

OMPS recognises that major infrastructure brings change, and that design work can often be an iterative process. Accordingly, OMPS has proactively engaged with relevant stakeholders on ongoing design matters, including alternate road options and proposed transmission routes. An overview of engagement activities is provided in Table 2.3 below.



Photograph 2.1 Engagement with landowners on TCW

Table 2.3 Overview of engagement activities

Date	Activity	Who was consulted	Matters discussed
October 2021	Community meeting – Lower Creek Local Area Committee	Local community group	<ul style="list-style-type: none">• Project update• Impact on roads• Road and transmission alignment
October 2021	Face-to-face landowner meetings	Directly impacted landowners	<ul style="list-style-type: none">• Project update• Road and transmission alignment
October 2021	Face-to-face meeting	Thunggutti Local Aboriginal Land Council (LALC)	<ul style="list-style-type: none">• Project update• Road and transmission alignment

Table 2.3 Overview of engagement activities

Date	Activity	Who was consulted	Matters discussed
November 2021	Project newsletter	Local and regional stakeholders	<ul style="list-style-type: none"> • Project update • Project scope – PHGW and TCW • Road impact and safety • EIS – planning process and site and field investigations • Engagement overview
November 2021	Face-to-face landowner meetings	Directly impacted landowners	<ul style="list-style-type: none"> • Project update • Road and transmission alignment
November 2021	Face-to-face meeting	Thunggutti LALC (Board Meeting)	<ul style="list-style-type: none"> • Project update • Road and transmission alignment • Cultural heritage work
November 2021	Face-to-face meeting	Dunghutti Elders Council	<ul style="list-style-type: none"> • Project scope – PHGW and TCW • Cultural heritage work
November 2021	Face-to-face meeting	Kempsey LALC	<ul style="list-style-type: none"> • Project scope – PHGW and TCW • Cultural heritage work
December 2021	Face-to-face regional engagement	Regional community from Jeogla to Armidale (approximately 50 km)	<ul style="list-style-type: none"> • Project introduction • Project scope – PHGW and TCW • New England REZ
December 2021	Face-to-face landowner meetings	Directly impacted landowners	<ul style="list-style-type: none"> • Project update • Road and transmission alignment
December 2021	Regional advertisements (newspapers)	Local and regional community (Armidale and Kempsey regions)	<ul style="list-style-type: none"> • Project introduction • Project scope – PHGW and TCW
January 2022	Face-to-face meetings	Armidale Regional Council Staff and councillors	<ul style="list-style-type: none"> • Project update • Road and transmission alignment • Impact on roads • EIS – planning process and site and field investigations
January 2022	Regional advertisements (newspapers)	Local and regional community (Armidale and Kempsey regions)	<ul style="list-style-type: none"> • Project introduction • Project scope – PHGW and TCW
January 2022	Community Information session - Armidale	Local community	<ul style="list-style-type: none"> • Project update • Project scope – PHGW and TCW • Road and transmission alignment • EIS – planning process and site and field investigations • Social impact assessment • New England REZ
January 2022	Community Information session - Bellbrook	Local community	<ul style="list-style-type: none"> • Project scope – PHGW and TCW k
January 2022	Community Information session - Kempsey	Local community	<ul style="list-style-type: none"> • Project scope – PHGW and TCW

Table 2.3 **Overview of engagement activities**

Date	Activity	Who was consulted	Matters discussed
January 2022	Project website (Update of legacy website)	Local and regional community Interested community members and environmental groups	<ul style="list-style-type: none"> • Project scope – PHGW and TCW k • Community engagement activities, including new contact details (eg toll-free phone number)
February 2022	Face-to-face landowner meetings	Directly impacted landowners	<ul style="list-style-type: none"> • Project update • Road and transmission alignment
February 2022	Project e-Newsletter	Local and regional community	<ul style="list-style-type: none"> • Project update • Road and transmission alignment • EIS – planning process and site and field investigations



Photograph 2.2 **Engagement with landowners on EAR**

2.5.2 Outcomes

OMPS used a diverse range of communication tools to capture the key issues raised by stakeholders. This includes a toll-free phone number, a project email address, a website and a variety of inclusive engagement methods (eg information sessions, surveys, and project collateral). The key issues raised by stakeholder are noted in Table 2.4 below.

Table 2.4 Key issues raised by stakeholders

	Landowners	Wider community	Indigenous	Government agencies	Community and environmental groups
Project scope	✓	✓	✓	✓	✓
Project justification including need, cost, and ownership		✓		✓	✓
Traffic and transport including road conditions	✓	✓		✓	✓
Visual amenity	✓	✓			✓
Biodiversity		✓		✓	✓
Water	✓	✓	✓	✓	✓
Land including access to National Trail			✓	✓	✓
Heritage			✓		✓
Social and economic	✓	✓	✓	✓	✓
Construction including timelines and impacts	✓	✓	✓	✓	✓
REZs including developments in the New England REZ		✓		✓	✓

2.5.3 Engagement case study – providing power to the grid

It is anticipated that the Project would play an integral part in the New England REZ. As such, in mid-December 2021, the OMPS completed initial engagement activities within the broader New England region.

Landowners residing near Line 965 from Jeogla to the outskirts of Armidale were visited. The aim of the engagement was to introduce the Project, offer residents a ready point of contact, and begin early discussions on renewable energy initiatives in the region.

Good engagement recognises that major infrastructure projects do not exist in isolation. Early conversations with the New England community served to place the Project scope and energy capacity requirements in the context of broader programs planned by the NSW Government.



Photograph 2.3 **Line 965**

2.5.4 Agency engagement

In addition to the community consultation completed to date, OMPS and EMM have engaged with various government agencies on the proposed amendments to the Project. Meetings and presentations to discuss the proposed changes have been conducted with:

- NSW Crown Land – meeting on 1 December 2022 and numerous online calls prior;
- DPE – online briefing on 3 February 2022;
- DPE - Biodiversity Conservation Division (BCD) – online briefing on 16 February 2022;
- DAWE – online briefing on 16 February 2022;
- Transport for NSW (TfNSW) – online briefing on 23 February 2022; and
- Energy Corporation of NSW (EnergyCo) – engagement series between 22 September 2021 and 26 October 2021.

2.6 Benefits

There are several key benefits related to the inclusion of the amendments outlined in this addendum report, including:

- the potential for on-going access improvements to the local road network via long term use of the EAR;

- the opportunity to improve communications networks in the local area; and
- the potential environmental impacts associated with the PHGW and TCW will be assessed and documented clearly within one EIS and through one approval process.

3 Environmental assessment

This section provides details on changes to assessment methodologies that result from the amendments to the Project. Generally, the methodologies that have been detailed in the scoping report (EMM 2021) for each of the technical area cover the changes to the scope of the Project as discussed in this addendum.

3.1 Review of checklist of matters

The scoping worksheet contained in the scoping report (EMM 2021) has been reviewed by the Project team to include the amendments to the Project. The updated scoping worksheet has remained largely unchanged from the scoping report. It should be noted that the inclusion of the TCW into the Project has resulted in less of a need to consider cumulative impact assessments (CIAs) for several matters. A review of other major projects in the vicinity will still be undertaken, however by combining all project components into a single EIS, the scope of the CIAs may reduce.

As a result of inclusion of the TCW and EAR, visual amenity has been upgraded to a higher category of assessment. As such, a detailed visual assessment will now be completed for the Project.

An electric and magnetic fields (EMF) assessment will also be undertaken to address potential EMF exposure risk to the public and occupational exposure for on-going maintenance and operations of the TCW.

3.2 Terrestrial biodiversity

3.2.1 Additional environmental features for consideration

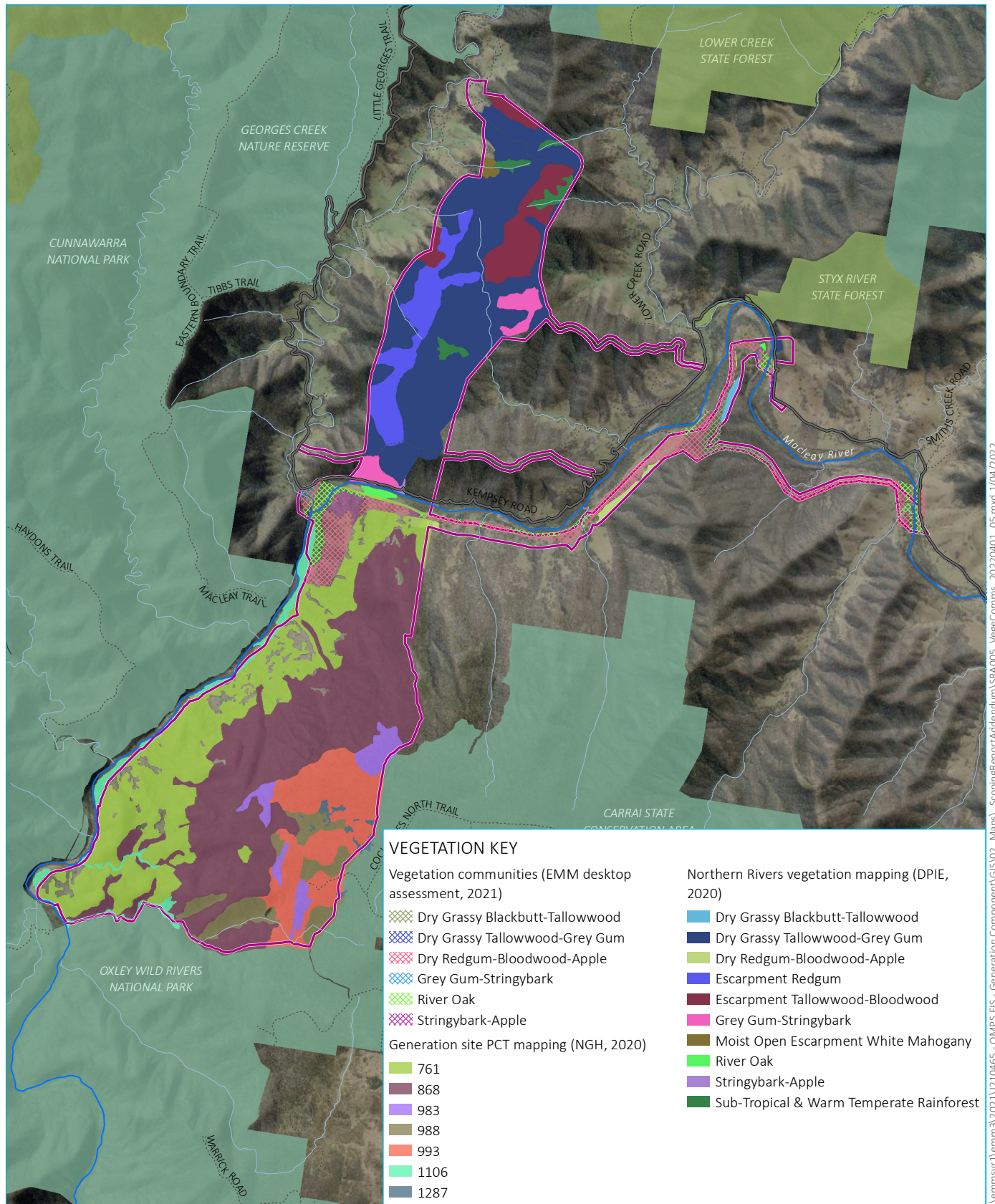
The new components of the Project could have an impact on plant community types (PCTs) not previously recorded within the site of the PHGW. Depending on the final footprint, features such as groundwater dependent ecosystems (GDEs), cliffs, ridges streams or rocky areas will also need to be considered as part of the assessment. Figure 3.1 provides an overview of mapping completed across the Project area to date. Further survey efforts will be conducted to refine the PCT mapping during the development of the EIS.

3.2.2 Summary of potential issues

New PCTs may be associated with endangered ecological communities (EECs) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and EPBC Act and trigger further threatened species surveys not previously identified on the site of the PHGW due to their association with a potential new PCT. It is likely that an array of threatened species survey period will be completed outside of the biodiversity development assessment report (BDAR) delivery date.

Several species will miss the survey period to meet the anticipated EIS and BDAR delivery date (scheduled for November 2022). For species where survey has not been completed, it will be necessary to assume their presence for the submission of the BDAR with the EIS. These species will require survey at a later date (as a part of the response to submissions (RTS) period and prior to determination of the EIS) and update of the BDAR for resubmission to DPE and BCD.

Species, such as Brush-tailed Rock Wallaby (BTRW), recorded on the PHGW site and cave dwelling microbats are dependent on features such as cliffs and caves. Development on associated habitat to support these species requires serious and Irreversible Impact assessments (SIAs). For CSSI projects, these assessments need to provide evidence of avoidance and further assessment of the population in the local area.



Source: EMM (2022); NGH (2020); DPIE (2020) DFSI (2017); GA (2011); ASGC (2006)

KEY

- Project area
- Existing environment
- Macleay River
- Watercourse/drainage line
- Road
- Vehicular trail
- NPWS reserve
- State forest

0 0.5 1 km
GDA 1994 MGA Zone 56

Plant community type mapping

Oven Mountain Pumped Hydro Energy Storage Project
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Figure 3.1

3.2.3 Updated approach to assessment

Methodologies for assessing potential impacts to terrestrial ecology will remain consistent to that documented within the scoping report. A detailed biodiversity impact assessment in the form of a BDAR will be undertaken in consideration of the BC Act and EPBC Act with site-specific assessment of flora, ground-based fauna, and aerial fauna (including bats and birds) to determine Project-related impacts, inclusive of the new TCW and EAR components.

3.3 Aquatic biodiversity

3.3.1 Additional environmental features for consideration

The amendments to the Project have been mapped against existing information to identify potential impacts to aquatic biodiversity across the Project area. Figure 3.2 outlines the amended Project area against mapped aquatic biodiversity. A large proportion of the TCW and the EAR footprints fall within area mapped as Manning River Helmeted Turtle (*Myuchelys purvisi*) habitat, a threatened species listed under the BC Act. The TCW and the EAR footprints also cross over area mapped as Southern Purple-spotted Gudgeon (*Mogurnda adspersa*) habitat extent.

3.3.2 Summary of potential issues

The inclusion of the amendments to the Project may result in potential impact to the threatened species mentioned in Section 3.3.1.

As part of the EAR works, two additional locations for crossing the Macleay River are being investigated. However, while the footprint of the TCW extends over the mapped habitat of the Southern Purple-spotted Gudgeon (*Mogurnda adspersa*), it is unlikely to impact on its habitat as the infrastructure associated with this interaction will be via overhead wires. Therefore, no instream works or works that may impact with this species is expected.

3.3.3 Updated approach to assessment

Both crossings of the EAR will be assessed for potential impacts to Southern Purple-spotted Gudgeon (*Mogurnda adspersa*) based on in-field survey results.

As detailed in the scoping report (EMM 2021), an assessment of potential impacts will be undertaken based on in-field survey, informed by modelling of changes in the hydrological and hydrogeological regime, and in accordance with NSW *Fisheries Management Act 1994* (FM Act), BC Act (if required) and EPBC Act assessments of significance. Identification of avoidance measures, where possible, together with the implementation of standard design and control measures during construction may address a range of potential impacts to aquatic habitat and threatened species. Mitigation and management measures to address impacts associated with, for example groundwater drawdown, will be further developed as part of the EIS stage. Offsets and/or compensation may be required for residual impacts that cannot be avoided or minimised in accordance with relevant policy requirements.

The assessment will be documented in an aquatic ecology impact assessment.



Source: EMM (2020); DFSI (2017); GA (2011); ASGC (2006)

KEY

- Purple-spotted Gudgeon habitat extent
- Known Bellinger River Snapping Turtle habitat
- Known Manning River Helmeted Turtle habitat
- Project area

- Existing environment
- Macleay River
- Watercourse/drainage line
- Road
- Vehicular trail
- NPWS reserve
- State forest

0 0.5 1 km
GDA 1994 MGA Zone 56

Mapped aquatic threatened species habitat areas

Oven Mountain Pumped Hydro Energy Storage Project
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Figure 3.2

3.4 Aboriginal heritage

3.4.1 Additional environmental features for consideration

The amended Project area extends further to north for the TCW, as well as extending further to east to allow for the inclusion of both the TCW eastern option and the EAR. A search of the Aboriginal Heritage Information Management System (AHIMS) was completed on the amended Project area on 24 February 2022. The search results indicate that there are 90 Aboriginal sites and three Aboriginal places recorded in or near the Project area. However, no new registered Aboriginal sites were recorded in the Project area, and as such, all sites identified within the Project area were documented in the scoping report (EMM 2021).

The three Aboriginal places identified include:

- ID 3: Carrai Waterholes;
- ID 45: Burrell Bulai; and
- ID 46: Long Gully.

The search also identified two restricted sites: 21-5-007 and 21-5-0121.

Figure 3.3 provides an overview of the AHIMS search results mapped against the amendment Project area.

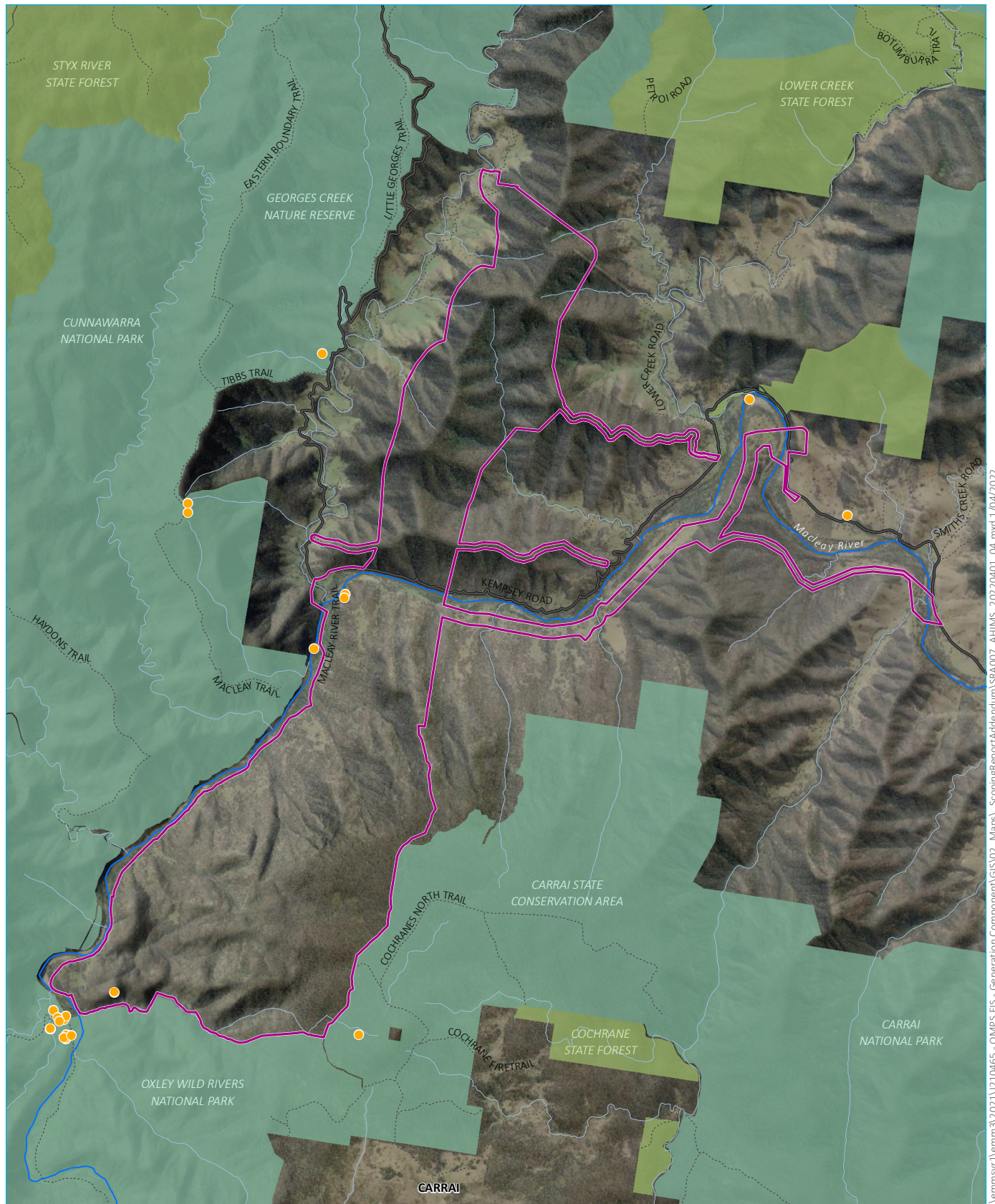
3.4.2 Summary of potential issues

While AHIMS results indicate that there are no new known registered heritage locations that fall within the additional footprint associated with the TCW and the EAR, the amended Project footprint has the potential to impact on Aboriginal heritage sites. Potential unknown Aboriginal heritage sites may include the:

- presence of open artefact sites and archaeological deposits along lower slopes and banks of Macleay River, with specific reference to the access roads and laydown areas;
- presence of rock shelters, low density artefact sites on upper slopes and plateau, with specific reference to the upper reservoir and access; and
- presence of cultural sites (intangible and tangible) throughout the landscape, which can be determined only by local Aboriginal knowledge holders.

3.4.3 Updated approach to assessment

The amended Project footprint will be incorporated into the Aboriginal cultural heritage assessment as detailed within section 5.3 of the scoping report (EMM 2021).



Source: EMM (2020); DFSI (2017); GA (2011); ASGC (2006)

KEY

- Registered heritage location
- ▭ Project area
- Existing environment
- Macleay River
- Watercourse/drainage line
- Road
- Vehicular track
- NPWS reserve
- State forest

Known Aboriginal and historic heritage sites

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Figure 3.3

3.5 Historic heritage

3.5.1 Additional environmental features for consideration

The addition of the TCW and the EAR result in a larger area over which potential historic heritage impacts need to be assessed and considered. A review of historical context and historical heritage databases was completed across the additional area.

3.5.2 Summary of potential issues

The key potential issue that has been identified through review of the historical context of the amended Project relates to travelling stock routes (TSRs). TSRs are specially designated sections of Crown land that form a continuous network of droving tracks and include fenced reserves and water sources allowing for drovers and their stock to camp overnight (Lennon 2014, 47).

TSR 1076, which was gazetted on 1 November 1880, passes west to east from Georges Creek crossing the Macleay River into the Project area towards Waterloo Paddock and Long Flat Head Station. Two TSR reserves, both notified on 20 June 1877, are present north-west of the Project area within the boundaries of Long Flat. Junction Holding Paddock (C & T.S.R. No.54/R26971) is at the junction of Georges Creek and the Macleay River and Tibbs Gully Reserve (Booths) (C & T.S.R. No.52/R26970) is located further north. The eastern transmission option footprint as well as the EAR footprint both have the potential to interact with the identified TSRs.

3.5.3 Updated approach to assessment

Based on the heritage constraints identified in the TCW and EAR, the following additional tasks will be undertaken:

- field survey of the TCW routes and EAR alignments; and
- the statement of heritage impact will be expanded to address the TCW and access routes.

3.6 Landscape and visual amenity

3.6.1 Additional environmental features for consideration

The inclusion of TCW and the EAR into the Project will introduce additional permanent infrastructure into the landscape. This includes above-ground structures such as the substation, transmission towers, associated connection infrastructure, communication towers, transmission lines and road infrastructure.

3.6.2 Summary of potential issues

The installation of the elements associated with the TCW and EAR will result in changes to existing views, amenity and landscape settings proximate to the Project area.

3.6.3 Additional environmental features for consideration

As mentioned in section 3.1, visual amenity has been upgraded to a higher category of assessment. As such, a detailed landscape and visual impact assessment (LVIA) will now be completed for the Project, due to the inclusion of the infrastructure associated with the TCW. The LVIA will incorporate and assess these additional components and will:

- consider potential changes to the landscape character and visual setting of the Project area;

- consider visual impacts of the project in relation to identified sensitive receptors;
- focus on those locations where permanent infrastructure is proposed; and
- discuss temporary impacts during construction.

3.7 Land and rehabilitation

3.7.1 Additional environmental features for consideration

The amended Project area has been considered against the modelled land and soil capability based on the eSPADE database (OEH 2016), shown in Figure 3.4. The soils in the area are expected to be highly variable reflecting the variability in the underlying parent material and landforms, this is consistent with the scoping report (EMM 2021) and will be assessed further in the EIS with the inclusion of TCW and the EAR.

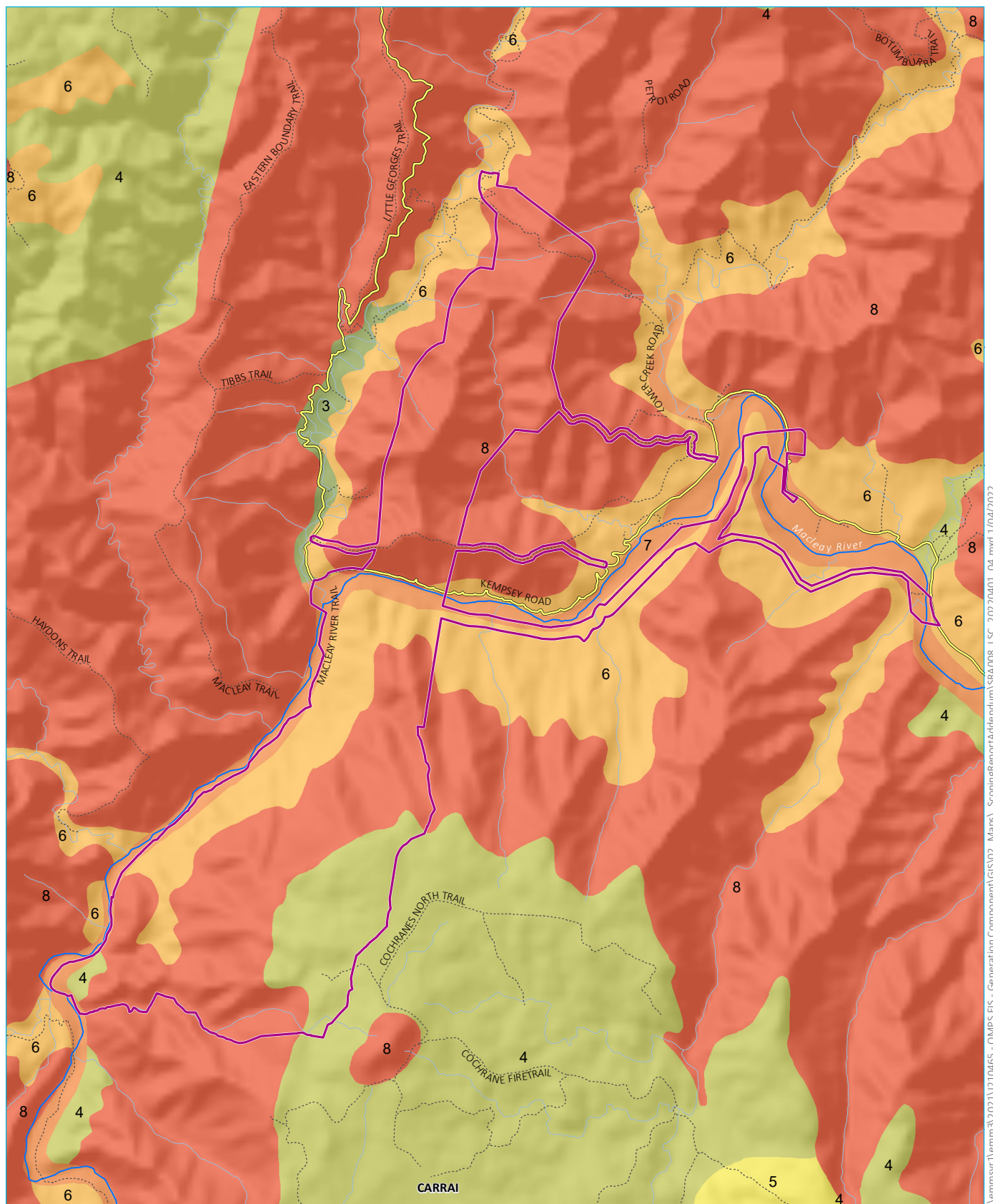
Based on eSPADE modelling (OEH 2016) most of the soils within the amended Project area are still likely to have generally low inherent fertility with modelled land and soil capability (LSC) ranging between Class 4–8.

3.7.2 Updated approach to assessment

The TCW and the EAR will result in an expanded assessment, including additional soil investigation sites based on the *Guidelines for Soil Survey along Linear Features* (Soil Science Australia 2013).

The assessment of the TCW and the EAR will be included within the land, soil and erosion assessment (LSEA) to support the EIS for the Project, including:

- desktop assessment;
- field investigation (erosion hazard inspection, soil survey and mapping); and
- documentation of impacts in a LSEA.



KEY

- | | |
|---|--|
| Project boundary | Land and soil capability |
| — Existing environment | 3 |
| — Macleay River | 4 |
| — Watercourse/drainage line | 5 |
| — Road | 6 |
| - - - Vehicular track | 7 |
| | 8 |

Project area modelled land and soil capability

Oven Mountain Pumped Hydro Energy Storage Project
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Figure 3.4

3.8 Surface water

The potential impacts of the Project on water resources and hydrology will remain largely consistent to that documented within section 5.4 of the scoping report (EMM 2021). Key water resources impacts can be attributed to the filling and periodical replenishment of the Project reservoirs, and temporary water usage that is required to support construction activities. The methodology for addressing these impacts is included within the scoping report.

Based on the current understanding and level of design for the eastern access road, as well as the secondary transmission alignment, there may need to be a larger focus around flooding impacts on the newly proposed infrastructure. These will be incorporated into the surface water assessment within the EIS.

3.9 Groundwater

The potential groundwater impacts will remain largely consistent with those detailed within section 5.4 of the scoping report (EMM 2021). The key groundwater impacts are largely related to the underground infrastructure related to the Project (tunnels, and caverns), those of which have already been documented within the scoping report.

The groundwater assessment will consider the location of TCW and the EAR, as well as the methods for construction for each.

3.10 Transport and access

The inclusion of TCW and the EAR result in an expansion to the overall internal road network for the Project. The traffic and transport assessment will assess the EAR and other access roads in terms of intersection performance, expected traffic movements and provide recommendations for potential mitigation measure to address potential impacts of the Project as a whole.

In general, the methodologies for assessing traffic and transport impacts will remain the same as detailed within the scoping report (EMM 2021). Inputs relating to the inclusion of the TCW and the EAR will be incorporated into the various assessments related to the transport and access approach.

3.11 Noise, vibration and EMF

The inclusion of TCW and the EAR into the Project is not expected to result in a significant increase to the scope of the noise and vibration impact assessment (NVIA) than what has been detailed within the scoping report (EMM 2021). Increases in construction and operational related noise sources, including any additional traffic movements, will be incorporated into noise and vibration assessment methodology that has been outlined within the scoping report.

Any additional sensitive receivers will be identified as part of the NVIA.

In addition to the risks identified within the scoping report (EMM 2021), an Electric Magnetic Fields (EMF) assessment will also be completed. The EMF assessment will consist of:

- a qualitative assessment of potential EMF exposure risk to the public and workers for the operation of the substation with consideration to its location, and site characteristics, eg accessibility for public access; and
- a quantitative assessment to predict potential impacts associated to the operation of the overhead transmission lines and associated infrastructure. The predicted EMF levels will be compared to relevant guidelines.

3.12 Air quality and greenhouse gas

The inclusion of TCW and the EAR into the Project is not expected to result in a significant increase to the scope of the air quality and greenhouse gas assessment then what has been detailed within the scoping report (EMM 2021). Increases in construction related air emission sources will be incorporated into air quality assessment methodology that has been outline within the scoping report.

Any additional sensitive receivers will be identified as part of the air quality assessment.

3.13 Social

The TCW and EAR would be incorporated into the social impact assessment (SIA) for the Project as described in the scoping report (EMM 2021). As depicted in Figure 5.8 in the scoping report (EMM 2021), the area of influence for the SIA already incorporates land on which the TCW and the EAR are proposed.

Comprehensive stakeholder engagement on the Project, inclusive of the TCW and EAR, has been completed to date and will continue as the SIA is progressed. This includes consultation with the local community, landowners, and government agencies.

3.14 Economics

The TCW and EAR would be incorporated into the economic assessment for the Project as described in the scoping report (EMM 2021).

3.15 Climate change and other risks

The key risks due to climate change are related predominately to the occurrence of severe weather events, including increased frequency and severity of rainfall events as well as drought events, and bushfire risk. The inclusion of the TCW and ear will be assessed for any additional impacts on climates change related risks as detailed within the scoping Report (EMM 2021).

A large focus of the climate change related risk assessments will be around bushfire impacts, particularly in relation to the construction and operation of the new electrical transmission network and the new substation. These key pieces of infrastructure will be assessed and detailed within a bushfire risk and hazard assessment (BFRHA) report prepared in accordance with the relevant guidelines and standards.

4 Conclusion

This report is an addendum to the scoping report (EMM 2021) for the Oven Mountain Pumped Hydro Energy Storage Project. The purpose of this addendum is to provide details on the amendments to the Project to enable DPE to determine if the SEARs need to be amended. The amendments include:

- the TCW, including construction of a substation, associated connection infrastructure and transmission lines rated up to 330 kV;
- the EAR which is an alternative access road to connect to the Project area to the Kempsey Road; and
- increasing the maximum power output of the pumped hydro-electric power station from 600 MW up to 900 MW.

As part of this addendum document, the environmental matters associated with the Project have been reviewed against Section 5 of the scoping report to incorporate the amended Project. Considerations for addressing the environmental matters incorporating the amendments are detailed within Section 3 of this document.

The project scoping worksheet has been reviewed for consistency against the scoping report assessment methodologies. It was identified that a higher category of assessment for the visual assessment will be required to address impacts associated with the TCW and EAR, therefore as part of the EIS a LVIA will be undertaken. In addition, to address potential impacts of EMF associated with the TCW, an EMF assessment will also be prepared and incorporated into the EIS.

Table 4.1 outlines the updated key elements table that incorporates the TCW and the EAR into the Project.

Table 4.1 Updated key elements

Project component	Description
Key project elements – operational infrastructure	<ul style="list-style-type: none">• an underground pumped hydro-electric power station complex;• lower reservoir and intake;• upper reservoir and intake;• spillways;• power waterway tunnels, chambers and shafts;• access tunnels;• new and upgraded roads to allow ongoing access and maintenance;• power and communication infrastructure;• bridges;• substation; and• transmission towers, powerlines and easements.

Table 4.1 Updated key elements

Project component	Description
To support the construction of operational infrastructure, the following elements and activities are needed and are referred to as construction elements, and include:	<ul style="list-style-type: none"> • construction water infrastructure and supply including: <ul style="list-style-type: none"> – a temporary water store such as a turkey's nest or similar for construction activities; – the ability to fill and maintain temporary water stores such as via surface water, bores, and/or extraction from the Macleay River; – associated infrastructure such as pumps and pipes; • an on-site borrow pit or quarry; • an on-site concrete batching plant; • establishment and removal of temporary structures including coffer dams; • management of cleared vegetation, soils and overburden; • construction compounds including laydown and logistics yards within the Project area boundaries; • supporting services infrastructure including: <ul style="list-style-type: none"> – construction power supply; – potable water supplies; – waste and wastewater management; – communications infrastructure; – site control infrastructure; – accommodation camps; • emergency infrastructure including: <ul style="list-style-type: none"> – water tanks for fire control; and – helicopter access.



