Queensland Hydro

Prepared for the Department of Climate Change, Energy, the Environment and Water

Borumba Pumped Hydro Energy Storage Project – Exploratory Works Preliminary Documentation

Response to Public Comments

DOCUMENT NUMBER: BR-NA-NON-EMG-RPT-00027

October 2025



Executive Summary

Queensland Hydro is the proponent of the Borumba Pumped Hydro Energy Storage (PHES) Project (the Borumba PHES Project). The Borumba PHES Project is a proposed hydroelectric scheme to store, generate, and supply energy at Lake Borumba. It includes two project phases:

- Exploratory Works – the geological investigations and the associated supporting infrastructure and activities required to support the geological investigations, which will ultimately inform the development of the Borumba PHES Project
- Main Works – the PHES project, including the power infrastructure (powerhouse, water and access tunnels), an upper reservoir, and a lower reservoir (Lake Borumba).

The Exploratory Works (referred to as the Project) comprises the critical geological technical investigations and associated supporting infrastructure required to confirm the suitability of the Borumba PHES Project location and design. Investigation is particularly required in areas where key subsurface infrastructure will be constructed, as there is limited technical geological information currently available and considerable project risk associated with this uncertainty.

The Project was referred under the *Environment Biodiversity and Conservation Act 1999* (EPBC Act) on 2 February 2023. Following consideration of the referral and supporting documentation, on 30 March 2023, a delegate for the Commonwealth Minister for the Environment and Water determined the Project to be a controlled action (EPBC 2023/09461) to be assessed by Preliminary Documentation. Listed threatened species and communities (sections 18 and 18A of the EPBC Act) are the relevant controlling provisions for the action.

The Preliminary Documentation was released for public comment on 14 February 2025, in accordance with section 95A(3) of the EPBC Act. It was open for comment for 29 days (20 business days), with the closure of the comment period extended from 10 March 2025 to 14 March 2025 due to expected disruptions from ex-tropical cyclone Alfred.

A total of 115 public submissions were received in response to the publication of the Preliminary Documentation. Most of the submissions (90%) were received from private individuals.

Each submission has been reviewed and the comments analysed to understand the key themes. The key themes relevant to the Exploratory Works and the EPBC Act assessment were generally categorised to correspond with the relevant Preliminary Documentation section. The themes broadly related to the scope of the Exploratory Works Project, the existing environment and specific species listed as matters of national environmental significance, the nature of the impact assessment, proposed management measures and offsets, and economic and social matters.

Queensland Hydro has carefully considered all public comments received on the Preliminary Documentation. This report provides a response to the key themes raised in submissions on the Exploratory Works.

The Preliminary Documentation has been updated in response to public comments, and in some instances, the design of the Exploratory Works has also been revised. Technical assessments and management plans have also been revised in response to submissions and are published with the updated Preliminary Documentation.

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Acknowledgement of Country

In the spirit of reconciliation, Queensland Hydro acknowledges the Traditional Custodians of Country throughout Queensland and, in particular the lands, skies and waters on which we operate. We celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands, skies and waters of Queensland.

Queensland Hydro pays respect to Elders past and present honouring their continuing spiritual and cultural connections to Country.



Acronyms and Abbreviations

Abbreviation	Description
AEP	Annual exceedance probability
AIP	Australian industry participation plan
BAR	Bioacoustics recording
CEMP	Construction Environment Management Plan
CSEP	Community and stakeholder engagement plan
cm	Centimetre
Cth	Commonwealth
db	Decibel
DBH	Diameter at breast height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DETSI	Queensland Department of Environment, Tourism, Science and Innovation
ECVT	Emergency, cable and ventilation tunnel
EIS	Environmental Impact Statement
EP Act	*Environment Protection Act 1994* (Qld)
EPBC / EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ERA	Environmentally relevant activity
ESCP	Erosion and sediment control plan
FFMP	Flora and fauna management plan
FSC	Fauna spotter catcher
GHG	Greenhouse gas
GTRE	Ground-truthed regional ecosystem
ha	Hectares
IECA	International Erosion Control Association
JSIP	Jobs, skills and industry participation framework
kL	Kilolitres
kL/day	Kilolitres per day
km	Kilometres
km^2	Square kilometres
KKPAC	Kabi Kabi People's Aboriginal Corporation
L/s	Litres per second
LOO	Likelihood of occurrence
m^2	Square metres
m^3	Cubic metres
mm	Millimetre
MAT	Main access tunnel
MNES	Matters of national environmental significance
MPs	Ministers of Parliament

Abbreviation	Description
MSES	Matters of state environmental significance
NC Act	*Nature Conservation Act 1992* (Qld)
NOA	Naturally occurring asbestos
OAMP	Offset Area Management Plan
PESCP	Preliminary erosion sediment control plan
PFAS	Per- and polyfluoroalkyl substances
PHES	Pumped hydro energy storage
Qld	Queensland
QPWS	Queensland Parks and Wildlife Service
RE	Regional ecosystem
RFI	Request for information
RNTBC	Registered native title body corporate
SAMP	Social Assessment and Management Plan
SARA	State Assessment and Referral Agency
SAT	Koala spot assessment technique points
SEP	Site Environmental Plan
SMP	Species management program (under the NC Act)
SRG	Stakeholder reference group
TEC	Threatened ecological community
VM Act	*Vegetation Management Act 1999* (Qld)
WoNS	Weeds of national significance
WMP	Weed management plan

1. Introduction

This report is a response to public comments received on the Borumba Pumped Hydro Energy Storage Project – Exploratory Works Preliminary Documentation, which is in support of a referral under the *Environment Protection and Biodiversity Conservation Act 1999*. The sections below provide an overview of the Exploratory Works Project, the Preliminary Documentation assessment and publication process, and the report's purpose and approach.

1.1 Overview of proposed action

Queensland Hydro is the proponent of the Borumba Pumped Hydro Energy Storage (PHES) Project (the Borumba PHES Project). The Borumba PHES Project is a proposed hydroelectric scheme to store, generate, and supply energy at Lake Borumba, approximately 13 kilometres (km) southwest of the township of Imbil, 48 km southwest of Gympie, and 180 km northwest of Brisbane. It includes two distinct project phases:

- Exploratory Works – the geological investigations to obtain sufficient geological information required to inform the development of the Borumba PHES Project.
- Main Works – the Borumba PHES Project, including the power infrastructure (powerhouse, water and access tunnels), an upper reservoir, and a lower reservoir (Lake Borumba).

The scope of each project phase is identified in Figure 1. The Exploratory Works (referred to as the Project) are the focus of this report and comprise critical geological technical investigations and the supporting infrastructure required to enable the investigations.

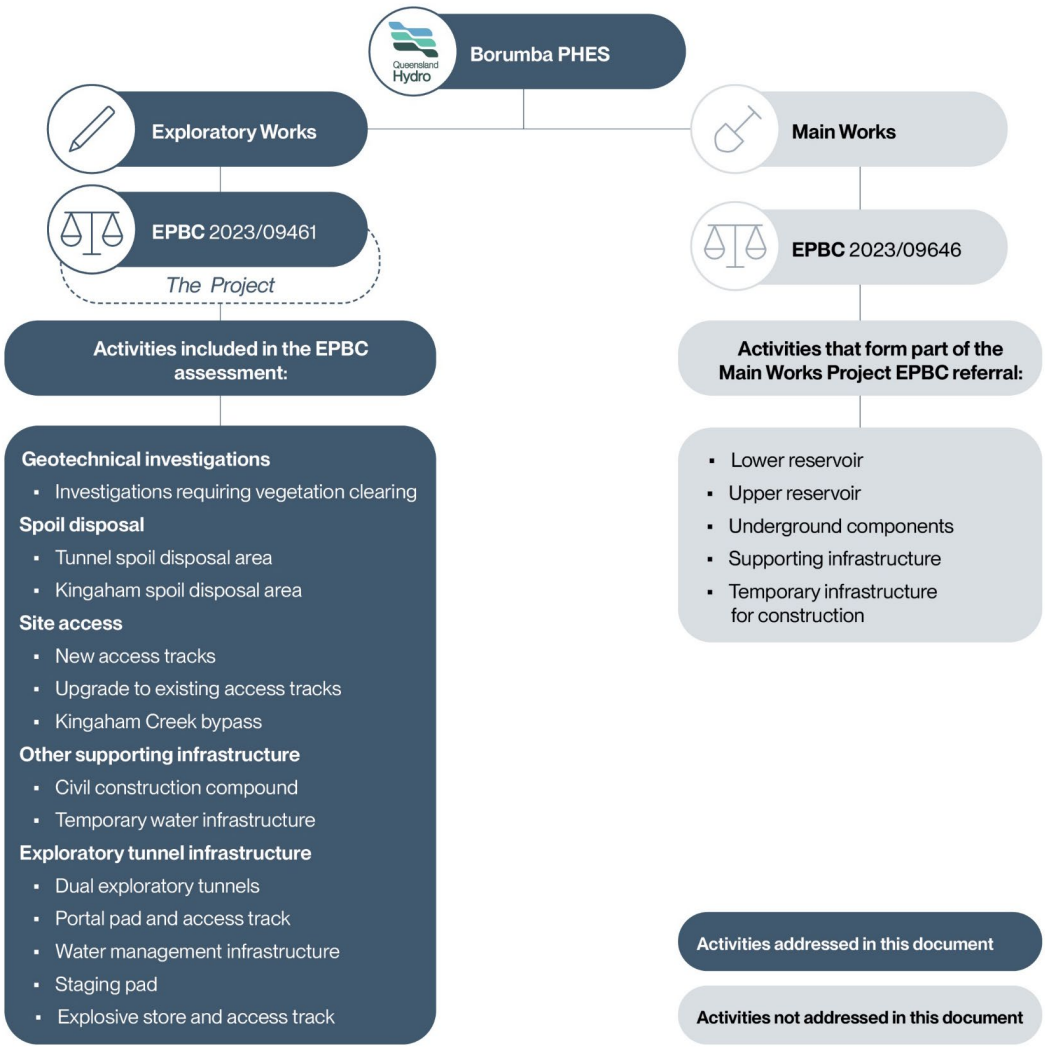


Figure 1: Phases required for Borumba PHES Project definition

The Project activities were described in Section 2 of the Preliminary Documentation. Updates to the action made in response to changes in the Borumba PHES Project and public comments on the Preliminary Documentation are described in Section 1.3 and Section 3.2 of this report. Section 2 of the Preliminary Documentation has also been updated to reflect those changes.

Activities associated with routine management of Queensland Hydro land (such as fire breaks, property fencing, access track maintenance, and any other similar activities) do not form part of the action.

With the exception of the Kingaham Creek bypass, Project infrastructure is largely temporary in nature and is not intended to remain in place for an extended duration, unless required for property access and maintenance (e.g. some access tracks). Should the Main Works phase of the Borumba PHES Project not proceed, the areas disturbed by the Project will be remediated where appropriate.

1.2 Assessment process and publication of Preliminary Documentation

1.2.1 Assessment process

The Project was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 2 February 2023, due to likely significant impact on matters of national environmental significance (MNES). On 30 March 2023, following consideration of the referral and supporting documentation, the Commonwealth Minister for the Environment and Water determined the Project to be a controlled action (EPBC 2023/09461) to be assessed by Preliminary Documentation.

The proposed activities for the Project have been identified to impact MNES, with listed threatened species and communities (sections 18 and 18A of the EPBC Act) the relevant controlling provisions for the action.

To facilitate the assessment by Preliminary Documentation, the Department of Climate Change, Energy, the Environment and Water (DCCEEW) issued a Request for Additional Information Required for Assessment by Preliminary Documentation on 21 April 2023.

Formal variations to the controlled action were approved by the Minister's delegate, in accordance with section 156 of the EPBC Act, on:

- 16 October 2023 for the inclusion of the Bella Creek Road realignment (Kingaham Creek bypass)
- 26 September 2025 for amendments to the EPBC Referral area, locations of some Exploratory Works components, Kingaham Creek bypass design, and temporary waterway crossing design.

The Preliminary Documentation was released for public comment in accordance with section 95A(3) of the EPBC Act on Friday 14 February 2025. It was open for comment for 29 days (20 business days), with the closure of the comment period extended from 10 March 2025 to 14 March 2025 due to expected disruptions from ex-tropical cyclone Alfred.

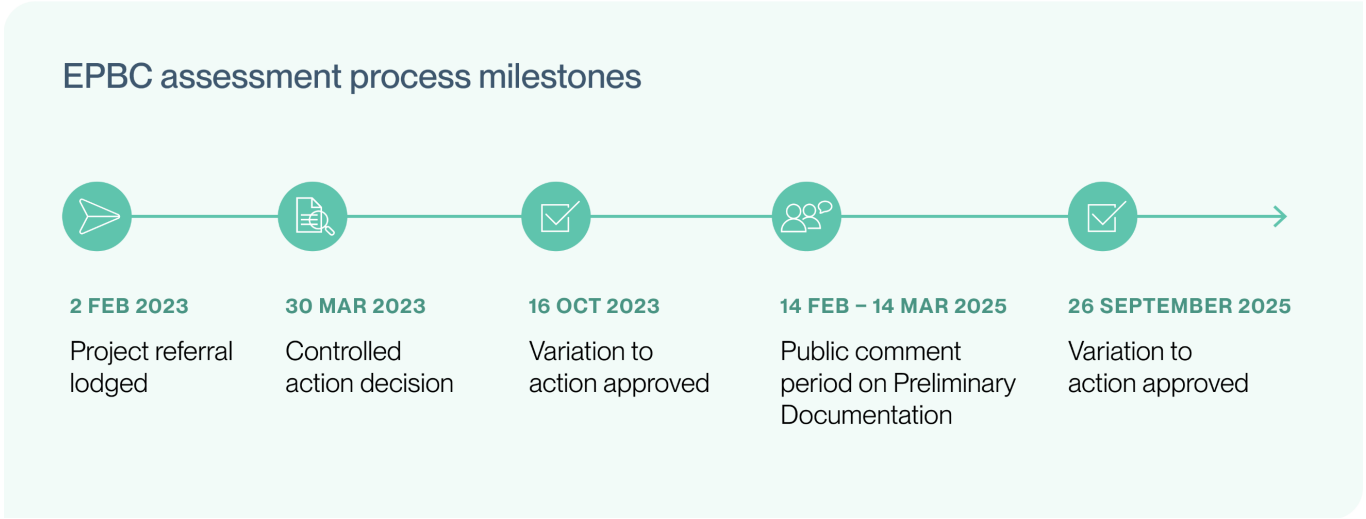


Figure 2: EPBC Act assessment process milestones

1.2.2 Preliminary Documentation publication activities

The Project is ultimately better off when it has input from its neighbours and local communities, along with other relevant stakeholders. The public comment period gave the public an opportunity to have their say on the Preliminary Documentation and the Project.

Stakeholders and the broader community were informed of the public comment period before it began on 14 February 2025. Table 1 outlines the methods of communication, target audience, and timing used to ensure adequate notice was provided before the Preliminary Documentation was published for public comment.

Queensland Hydro ensured there were multiple ways for the public to view the Preliminary Documentation and provide comments. The documentation was available to be viewed:

- Online, at www.qldhydro.com.au/borumba-pd
- With hard copies at:
  - Imbil Library, 123-125 Yabba Road, Imbil QLD 4570
  - State Library of Queensland, Stanley Place, South Brisbane QLD 4101
  - Queensland Hydro office, 6 Imbil Island Road, Imbil QLD 4570.

Comments were able to be submitted:

- Online: via a dedicated website page at www.qldhydro.com.au/borumba-pd
- By post: Borumba Pumped Hydro Project Team, PO Box 12278 Brisbane QLD 4000
- By email: borumba@qldhydro.com.au.

Table 1: Summary of Preliminary Documentation publication activities

Methods	Target audience	Timing
Briefings/presentations	• Stakeholder reference group (SRG) members • Focus groups and environment working group members • Kabi Kabi First Nation Traditional Owners Native Title Claim Group RNTBC (Kabi Kabi)	3 February to 12 February 2025
Print advertising	• The Australian • The Courier Mail • The Sentinel • The Lockyer & Somerset Independent • Noosa Today • Gympie Today • Burnett Today	From 12 February 2025
Video published online to explain the public comment process and how to comment	• Landholders • Businesses • Local community • Broader community • Environment groups • Community groups • Local government • SRG members • Focus groups and working group members • State and Federal ministers of parliament (MPs) • Media	12 February 2025
Phone calls / emails	• Landholders • Businesses • Local community • Broader community • Environment groups • Community groups • Gympie Regional Council, Somerset Regional Council, Noosa Shire Council, Sunshine Coast Council	From 12 February 2025

Methods	Target audience	Timing
	• Kabi Kabi First Nation Traditional Owners Native Title Claim Group RNTBC (Kabi Kabi) • Butchulla Aboriginal Corporation Board • Butchulla Native Title Aboriginal Corporation • SRG members • Focus groups and working group members • State and Federal MPs • Media	
Media release	• **Print/online** – Brisbane Times, Courier Mail, Gympie Times, The Australian, InQLD, Pump Industry, Business News, Renew Economy, Sunshine Coast Daily, My Weekly Preview, Noosa Today, Gympie Today, Coolum Advertiser, Mary Valley Voice, Eumundi Voice, Cooroy Rag, Sunshine Valley Gazette, Hinterland Times, The Aura Post, View News, The Pineapple, Gympie Living, Your Local Lifestyle, Sentinel News, South Burnett Times, The Lockyer & Somerset Independent • **Radio** – 4BC, ABC QLD and Sunshine Coat, Sunshine FM, Grant Broadcasters Sunshine Coast, ARN, 4GY radio, Southern Cross Radio, Zinc96FM • **TV** – Channel 9 QLD, Channel 10 QLD, Channel 7 QLD, WIN TV Sunshine Coast, Channel 7 Sunshine Coast	13 February 2025
E-Newsletter	• 2,446 Project subscribers	13 February 2025
Social Pinpoint Page on Queensland Hydro Website to view documentation and submit online comments	• Landholders • Businesses • Local community • Broader community • Environment Groups • Community Groups • Local Government • SRG members • Focus groups and working group members • State and Federal MPs • Media	14 February 2025
Hard copy Preliminary Documentation delivered for public viewing to Imbil, Kilcoy and Gympie Libraries, and State Library of Queensland	• Landholders • Businesses • Local community • Broader community • Environment Groups • Community Groups • Local Government • SRG members • Focus groups and working group members • State and Federal MPs • Media	14 February to 14 March 2025
Social media posts	• Facebook • LinkedIn	14 February, 25 February, 6 March 2025
Project office	• Landholders • Local community • Environment Groups • Community Groups • SRG members • Focus groups and working group members	14 February to 14 March 2025
Fact sheet	• Businesses • Local community • Local libraries	From 18 February 2025

1.3 Project changes since the Preliminary Documentation publication

Since publication of the Preliminary Documentation on 14 February 2025, Queensland Hydro has reviewed and optimised the Project in response to:

- the feedback received through public consultation on the Preliminary Documentation
- engineering inputs, cultural heritage and environmental investigations, and design alterations associated with refinements to the Main Works.

Where relevant, the Project has been refined to address public concerns while maintaining environmental management principles and Exploratory Works objectives. All alterations and refinements made to the Exploratory Works Project since publication of the Preliminary Documentation (herein referred to as Project changes) were included in the variation request approved on 26 September 2025.

In summary, the Project changes include:

- Adjustment of the EPBC Referral area to encompass activities that have been added to the action or relocated since the EPBC Referral.
- Relocation of geotechnical investigations and associated access tracks in some areas in response to engineering requirements and optimisation of the Main Works Project design.
- Adjustment of the Kingaham Creek bypass design to improve surface water management in response to public comments and the inclusion of a dedicated spoil area.
- Conversion of waterway crossing designs from gravel bed level crossings to concrete bed level and/or piped culvert crossings to reduce potential water quality impacts in response to public comments.
- Selection of a preferred option for the exploratory tunnel alignment after the EPBC Referral and associated relocation of supporting infrastructure for the exploratory tunnels.
- Adjustments to the temporary water infrastructure associated with the relocation of the exploratory tunnelling supporting infrastructure and increased understanding of site conditions.

The Project changes that were the subject of the variation are substantially the same in character as the activities in the EPBC referral and published Preliminary Documentation. Importantly, the Project changes do not change the nature of the impacts or result in a substantial increase to impacts to MNES beyond those considered in the EPBC Referral (EPBC 2023/09461) and assessed in the Preliminary Documentation.

Notably, some of the above Project changes (i.e. the preferred exploratory tunnel alignment and supporting infrastructure for the tunnel) were incorporated in the published Preliminary Documentation. Section 1.4 of the Preliminary Documentation describes the Project changes since the EPBC referral. All proposed changes were developed with consideration of the environmental management hierarchy and aimed to avoid or reduce impacts wherever possible.

Queensland Hydro has updated the Preliminary Documentation to incorporate the Project changes.

1.4 Document purpose and approach

1.4.1 Purpose of this report

In accordance with section 95B(1) of the EPBC Act, this report:

- Sets out the information given to the Minister previously in relation to the action, with any changes or additions needed to take account of the public comments
- Contains a summary of the public comments received and how those comments have been addressed.

Specifically, this report presents a summary and analysis of the public comments received during public notification of the Preliminary Documentation and provides Queensland Hydro's response to those public comments related to the Project. Public comments are documented in the register provided in Appendix A. Each comment is cross-referenced to the relevant section of this report (i.e. where the comment is addressed).

The Preliminary Documentation has been updated in response to public comments. The information given to the Minister previously in relation to the action and the documents updated in response to public comments are listed in Table 2. The updated Preliminary Documentation is available on the Queensland Hydro website[1].

Queensland Hydro, partly in response to public comments, has varied the action to account for alterations to the Exploratory Works. Project changes are described in Sections 1.3, 1.4 and 2 of the Preliminary Documentation.

Information presented in this report should be read in conjunction with the Preliminary Documentation.

Table 2: Information previously provided to the Minister and corresponding updates

Preliminary Documentation	Updates to Preliminary Documentation
Preliminary Documentation report	Preliminary Documentation report updates: • Section 1 Overview • Section 2 Project description • Section 5 Impact assessment • Section 6 Mitigation and management • Section 7 Significant impact assessment • Section 8 Proposed offsets • Section 9 Habitat quality assessment • Section 10 Economic and social matters • Section 12 Environmental record of the person proposing to take the action • Figures updated to reflect revised project and to address public comments (refer to Section 3 of this report)
Appendix A – Request for information – 24 April 2023	No change
Appendix B – Groundwater impact assessment	No change
Appendix C – Decommissioning and Rehabilitation Strategy	No change
Appendix D – Likelihood of occurrence	No change
Appendix E – Species observations and habitat	No change
Appendix F – Construction Environmental Management Plan	Updates to: • Construction Environmental Management Plan • Appendix J – Flora and fauna management plan • Appendix K – Water management plan
Appendix G – Water quality risk assessment	Updated
Appendix H – Risk assessment for impacts to threatened species	Updated
Appendix I – Offset Area Management Plan	Updated
Appendix J – Significant impact assessments of MNES with potential to occur	Updated
Appendix K – Terrestrial ecology technical reports	No change
Appendix L – Aquatic ecology technical reports	No change
Appendix M – Survey methodology and results	No change
Appendix N – Protected matters search tool results	No change

[1] https://qldhydro.com.au/projects/borumba/

1.4.2 Approach to responding to public comments

Each public comment received on the Preliminary Documentation has been reviewed and analysed for key themes in the public comment register (Appendix A). Personal information has been redacted from the public comment register to maintain the privacy of submitters in accordance with Queensland Hydro's privacy policy and the *Information Privacy Act 2009* (Qld).

Matters or points raised in each submission were extracted and categorised according to their common themes. These themes generally aligned with the structure and topics of the Preliminary Documentation (e.g. project description, existing environment) and are referred to herein as 'key themes'. Where necessary, additional key themes were developed to reflect the nature of stakeholder concerns. Individual public comments may be represented in more than one key theme.

Section 3 of this report includes the responses to public comments organised by key themes.

As noted in 1.3.2, since the end of the public comment period and in conjunction with preparing this report, Queensland Hydro has updated the Project to, in part, take into account the public comments and proposed responses summarised in this report.

2. Overview of public comments

2.1 Types of public comments

Of the 115 public comments, 104 (90%) were from private individuals and 10 (9%) were from organisations (i.e., non-governmental organisations or other registered entities). One public comment did not provide a name or organisation and is included as an 'anonymous' submission in Table 3. A breakdown of the types of comments is provided in Table 3.

Table 3: Types of public comments

Position	No. of respondents	% of total respondents
Private individual	104	90%
Organisations	10	9%
Anonymous	1	1%

2.2 Location of respondents

Of the 115 public comments, 46 (40%) were from within the region and the remaining 69 (60%) were from other locations in Queensland or interstate.

A detailed breakdown of the location of respondents within the region is provided in Table 4 and illustrated in Figure 3.

Table 4: Location, number, and percentage of respondents within the region

Town within region	No. of respondents	% of total respondents
Imbil	35	30%
Gympie	7	6%
Kandanga	2	2%
Kenilworth	2	2%
Total	**46**	**40%**

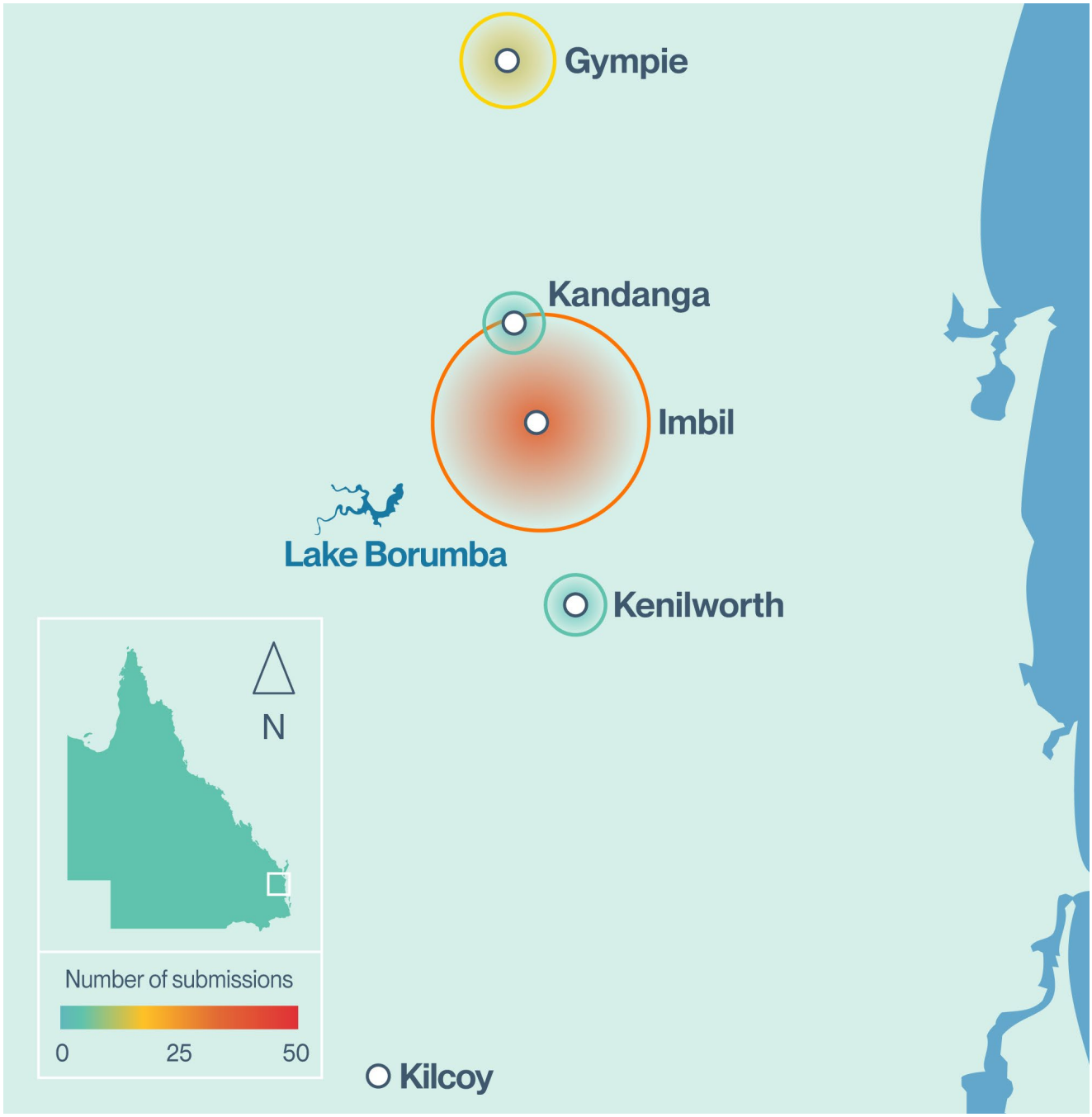


Figure 3: Location of respondents in the region

2.3 Species mentioned in public comments

Most submissions mentioned at least one species of flora or fauna, including some species that are not MNES. The Mary River turtle, koala and greater glider were the most mentioned species in submissions. Non-MNES species that were mentioned are the cascade tree frog and platypus. Freshwater crayfish (assuming this refers to the Conondale spiny crayfish) and diamond firetail were not listed as MNES at the time of the Project's EPBC controlled action decision (refer to Section 3.3.2 for more information).

Figure 4 shows the number of submissions that mentioned each species.

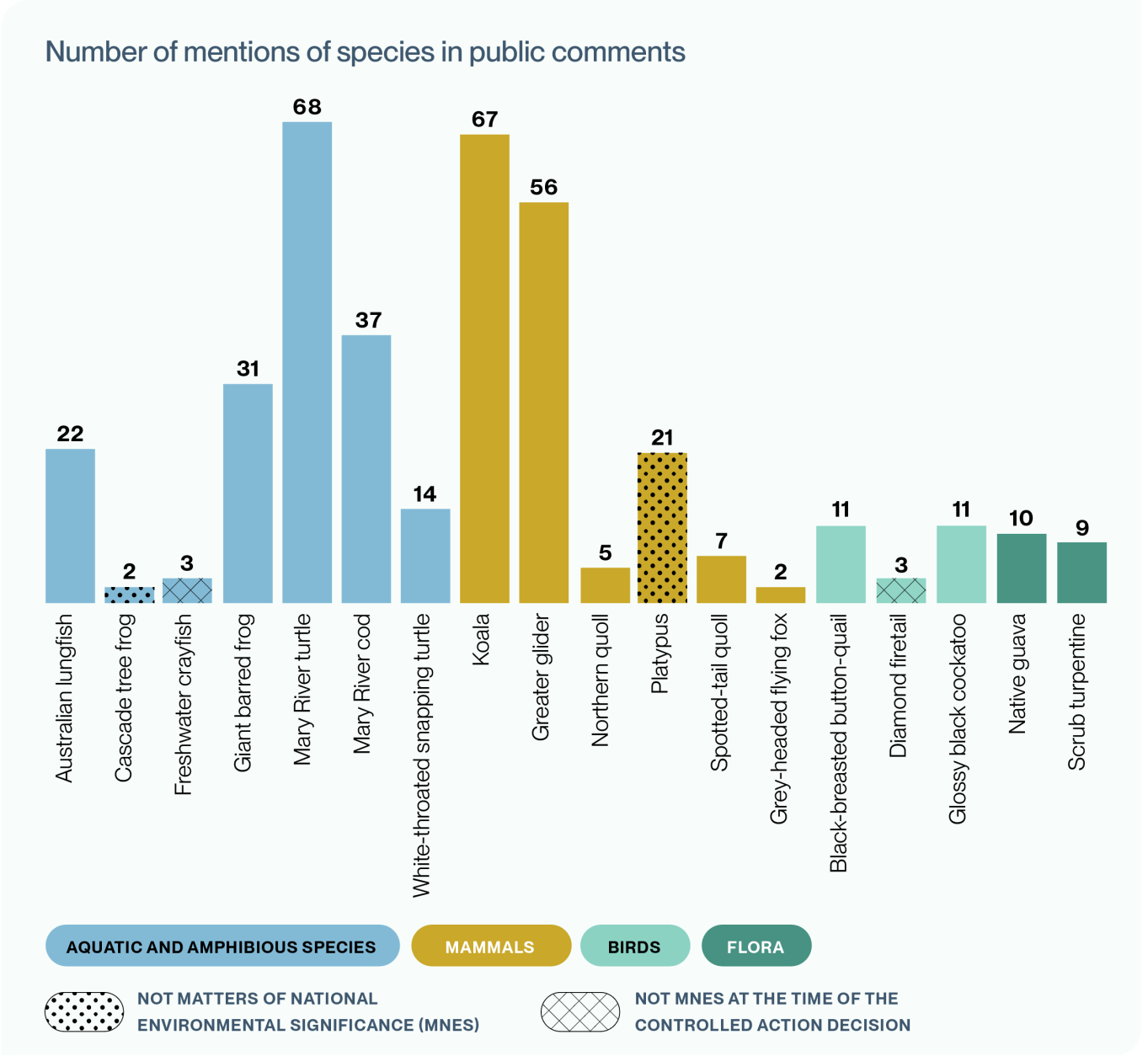


Figure 4: Species mentioned in public comments and the number of submissions that mentioned each species

2.4 Key themes of submissions

The public comments were analysed to identify key themes. As described in Section 1.4.2, these themes were generally categorised to correspond with the relevant Preliminary Documentation section where appropriate (e.g. project description, existing environment, etc.).

The frequency of key themes identified in the submissions is indicated in Figure 5. This figure illustrates the importance of a theme across submitters, with larger text indicating a theme was referenced in more submissions than themes in small text. A large proportion of comments were focused on other projects (including the separate Main Works project).

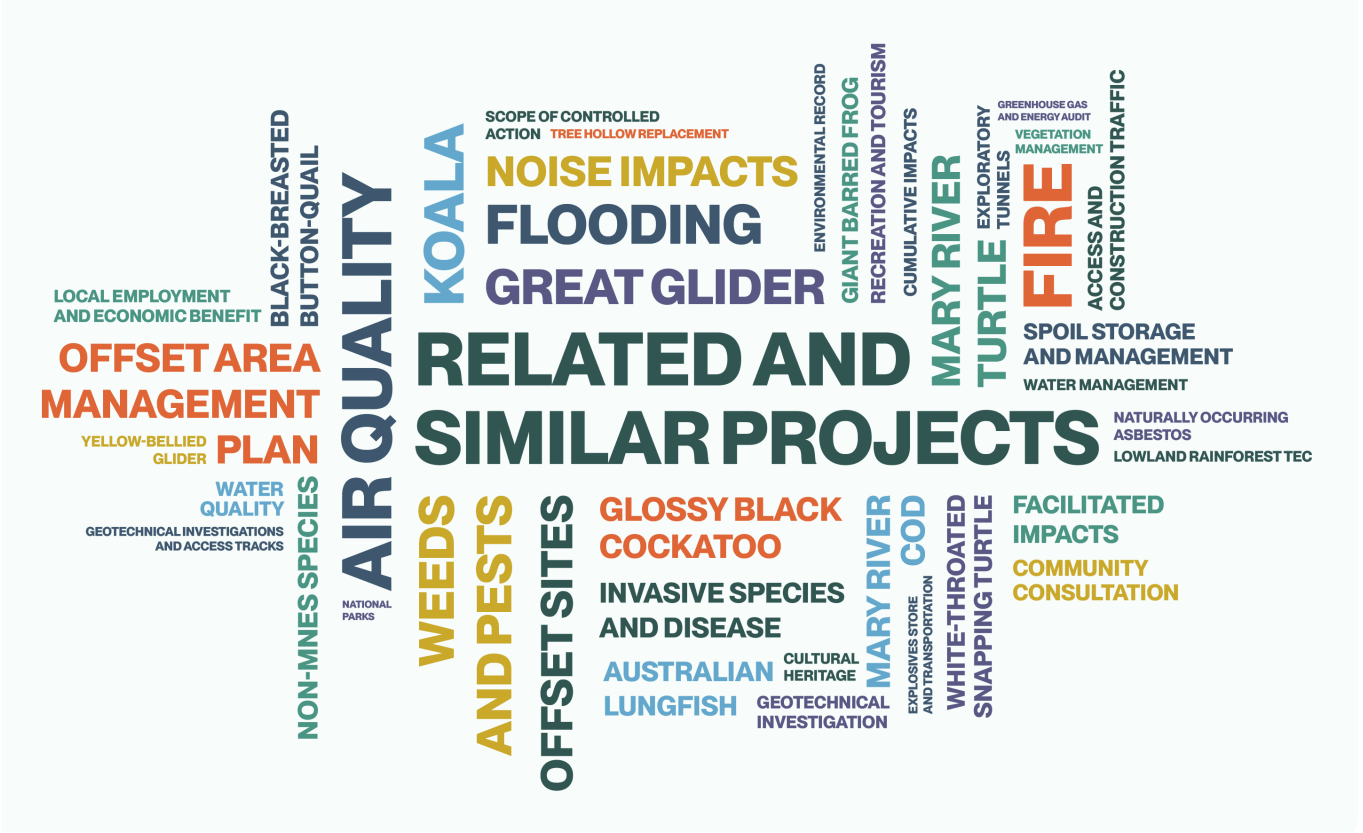


Figure 5: Key themes

Responses to public comments for each key theme are presented in Section 3, with the structure and order of these outlined in Table 5.

Table 5: Structure of response to public comments

Category	Key theme in public comments	Report section
Related and similar projects		Section 3.1
Exploratory Works description	Scope of controlled action	Section 3.2.1
	Water management	Section 3.2.2
	Exploratory tunnels	Section 3.2.3
	Spoil storage and management	Section 3.2.4
	Explosive store and transportation	Section 3.2.5
	Geotechnical investigations and access	Section 3.2.6

Category	Key theme in public comments	Report section
Existing environment	Survey effort	Section 3.3.1
	Non-MNES species	Section 3.3.2
	National parks	Section 3.3.3
MNES	Lowland Rainforest of Subtropical Australia threatened ecological community (TEC)	Section 3.4.1
	Australian lungfish	Section 3.4.2
	Black-breasted button-quail	Section 3.4.3
	Giant barred frog	Section 3.4.4
	Glossy black-cockatoo	Section 3.4.5
	Greater glider	Section 3.4.6
	Koala	Section 3.4.7
	Mary River cod	Section 3.4.8
	Mary River turtle	Section 3.4.9
	White-throated snapping turtle	Section 3.4.10
	Yellow-bellied glider	Section 3.4.11
Impact assessment	General	Section 3.5.1
	Air quality	Section 3.5.2
	Noise	Section 3.5.3
	Weeds and pests	Section 3.5.4
	Water quality	Section 3.5.5
	Flooding	Section 3.5.6
	Fire	Section 3.5.7
	Facilitated impacts	Section 3.5.8
	Cumulative impacts	Section 3.5.9
Mitigation and management measures	Vegetation management	Section 3.6.1
	Invasive species and disease	Section 3.6.2
	Fire	Section 3.6.3
	Tree hollow replacement	Section 3.6.4
	Naturally occurring asbestos	Section 3.6.5
Offsets	Offset sites	Section 3.7.1
	Offset Area Management Plan	Section 3.7.2
Economic and social matters	Access and construction traffic	Section 3.8.1
	Cultural heritage	Section 3.8.2
	Community consultation	Section 3.8.3
	Local employment and economic benefits	Section 3.8.4
	Recreation and tourism	Section 3.8.5
	Greenhouse gas and energy audit	Section 3.8.6
Environmental record		Section 3.9

3. Response to public comments

This section provides responses to key themes in the public comments. The structure of this section is outlined in Table 5. Key themes are generally categorised to correspond with the relevant Preliminary Documentation section.

3.1 Related and similar projects

Summary of comments
Number of submissions referencing theme: 51

Public comments raised concerns about the overall cost and economic viability of the Main Works including the cost per gigawatt (GW) and reliability of the technology. Comments acknowledged the need for baseline power and the suitability of hydropower in a renewable energy-powered network. In some cases, this was tied with fundamental opposition to renewable energy technology and made comparisons to the Snowy Hydro 2.0 Project. Concerns were also raised over the consideration of detailed options evaluations in the context of forecasted market shifts and technological advancements.

A small proportion of public comments raised concerns over dam failure of the Main Works and queried the associated risk of such an event to adjacent communities.

Some comments flagged concerns regarding the overall environmental and social impact of the Main Works, noting the existing environment (including flora, fauna, and watercourses) of the Project area along with the wider Mary River catchment and downstream Great Sandy Strait. Submitters also noted indirect social impacts of environmental degradation on affected communities.

Other public comments also raised concerns about the visual, biosecurity, and other economic and environmental impacts of Powerlink's Transmission Connections Project.

A small proportion of comments were otherwise fundamentally supportive of the broader Borumba PHES Project and its role in the wider energy transition.

The following public comments are representative examples of the various aspects of this theme:

- *"Without a comprehensive evaluation of other renewable energy storage options—such as battery storage, distributed energy solutions, or smaller-scale pumped hydro systems—it is impossible for the public and decision-makers to assess whether the Borumba project represents the most cost-effective and least environmentally damaging solution."*
- *"The impacts of Snowy Hydro 2 have been detrimental on numerous levels, leading me to question why anyone would consider repeating such a mistake. The energy produced will not provide the dense, reliable power that Australia needs, nor does it contribute to our energy sovereignty."*
- *"Given the proposed enlargement of the existing Borumba Dam and the construction of the Upper Reservoir, this combined system volume of up to 290 billion litres presents a catastrophic danger of flash flooding to landowners below the dam site and the communities of Imbil and beyond."*
- *"We have serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed."*
- *"The announcement of the transmission lines has put my life into uncertainty for a number of years, lowered the value of my property, potential loss of visual amenity and will greatly affect my tourism business as the proposed location of the lines is close to my accommodation for my visitors and where they recreate. It will also increase my insurances and fire risk and make it very difficult to manage the increase biosecurity risks. In addition, there will loss of biodiversity and significant impacts on MNES on my property, in particular koalas and greater glider."*
- *"The overall project will bring great environmental value to the region. The Yabba is a secondary stream which has already been dammed which people appreciate - fishing, recreation, tourism, and water supply/irrigation. I believe that because platypus are in all three sections of the Yabba (above the falls, below the falls to the dam wall and downstream of the dam), and lung fish and turtles are in two sections (below the falls to the dam wall and downstream of the dam at least), I don't anticipate large impacts to aquatic fauna. If the lower dam is designed in a strategic way, the project could have flood improvement to downstream communities."*

Response to comments

While the Exploratory Works will inform the Borumba PHES Project Main Works, they are independent investigative activities (and necessary supporting works) that will provide data on the geology of the Project area. The Exploratory Works are not dependent on the Main Works occurring and do not commit Queensland Hydro to deliver the Main Works. As such, the Exploratory Works are a separate controlled action under the EPBC Act and the two phases of the Borumba PHES Project, being the Exploratory Works and the Main Works, are subject to separate assessment processes and require separate approvals under the EPBC Act.

The assessment of potential impacts on MNES relevant to the Main Works will be addressed in the EIS process for that Project. Similarly, Powerlink's Borumba to Halys Transmission Connection Project will also be assessed separately under the EPBC Act (2025/10128).

Matters such as the overall cost, economic viability, risk of dam failure, or the need for comprehensive options analysis (e.g. comparing other energy storage technologies) for the Main Works are specific to that phase of the Borumba PHES Project and do not form part of the Exploratory Works. Therefore, they are not assessed in the Preliminary Documentation. There will be opportunity for the public to engage and comment on matters related to the Main Works during the EIS process for that project; however, comments related to the Main Works received during the Preliminary Documentation publication period will also be considered during the EIS process.

The commercial assessment of the Borumba PHES Project will be addressed as part of the business case being prepared for the Queensland Government. Queensland Hydro's current focus for the Main Works is delivering a refreshed business case and commercial assessment for the proposed Borumba PHES Project, aligned with the Queensland Government's five-year energy roadmap strategy and the State's future energy needs. The refreshed business case for a long-duration pumped hydro system is expected to be completed by mid-2026 (Queensland Hydro, 2025).

3.2 Exploratory Works description

3.2.1 Scope of controlled action

Summary of comments
Number of submissions referencing theme: 6

This theme responds to public comments that raised the following matters:

- lack of consideration of the broader Borumba PHES Project or transmission infrastructure in the Preliminary Documentation.
- concerns about the implications for the Exploratory Works design and EBPC Act assessment process.

The following public comments are representative examples of the various aspects of this theme:

- *"I disagree with Figure 4 (Borumba PHES Project definition) where it shows that the Borumba PHES Project includes two Project phases, the Exploratory and the Main Works. There is a third phase and that is the Transmission lines from Borumba Dam to Halys and Borumba Dam to Woolooga. Transmission lines are essential to this project and will have facilitated/cumulative impacts on Matters of National Significance."*
- *"This is a staged piecemeal approach to the Borumba PHES Project implying that the exploratory works will be completed before the Main Works is assessed but from the scheduling timeframe for the Main Works EIS this is not possible. The "tunnelling" appears to be the start of the Main Works and an attempt by the Proponent to fast track the project."*
- *"A new Project design could mean that some impacts that will no longer happen are addressed in the Preliminary Documentation, while some impacts of any new design may not be addressed in this Documentation."*
- *"…it is dishonest not to include the environment impact of all of the proposed new powerlines, that are required to link the Borumba hydro to the power grid, into this same assessment."*
- *"Recent media reports indicate that there may be some revisions and down-scaling of the proposal. While these may not affect the exploratory works (and the exploratory works may help inform them), this possibility needs to be made plain in the project overview.*"

Response to comments

While the Exploratory Works are part of the broader Borumba PHES Project and will inform the Main Works, they are a separate controlled action to the Main Works under the EPBC Act (refer to the response in Section 3.1).

The Exploratory Works, as described in Section 2 of the Preliminary Documentation comprises the critical geological technical investigations to confirm the suitability of the location and design of the Main Works. Specifically, the Exploratory Works is the first phase of the Borumba PHES Project and, subject to the outcomes of the business case, the Main Works is the second phase. The activities comprising the Exploratory Works include site establishment, geological investigations (including exploratory tunnelling), and supporting activities such as site establishment and the construction of temporary access roads, which are investigatory in nature and do not commit Queensland Hydro to deliver the Main Works.

Design alterations to the Main Works will be addressed as part of the environmental impact statement (EIS) process for the Main Works under the EPBC Act and *State Development and Public Works Organisation Act 1971* (Qld).

Broader concerns regarding the future and cumulative impacts of the Main Works and Powerlink's Transmission Connections projects are not within the scope of the current assessment of the Exploratory Works but will be considered under separate controlled actions under the EPBC Act and relevant State legislation.

Cumulative impacts related to the Exploratory Works are assessed in Section 5.5 of the Preliminary Documentation and addressed in Section 3.5.9 of this report. The cumulative impact assessment found that the cumulative impacts on MNES including koala and grey-headed flying-fox are not expected to be locally or regionally significant. The response to public comments regarding facilitated impacts is provided in Section 3.5.8 of this report.

3.2.2 Water management

Summary of comments

Number of submissions referencing theme: 7

Public comments relevant to the water management theme included queries on sourcing water, managing used water, and contingency planning. Specifically, comments were interested in further information about:

- the total expected volume of surface water and groundwater required for the Project
- contingency plans if water requirements exceed the capacity of water sources
- the expected volume of water (from exploratory tunnel excavation) and groundwater seepage likely to be encountered in the exploratory tunnels
- how collected sludge/used water will be managed to avoid contamination of the environment
- the water management infrastructure and water treatment to be used.

The following quotes are representative of the range of queries received on this theme in the submissions:

- *"Considering the significant scale of the Exploratory Works construction and of the access tunnel in particular, much more detail should be provided on volumes required, the capacity of the water sources mentioned to deliver these volumes, and contingency plans if the requirements exceed the capacity of these sources."*
- *"The potential impact of exploratory works on Yabba Creek, the sole water source for the town of Imbil, is a significant concern due to the risk of contamination, degradation, and disruption to the creek's natural flow. Exploratory activities such as excavation, soil relocation, and the operation of heavy machinery can introduce pollutants and sediments into the waterway, jeopardizing the creek's water quality and, by extension, the health and well-being of Imbil's residents".*
- *"The actual volume of ingress of drilling water and ground water seepage is unknown, (guessed at two litres per second per kilometre) and will determine the size and type of technology used to dewater sediment sludge, drilling mud residue etc Laminar/Lamella separators as suggested, work best with flocculant or coagulant dosing and a steady flow rate. Will this be the case and if so where and how will the collected sludge product, treated OR untreated, be collected and stored? How will this water of unknown volume or rate of ingress to the tunnelling area be collected before any treatment or transfer – by launders, gutters, diaphragm pump and pipes?"*

Response to comments

3.2.2.1 Water demand and sourcing

Raw water for access track construction, management, exploratory tunnels, and geotechnical drilling will be extracted from the upper reaches of Lake Borumba as discussed in Section 2.6.1 of the Preliminary Documentation. Water for drilling and construction works does not need to be potable. Untreated water (raw water) is suitable for operating drilling rigs (geotechnical and exploratory tunnelling), and for dust suppression and material moisture conditioning during surface earthworks (roads and tracks) (refer to Section 2.6.1 of the Preliminary Documentation).

The highest demand for raw water is anticipated to occur during construction and site establishment, with approximately 500 kL per day required (refer to Section 2.6.1 of the final Preliminary Documentation). Section 5.3.9 of the Preliminary Documentation identifies that this daily volume is very small compared to the total water available for take through water allocations under the Water Plan. After construction and site establishment, demand for raw water is estimated to be:

- approximately 55 kL/day for exploratory tunnelling
- approximately 120 kL/day for geotechnical drilling (refer to Section 2.6.1 of the final Preliminary Documentation).

The Project aims to maximise water reuse, prioritising treated water captured from exploratory tunnelling and site runoff for dust suppression, process water, site amenities, and potentially concrete production. Water extracted from Lake Borumba will be taken in accordance with a water permit or licence as required by the Queensland Department of Local Government, Water and Volunteers and/or the Borumba Dam operator (Seqwater), and the volume taken is not expected to impact surface water flows (refer to Section 2.6.1 of the Preliminary

Documentation). Section 1.4.1 of the Preliminary Documentation describes the relocation of the proposed water take site to a deeper section of the Lake Borumba to improve the reliability of raw water supply and a reduction in potential impacts. In addition, the Project includes an option for two potential groundwater supply bores, designed to be used as a contingency measure for construction purposes if there is a shortfall in water supply.

Potable water for site facilities will be transported to site by truck.

3.2.2.2 Water sourcing infrastructure and tank capacity

Raw water from Lake Borumba will be supplied via temporary water infrastructure, which includes pumps, pipelines, and storage tanks. Water may also be sourced from the Lake Borumba boat ramp using a water truck or removable pump, or from contingency water bores installed for the Project as described in Section 2.6.1 of the Preliminary Documentation.

The proposed design of the temporary water infrastructure is illustrated in Figure 16 of the Preliminary Documentation. Section 2.6.1.2 of the Preliminary Documentation describes the capacity of the water tanks as follows:

- Tank Farm 1 – 4 x 150 kL storage tanks (600 kL of water storage)
- Tank Farm 2 – 4 x 150 kL storage tanks (600 kL of water storage)
- Lift stations – 4 x 50 kL polyethylene tanks (single or dual tank at each station).

3.2.2.3 Water management infrastructure and water treatment

Infrastructure will be established for the management of groundwater ingress into the exploratory tunnels and site runoff. This infrastructure will accommodate the collection, distribution and treatment of water for reuse or release to the environment; it will include, but may not be limited to, catch drains, storage basins, sediment dams, and tank pads.

A high-level schematic of the water management process is shown in Figure 6 (provided as Figure 22 in the Preliminary Documentation).

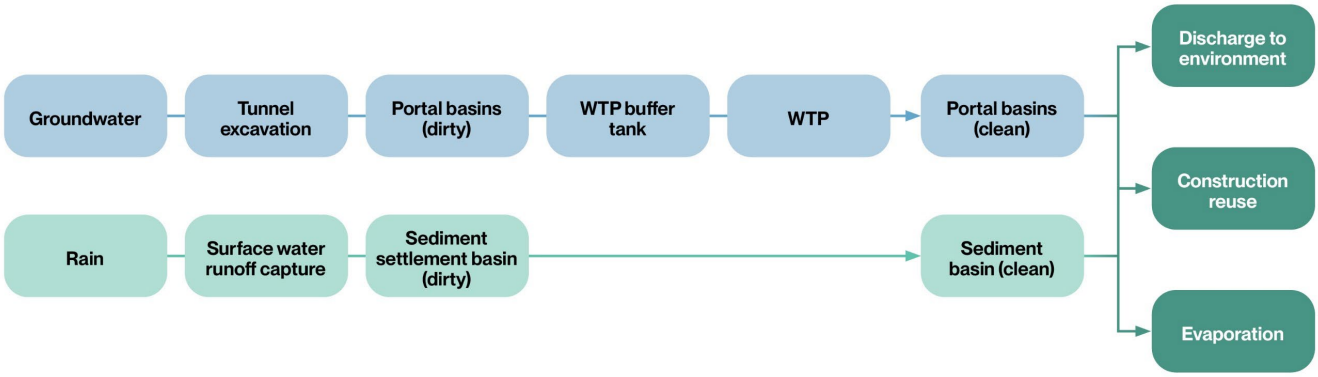


Figure 6: Water management schematic

As described in Section 2.7.3 of the Preliminary Documentation, water from the exploratory tunnel excavation will initially flow to a basin at the portal pad via a laminar clarifier or similar. This water will then be transferred to a water treatment plant (e.g., reverse osmosis plant) with a capacity of approximately 100 L/s to meet standards for reuse and/or environmental release. Water treatment plant specifications are not yet finalised as a contractor is not engaged. However, Queensland Hydro can confirm that the water treatment plant will be within the footprint presented in the Preliminary Documentation and have capacity to treat water to the required standards.

Proposed options for use of treated water include, but are not limited to, irrigation, grey water, potable water, dust suppression, and shotcrete production.

Stormwater is proposed to be managed in separate storage basins at the portal pad to limit or prevent any contamination by operational water, thereby reducing treatment requirements. Stormwater that exceeds the basin capacity will be incorporated into the operational water management. An evaporation basin and an evaporator

system may be established at the spoil stockpile site, fully lined for environmental compliance, as stated in Section 2.7.2 of the Preliminary Documentation. HumeCeptors or similar will also be used in basins to remove hydrocarbons and suspended solids in runoff from the staging pad and portal areas.

Contingency measures to manage water during storm events that exceed the design capacity of the storage basins include multiple tank farms with contingent water capacity, mechanical evaporation, water treatment plant, temporary water infrastructure to enable water transfer, and water evaporation pond(s). Excess water (i.e. not required for reuse) will be treated to the appropriate Mary River Basin Catchment water standards as outlined by the *Mary River Environmental Values and Water Quality Objectives* for release to the environment.

Section 4.7 of the Water Management Plan identifies that an Environmental Work Method Statement (EWMS) for water management will be required for high-risk activities from the contractor.

3.2.2.4 Sediment basin location, size, and sludge removal

As noted above, and in the Preliminary Documentation, diversion (catch) drains and sediment basins will be used for water management. This includes, but may not be limited to, at the portal pad (refer to Section 2.7.2 of the Preliminary Documentation), spoil disposal sites (refer to Section 2.4.2 of the Preliminary Documentation), and the Kingaham Creek bypass (refer to Section 2.5.2 of the Preliminary Documentation). While specific dimensions and precise locations for all basins are not yet finalised, the general approach to stormwater management will be consistent with the International Erosion Control Association (IECA) 2008 Best Practice Erosion and Sediment Control Guidelines (Australasia) (refer to the CEMP in Appendix F of the Preliminary Documentation) and the Stormwater and Environmentally Relevant Activities guideline produced by Department of Environment, Tourism, Science, and Innovation.

Excess water from the clean water compartment of this pond will be diverted to the water storage tanks located at the staging pad via pump and pipeline. Sludge (rock particles and fines) from the water treatment process will be periodically removed and stored in the tunnel spoil disposal area.

3.2.2.5 Runoff

The Preliminary Erosion and Sediment Control Plan (PESCP; Appendix G of the CEMP (Appendix F of the Preliminary Documentation)) will help manage risks from erosion and sediment mobilisation. Area specific erosion and sediment control plans will be developed be prepared by a Certified Professional in Erosion and Sediment Control in accordance with the standards and requirements of the PESCP and the International Erosion Control Association (IECA) 2008 Best Practice Erosion and Sediment Control Guidelines (Australasia).

Queensland Hydro has undertaken a contaminated land assessment of the majority of the footprint subject to disturbance on Lot 3 on LX2754 and Lot 1723 on L37994. This assessment has been undertaken by a suitably qualified person and involved the collection of soil from a total of 99 locations. With the exception of an area around a former cattle dip on Lot 3 on LX2754, no contaminated material has been identified onsite. A restricted area has been established around this former dip to ensure that no contaminated material is disturbed during the Exploratory Works.

Sections 4.2 and 6.2 of the Water Management Plan (Appendix K to the CEMP (Appendix F of the Preliminary Documentation)) state that potential contaminated runoff from spoil disposal areas will be managed by directing all runoff from spoil pads to internal drainage channels that flow to lined sediment basins. The water from these basins will then be treated as required (noting that not all uses require treated water) and reused as described in Section 3.2.2.3. Additionally, a geotextile liner will be installed at the spoil disposal areas to restrict the potential seepage of poor-quality leachate into shallow groundwater aquifers.

3.2.3 Exploratory tunnels

Summary of comments
Number of submissions referencing theme: 5

Public comments raised concerns about including tunnel excavation in the Exploratory Works Project. Some comments suggested that the exploratory tunnels are the main access tunnel (MAT) and emergency, cable and ventilation tunnel (ECVT) of the Main Works (herein referred to as the Main Works tunnels). Those public comments suggested that constructing these as part of the Exploratory Works would allow the Main Works to be constructed more efficiently.

Comments also sought further information about:

- the program or timing of exploratory tunnel blasting operations
- the source of shotcreting material.

The following public comments are representative examples of this theme:

- *"Exploratory Works were not meant to include tunneling as such? Tunneling that after inspection of the diagrams greatly resembles the Main Works Design?"*
- *"The draft Preliminary Documentation does not provide a program or timing of the exploratory tunnel drill-and-blast operations. Understanding the program/timing of the explosive works is critical… for risk management purposes…"*
- *"The source(s) of the considerable quantities of coarse aggregate, fine aggregate and sand needed to keep a batching plant operating 24/7 needs to be identified, particularly as they, at the scale proposed, may have their own EPBC implications".*

Response to comments

3.2.3.1 Inclusion of tunnels in the Exploratory Works

Constructing the exploratory tunnels from the portal pad to the PHES powerhouse cavern location is required to appropriately assess the suitability of the geology for the Main Works' underground infrastructure.

The geotechnical information to be gathered from constructing the exploratory tunnels will inform the design and construction methodology for the proposed Main Works underground infrastructure; this will reduce risks associated with the construction of the powerhouse cavern and other tunnels if the Main Works Project proceeds.

Table 6 outlines the main risk that exploratory tunnelling will address. Ultimately, constructing the exploratory tunnels aims to ensure that, if the Main Works proceed, the underground infrastructure can be designed and constructed with greater confidence and with fewer risks.

Constructing the exploratory tunnels is the single most effective method for reducing geotechnical risk to the Main Works Project as it eliminates or reduces most unknowns.

Table 6: Main Works powerhouse cavern construction risks addressed by exploratory tunnels

Risk	Cause	Potential consequence	Resolution / mitigation through exploratory tunnels
Designing and constructing an underground PHES with unknown ground/ geotechnical conditions	Inadequate geotechnical investigations	• Cavern relocation after commencement of construction • Need for additional ground support • Occurrence of localised and progressive excavation failure	• Identify unfavourable geology during Exploratory Works and Main Works design phase, not during Main Works construction. • Multi-angle drilling decreases the risk of missing key geological structures or faults. • Increase geological understanding to permit more accurate ground support engineering.

Risk	Cause	Potential consequence	Resolution / mitigation through exploratory tunnels
		• Occurrence of major water ingress event • Occurrence of excessive geological overbreak	• Understanding of ground behaviour at tunnel scale (larger than borehole diameter). • Exploratory tunnel could be re-purposed during Main Works to provide a platform from which ground support could be installed and/or grouting conducted for the caverns, if and where required. • Important geotechnical information obtained during the Exploratory Works and Main Works design phase, significantly reduces the potential of encountering unknown ground/geotechnical conditions during Main Works construction.

As described in section 2.7 of the Preliminary Documentation, environmental, cultural heritage and access constraints at the surface necessitate that geotechnical data is investigated from underground. The design and location of the exploratory tunnel portal was also robustly evaluated to avoid and then minimise impacts to MNES after detailed ecological surveys; this included the consideration of buffer distances between disturbance areas.

3.2.3.2 Difference between the Exploratory Works and Main Works tunnels

The exploratory tunnels differ in scale and scope from the Main Works tunnels. Cross-sections of the tunnels are illustrated in Figure 7 to show the differences.

Tunnels are required for the Main Works to provide pedestrian and vehicle access (via the MAT) and emergency access, cabling and ventilation to the powerhouse cavern (via the ECVT), as well as for the movement of water for the operation of the PHES (i.e. power waterways). If the Main Works proceed, the exploratory tunnels are likely to be repurposed as the ECVT and provide the required emergency access/egress, house the high voltage cables connecting the power station and switchyard, and support ventilation of the MAT and powerhouse.

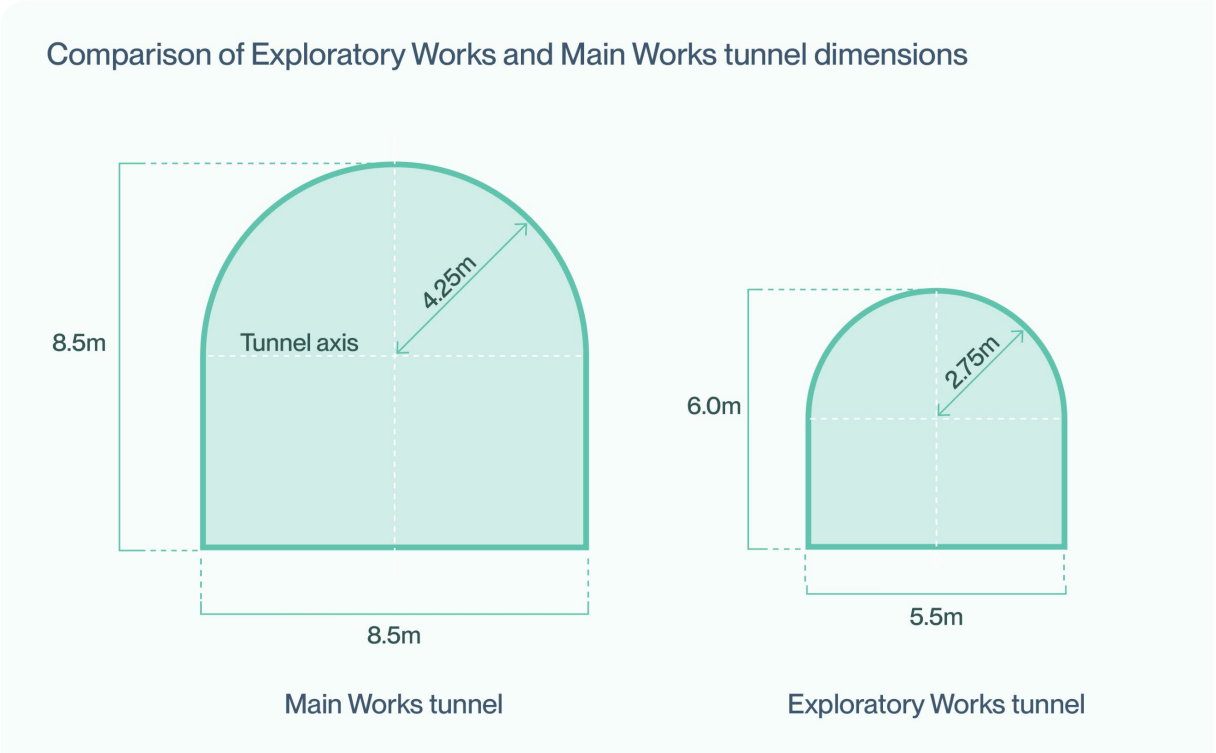


Figure 7: Comparison of Exploratory Works and Main Works conceptual cross sections

While co-location and repurposing of the exploratory tunnels for the Main Works ECVT may occur, this does not make the Main Works Project possible. Although the Exploratory Works, including the tunnel excavation, will inform the Main Works, other factors not related to the Exploratory Works will determine whether the Main Works go ahead. This includes, but is not limited to, the assessment of the Main Works Project as a separate controlled action under the EPBC Act.

3.2.3.3 Blasting schedule for exploratory tunnels

Blasting is expected to occur at any time of the day and night, but is anticipated to occur at shift change (i.e. typically around 6am and 6pm each day). Blasting will follow the needs for constructing the exploratory tunnels. Due to the small quantities of explosives being used for each blast and the confined nature (underground) of the blasting activities, the noise and vibration effects from blasting for the tunnel will be limited to the exploratory tunnel and drilling area and are not expected to impact nearby sensitive receptors (refer to the response in Section 3.5.3).

3.2.3.4 Volume of drilling water and groundwater ingress

The volume of water required for exploratory tunnel drilling is 55 kL/d (Table 8, Section 2.6.1.1, Preliminary Documentation). This volume may be refined following detailed design.

Further information about water management is provided in Sections 2.6.1 and 2.7.3 of the Preliminary Documentation and Section 3.2.1 of this report.

3.2.3.5 Source of shotcreting material

The Project will source construction materials from established quarries and businesses in the local area, which have sufficient capacity to support the Project. Material will meet relevant industry and environmental standards.

3.2.4 Spoil storage and management

Summary of comments
Number of submissions referencing theme: 11

Public comments raised the following matters relating to spoil storage and management:

- contaminants in the spoil material
- potential adverse impacts that may occur if the spoil area becomes inundated during a flood
- a lack of detail regarding the spoil volumes and storage design
- adequacy of measures designed to prevent and manage leachate.

With regard to contaminants in spoil material, several comments raised the possibility of the spoil area potentially containing “toxic substances” and “naturally occurring asbestos” material, and the potential for these substances to be mobilised outside of the spoil area and potentially contaminate neighbouring properties.

Comments highlighted concerns about potential adverse impacts that may occur if the spoil areas are inundated during a high rainfall / flood event, and noted that impacts from these scenarios were not sufficiently considered or assessed in the Preliminary Documentation. A few public comments queried the suitability of placing spoil areas in a floodplain and adjacent to a natural drainage line, citing concerns about the potential for the spoil area to contain contaminated material (acid-generating materials and heavy metals) and to be a source of sediment. Concerns were also raised for the Kingaham Creek spoil area with submissions stating that the spoil area is located near a waterway that flows directly into Kingaham Creek and is also within the proposed inundation area for the Main Works.

Proposed mitigation strategies for spoil management were considered insufficient and lacking in detail. Specifically, there were concerns that the planned measures, such as silt fences and coir logs, are inadequate to prevent leachate containing nitrates and other oxidising materials from the spoil. The absence of specific information on the volume of spoil, the design of storage sites, and engineering requirements was highlighted as a major concern.

Finally, one comment raised concerns about the adequacy of the proposed mitigation measures for preventing leachate generated from spoil areas adversely impacting downstream sensitive receptors given the volume of spoil expected and the potential presence of contaminants within the material.

The following public comments are representative examples of this theme:

- *“The tunnelling and spoil dump area located in such a difficult location on the banks of Sandy and Yabba Creeks, which flow into an urban water storage, can cumulatively have a significant impact on water quality.”*
- *“The (tunnel) spoil area is also collocated within the inundation area for the Main Works to reduce the risk of unnecessary clearing.” Placing the tunnel spoil within the proposed inundation area of the Main Works is highly risky given the potential risk of acid generating materials and heavy metals leaching into the Borumba Dam and affecting water quality.”*
- *“The spoil dump proposed at Borgan (area 4) is of great concern. There are many unknowns about the spoil dump, in particular the size, volumes of dams and sediment detention basins. The volume of spoil can be estimated, but at this point the water ingress from the tunnel is unknown”.*
- *“Bella Creek Road upgrade (page 16) states that any runoff from the new road will enter Kingaham Creek. However the spoil dump for the Kingaham Creek bypass is not referred too, which is planned to be located adjacent to a waterway that enters directly into Kingaham Creek. The location of this spoil dump could result in WQ contamination of fine sediment directly into Kingaham Creek”.*

Response to comments

3.2.4.1 Potentially contaminated spoil

Queensland Hydro has undertaken a contaminated land assessment of most of the footprint subject to disturbance on Lot 3 on LX2754 and Lot 1723 on L37994. Exploratory Works footprint on these lots includes the portal pad, staging pad, tunnel spoil area, explosive store, civil construction compound, and associated access tracks. This assessment has been undertaken by a suitably qualified person and involved the collection of soil from a total of 99 sampling locations, with a focus on the Exploratory Works Project footprint and likely existing sources of

contamination (e.g. past cattle dips). With the exception of the area around the former cattle dip on Lot 3 on LX2754, no contaminated material has been identified onsite. A restricted area has been established around this former dip to ensure that contaminated material is not disturbed during the Exploratory Works.

Geochemical assessment of the Borumba PHES Project area is ongoing, with an objective to provide preliminary screening of the geochemical properties of potential spoil materials. Preliminary investigations have included the testing of 94 rock samples from 28 boreholes excluded from the controlled action or drilled for the purposed of groundwater monitoring.

Preliminary results indicate that a significant proportion of the tested samples, primarily fresh core, exhibit non-acid forming characteristics and possess measurable acid-neutralising capacity. Short term leachate tests produced leachate compositions that were generally comparable to background levels in the local groundwater. Long-term leaching tests will be completed to better understand the leachability risks.

The current dataset, intended as a screening round, has limited representation for some rock units and therefore, further sampling and analysis will be completed to develop a representative dataset. Reassessment of spoil geochemistry will be conducted upon availability of the expanded dataset.

The Preliminary Documentation acknowledges spoil material may contain contaminants based on the area's natural geology and as a result of past anthropogenic activities and provides a process to ensure any affected material is suitably managed. As discussed in Section 2.4.1 of the Preliminary Documentation, the tunnel spoil stockpile will be progressively installed as the exploratory tunnelling progresses, with testing during probing and post-excavation, and management occurring on an ongoing basis. In addition, all spoil materials will be tested before they are added stockpiles to minimise the risk that stockpiled spoil materials contain contaminates that could leach into the surrounding environment. Any material found to contain contaminants will be treated appropriately for reuse, remediated, and/or managed onsite or removed offsite for disposal at a licensed facility. Any contaminated spoil that is removed from site will be transported appropriately in accordance with relevant standards and regulations (e.g. securely covered to prevent inadvertent contamination during transport) such as the Environmental Protection Regulation 2019 (chapter 5, part 9).

The Preliminary Documentation addresses public concerns about the Kingaham Creek spoil area by detailing specific management and mitigation measures. Management plans (for spoil and erosion and sediment control) will be implemented to prevent contamination of local waterways and will include the diversion of surface runoff away from the spoil disposal areas and the construction of sediment ponds to capture any sediment-laden water before it can enter the waterways. Section 6.2 of the Preliminary Documentation states that the design of the spoil dumps will be developed to ensure they are stable and do not pose a risk of failure or contamination, even during high rainfall events.

Furthermore, the proposed approach for the Exploratory Works is to stage activities across the discrete work areas, ensuring disturbance only occurs when and where needed.

The tunnel spoil disposal area is of sufficient size to allow for material to be segregated for contamination testing before being placed in the stockpiles (refer to Sections 2.4.1 of the Preliminary Documentation), along with appropriate design controls and mitigation measures. The spoil stockpile has been designed to allow a 50 m buffer to the riparian zone of Yabba Creek and Sandy Creek (refer to Appendix A of the CEMP).

3.2.4.2 Flood risk

Queensland Hydro has considered flood risk in siting the spoil disposal areas, along with other key infrastructure. The tunnel spoil disposal area, the Kingaham Creek spoil area, and exploratory tunnelling infrastructure is located outside the 1:100 year flood event area, meaning it is not on land that is expected to be inundated by a flood that has a 1% chance of occurring in any given year. Further, with the exception of two small areas in the northern and southern extents of the tunnel spoil disposal area, the tunnel spoil area is also situated above the 1:10,000 year flood event area. The small areas of the spoil pad that are within the 1:10,000 flood area will be built up to provide immunity for a flood of this size. As such, it is unlikely that the tunnel spoil area will be inundated during a flood event.

The Kingaham Creek bypass and exploratory tunnel infrastructure is also located above the 1:10,000 year flood event, and as such it is unlikely that this infrastructure will be inundated during a flood event.

3.2.4.3 Spoil volumes, composition and storage site design

A total volume of approximately 490,000 tonnes of spoil (i.e. excess material that cannot be reused onsite) is expected to be generated from the Exploratory Works. This comprises:

- 395,000 m^3 of excavated waste rock material (500 mm minus material) from the exploratory tunnel excavation
- 95,000 m^3 from the construction of the Kingaham Creek bypass.

The spoil material generated by the Project is primarily blasted rock from the tunnelling process. Blasting may also be required along the Kingaham Creek bypass due to the nature of the rock, with this and the nature of the overburden to be confirmed following geotechnical investigations that are part of the Exploratory Works Project. The expected density of spoil is estimated to be approximately 2.4–2.7 tonnes/m^3 in-situ. All other excavated material will be reused or reinstated to its original location.

Spoil will be disposed of in two designated areas (see section 2.4 of the Preliminary Documentation):

- the tunnel spoil disposal area (Area 4 Borgan) for material from the tunnel excavation
- the Kingaham spoil disposal area (Area 2) for material from the Kingaham Creek bypass construction.

Stripped topsoil and vegetation may also be temporarily stored at the spoil disposal areas. Spoil from the tunnel excavation may be temporarily stockpiled on the portal pad before being transported to the spoil disposal area.

The spoil disposal areas were selected with consideration of potential impacts to MNES and other environmental values, as well as capacity and the topography. Both spoil disposal areas in cleared land used for cattle grazing, set 50 m away from nearby defined watercourses (i.e. Yabba and Sandy creeks), and higher than the 1:100 year flood event area. Each spoil area has been designed with sufficient space for the implementation of management measures including water management and erosion and sediment controls (e.g. catch drains and sediment basins), and materials segregation and testing, as well as screening of materials. The spoil disposal area designs also allow contingency to accommodate additional spoil if required.

The mass and volume of material to be screened per year is currently unknown. This will be determined by geochemical and geotechnical testing with reference to the intended re-use application.

Preliminary spoil storage area design details are described in Sections 3.2.4.1, 3.2.4.2 and 3.2.4.4 of this report.

3.2.4.4 Leachate

Please refer to Section 3.2.4.1 for a summary of the preliminary results from early geochemical assessments. Noting that testing will be ongoing.

Appendix B-1 of the CEMP describes the process for identifying and treating potentially contaminated spoil, which is standard industry practice. Therefore, Queensland Hydro does not expect runoff from the spoil areas to contain any pollutants, except suspended solids. Nevertheless, Queensland Hydro has proposed additional measures to prevent potential leachate from entering the surrounding environment. Preliminary design of the spoil pads includes installation of a Bentofix NSP 4900 or approved equivalent lining with a geogrid layer to retain any leachate that may be generated by the spoil area. In addition, the spoil disposal areas have been designed to include internal drainage channels flowing directly to lined basins with secondary drains outside the spoil disposal area confinement bunds.

3.2.5 Explosive store and transportation

Summary of comments

Number of submissions referencing theme: 2

Comments relevant to this theme sought further:

- justification for the location of the explosives store, particularly in relation to its proximity to vegetation and watercourses
- information about the timing of program of movement of vehicles transporting explosive material to the site.

The following public comments are representative examples of this theme:

- *"The location of the Explosives Store identifies a blast exclusion area and makes reference to clearing for firebreaks. Given that over half of the blast exclusion area is well-wooded, with some of it identified as Subtropical Eucalypt Floodplain Forest (and buffer) and that it is quite close to a large area of Lowland Rainforest of Subtropical Australia, the location would seem sub-optimal and the proposed firebreaks need to be identified."*
- *[The Explosive Store] … will be located on a bend in Sandy Creek. Should there be a major rain event there is a high probability that this may be flooded. What could be in this compound is listed later in the document and many of the stored items should probably not get wet.*
- *"Further, beyond light and heavy vehicle descriptions, no detail is provided on the nature of vehicles using these public roads, particularly vehicles that may be carrying explosives. Understanding the timing and or program of the movement of vehicles carrying explosives is critical."*

Response to comments

3.2.5.1 Explosive store location

The location, footprint and minimum design requirements for the explosives store were determined with regard to relevant Australian standards, as well as explosion, fire, and water contamination risk. The location and footprint also aimed to minimise potential impacts on MNES.

The explosives store needs to be as close as safely possible to the exploratory tunnel portal to facilitate efficient tunnel excavation. In accordance with Queensland legislation and Australian Standards, the explosives store requires a 612 m blast exclusion zone to ensure safe separation from other operational areas. Importantly, the blast exclusion zone relates solely to health and safety requirements – it does not apply to vegetation or bushfire management.

Bushfire risk and setback requirements are addressed in the hazardous chemical facility approval for the explosives store. This approval is available on the State Assessment and Referral Agency (SARA) website[2]. Further, a Bushfire Management Plan for the Project includes prevention, protection and response plans. A minimum 3 m fire break will be maintained around the explosives storage area (Figure 8), and there will be a 10 m clearance inside the fence (Figure 9), ensuring vegetation within and around the explosives store is cleared and managed in accordance with AS2187.1 Explosives – Storage, Transport and Use – Storage and Australian Explosives Industry and Safety Group Inc. (2017) Code of Practice Storage and Handling of UN3375. The proposed fire break is within the explosives store footprint presented in the Preliminary Documentation, with no additional clearing required outside of the footprint to manage fire risk.

While the explosives store is within 50 m of a patch of Subtropical eucalypt floodplain forest (i.e. within the buffer zone for the TEC; Figure 8) and will directly impact approximately 0.1 ha of vegetation in the buffer, the location has been strategically selected to avoid impacts on MNES, including TECs, to the greatest extent possible. To ensure no additional vegetation is accidentally cleared, the boundaries of the explosives store will be clearly demarcated prior to clearing works being undertaken to indicate clearing boundaries. The relevant areas around the store, noting that there are existing tracks which are actively maintained, will be designated as an exclusion or buffer zone.

[2] DSDMIPPRD Qld Hydro State Code 21 Final

The explosive store is located more than 50 m from the high bank of Sandy Creek, and is about 50 m above the 1% Annual Exceedance Probability (AEP) flood area (i.e. 1:100 year flood event); only a small portion of the storage area would be impacted in a 1:10,000 year flood event. As required by the hazardous chemical facility approval, all materials at the explosives store will be bunded and runoff will be diverted away from the explosives store, with all potentially contaminated waters contained on-site and removed by a licensed wastewater contractor.

3.2.5.2 Transportation of explosives

Explosives will not be transported to site; they will be stored and transported in their constituent parts in accordance with the relevant Queensland legislation and Australian standards, as well as the hazardous chemical facility approval. The hazardous chemicals proposed to be transported to and stored on site are identified in the hazardous chemical facility approval and Table 7 below.

All explosives will be manufactured at the tunnel excavation site by only licenced and trained personnel. Vehicles transporting constituent parts for explosives will meet specific design and safety standards, including proper signage and secure storage compartments. Exclusion zones will be set up to restrict access to areas of manufacture/preparation.

All heavy vehicle movements, including those carrying constituent parts for explosive manufacturing, will be managed in accordance with the Transport Management Plan and Road Use Management Plan. Further response to public comments regarding traffic is provided in Section 3.8.1 of this report.

Table 7: Hazardous chemicals proposed to be transported to and stored on site

Chemical Name	UN Number	GHS Classification	DG Classification	Transport standard
Ammonium nitrate emulsion	3375	• Oxidising solids – Category 3 • Acute toxicity (Oral) - Category 5 • Serious Eye Damage/Eye Irritation – Category 2A	Division 5.1 PGIII	Australian Code for the Transport of Dangerous Goods by Road & Rail[3]
Boosters, without detonator	0042	• Explosives – Division 1.1 • Serious eye damage/irritation – Category 2A	Division 1.1D	
Detonating cord	0065			
ANFO	0082			
Packaged emulsion	0241			
Non-electric detonators	0360	• Explosives – Division 1.1	Division 1.1B/1.4B/1.4S	
Electric detonators	0255			
Electronic detonators	0030			
Gassing sensitiser chemical*	3099	• Oxidising liquids – Category 3 • Acute toxicity (Oral) - Category 3 • Serious eye damage/irritation – Category 2A	Division 5.1, Sub-Risk 6.1	

* Classification may change depending on gasser chemical manufacturer; however, this is the typical classification for the gassing chemical. Some manufacturers may use a gasser that is not classified as dangerous goods with a lower risk GHS classification.

[3] Australian Dangerous Goods Code | National Transport Commission

Civil Construction Compound

Explosive Store Access Track

Existing Access Track Upgrades

Explosive Store

Sandy Creek

Existing Access Track Upgrades

Tunnel Spoil Disposal Area

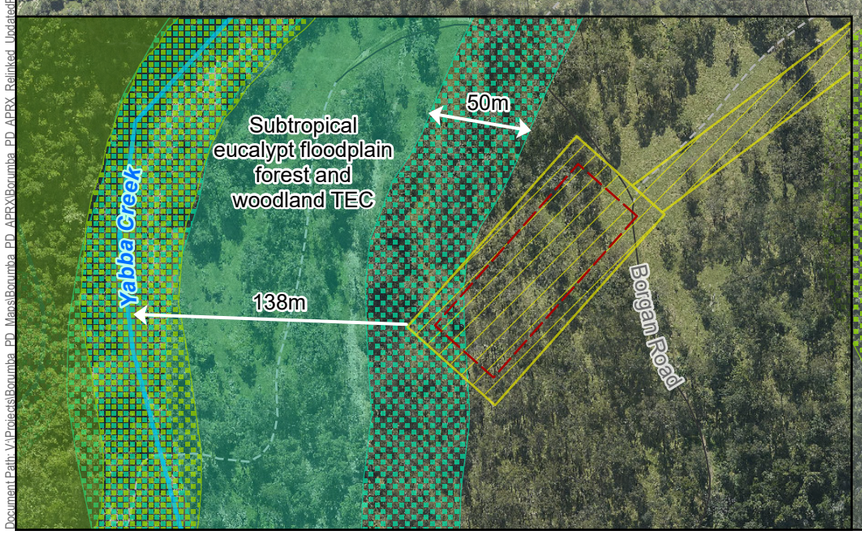
Portal Access Track

Borgan Road

Yabba Creek

Staging Pad

Exploratory Works Portal Pad



Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

- Watercourses
- Local Roads
- Tracks

Exploratory Works Project

Area 3 - Walkers Top
- Project Area
- Project Area (Underground)
- Project Footprint

Area 4 - Borgan
- Project Area
- Project Footprint
- Fire break (10m distance)
- Blast exclusion zone (612m distance)

Ground-truthed threatened ecological communities
- Lowland Rainforest of Subtropical Australia
- 50m buffer for lowland rainforest of subtropical Australia
- Subtropical eucalypt floodplain forest and woodland
- 50m buffer for Subtropical eucalypt floodplain forest and woodland

Data Sources:
1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
3. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
4. Cadastre © State of Queensland (Department of Natural Resources, Mines and Energy) 2024
5. Basemap World Light Gray Canvas Base @ Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

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Exploratory Works Project
Preliminary Documentation

EXPLOSIVES STORE AND SUBTROPICAL EUCALYPT TEC (AREA 4 - BORGAN)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 19/09/2025
REVISION:	A

FIGURE 8

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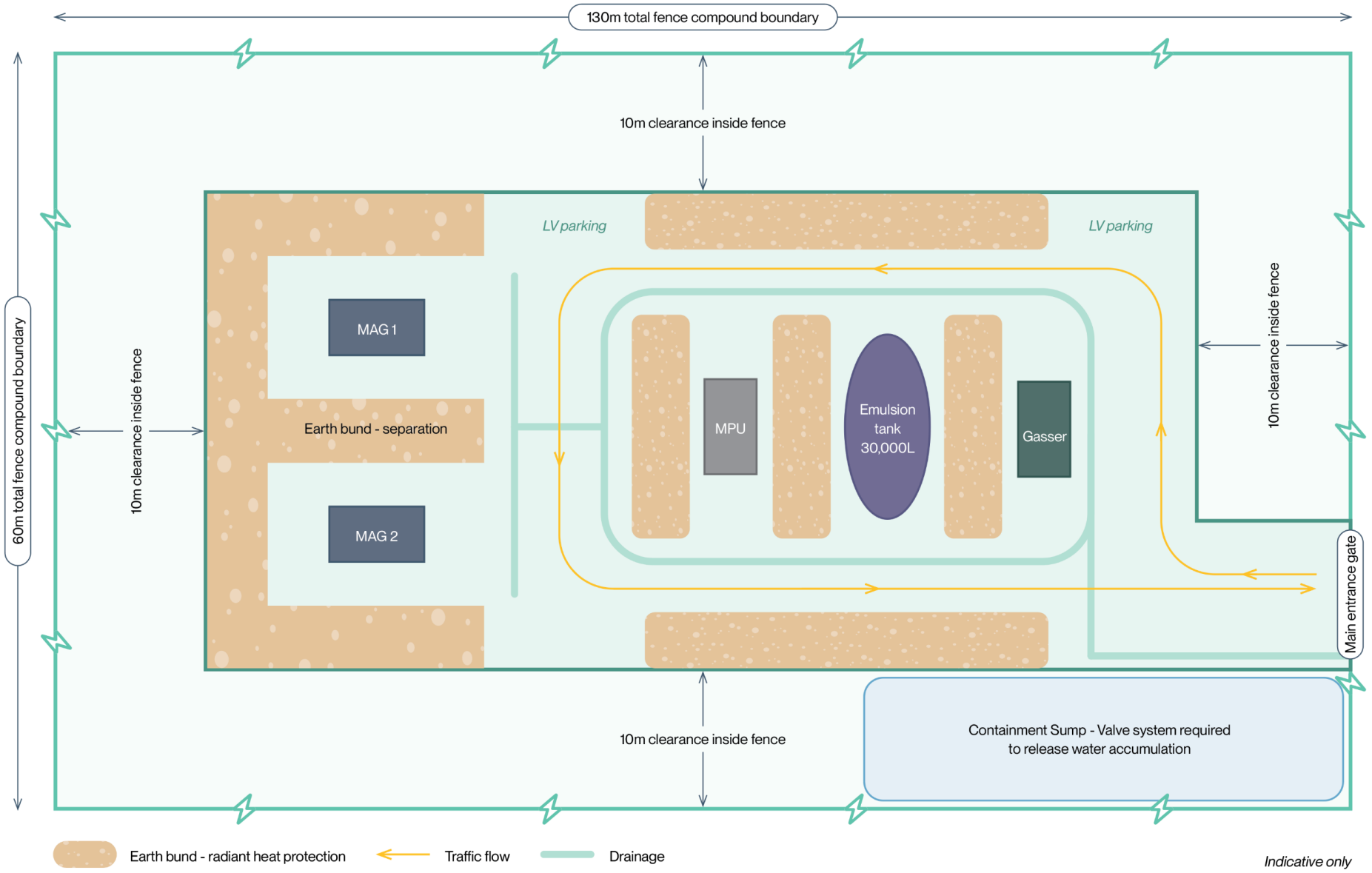


Figure 9: Schematic of the site plan for the explosive store

3.2.6 Geotechnical investigations and access tracks

Summary of comments

Number of submissions referencing theme: 2

Comments requested further information and explanation about:

- geotechnical investigations at the edge of Lake Borumba including the particular equipment to be used and how the site would be accessed.
- the presentation of geotechnical investigation and access tracks in figures in the Preliminary Documentation
- backpack drilling and heli-drilling
- investigation areas for quarries
- access tracks.

The following public comments are representative examples of this theme:

- *"There is considerable information provided for the exploratory works just downstream of the existing dam wall with mapping showing access tracks, drill sites etc. No such information seems to be provided for the geotechnical site on the edge of the lake itself. It is not listed as part of "Borumba Dam" but included under Walker's Top. The only reference we could find was that "geophysical surveys are proposed at the Lake Borumba waterline in addition to geotechnical drilling due to the difficult terrain and minimise disturbance to the lake environment." It would appear to be part of the Resource Area excised temporarily from the National Park that surrounds it, but we could find no reference as to how this geotechnical work would be carried out there. Is it the backpack drilling referred to, or is drilling access via the dam? We note too that there seemed to be a paucity of testing for terrestrial species in the vicinity of the site although there was aquatic eDNA testing. It is in the vicinity of a white throated snapping turtle nesting site…"*
- *"Quarries were also something not mentioned in the PHES Exploratory Works paperwork - mention was made to a member of the public that all sand and gravel will be coming from a registered supplier offsite, does that then mean that there will be no quarries within the footprint of the exploratory works"*.
- *"Heli-drilling: More details needed to assess impacts and needs a photo."*

Response to comments

3.2.6.1 Geotechnical investigations at the edge of Lake Borumba

Area 3 – Walkers Top geotechnical investigations relate to the Main Works upper reservoir, water tunnels, and powerhouse cavern. Geotechnical investigations at the edge of Lake Borumba will collect information to inform the location and design of the intake/outlet location for the Main Works water tunnels, and are referred to as the 'Lake Borumba water line' geotechnical investigation site.

The proposed geotechnical investigations for the water tunnel intake/outlet are within Seqwater-managed reserve and a Conondale Resources Reserve area (Lot 3 on plan AP23765 & Lot 6 on plan AP23765). There are no geotechnical works proposed in the Conondale National Park.

The Lake Borumba water line geotechnical investigations site is only accessible by boat. The Lake Borumba water line geotechnical investigations have been redesigned since the publication of the Preliminary Documentation and were included in the variation approved on 26 September 2025. The water line investigation site is only accessible by boat; therefore the redesign involved the addition of temporary access tracks from the water's edge to the investigation site. The geotechnical investigations for the inlet/outlet location will comprise borehole drilling, using a drill rig for vertical or directional drilling, and geophysics.

Surveys to ground-truth the vegetation at the Lake Borumba water line geotechnical investigation area and identify the presence of protected plants confirmed that:

- there are no threatened plant species at this geotechnical investigation site
- the area contains eucalypt dominated woodland and forests made up of regional ecosystem (RE) 12.11.14.

Eucalypt dominated woodland and forests are suitable habitat for the following MNES that are known or likely to occur in the Borumba PHES Survey area:

- Australian painted snipe (*Rostratula australis*)
- glossy black-cockatoo (*Calyptorhynchus lathami lathami*)
- greater glider (southern and central) (*Petauroides volans*)
- grey-headed flying-fox (*Pteropus poliocephalus*)
- koala (*Phascolarctos cinereus*)
- spotted-tail quoll (*Dasyurus maculatus maculatus*)
- northern quoll (*Dasyurus hallucatus*)
- yellow-bellied glider (southeastern) (*Petaurus australis australis*).

Aquatic fauna surveys included in the Preliminary Documentation near this location detected striped rocket frog (*Litoria nasuta*), which is not listed under the EPBC Act. More recent surveys completed in late 2024 detected four common fish species: fly-specked hardyhead (*Craterocephalus stercusmuscarum*), Agassiz's glassfish (*Ambassis agassizii*), Australian smelt (*Retropinna semoni*), and eel-tailed catfish (*Tandanus tandanus*). No threatened aquatic or amphibian species were detected. Surveys and habitat mapping for the white-throated snapping turtle do not indicate that suitable nesting habitat is present in the vicinity of the geotechnical investigation area at the edge of Lake Borumba (Figure E-21 of Appendix E to the Preliminary Documentation). Nesting and spawning habitat for other MNES aquatic fauna are also not mapped as present in this location (Appendix E of the Preliminary Documentation). A response to public submissions on survey effort is provided in Section 3.3.1 of this report.

There will be limited direct impact (clearing) on MNES habitat for geotechnical investigations for the inlet/outlet location and indirect impacts on MNES will be managed through implementing measures described in the FFMP (Appendix J of the CEMP).

3.2.6.2 Geotechnical investigation figures

Geotechnical investigations areas are shown on the following figures in the Preliminary Documentation:

- Figure 10 – Proposed geotechnical investigation sites: Yabba Creek North and South
- Figure 11a – Proposed geotechnical investigation sites: Power Track North, Dam Track North, Dam Track South, and Walkers Top North
- Figure 11b – Proposed geotechnical investigation sites: Walkers Top Central, Walkers Top South and Power Track South
- Figure 11c – Proposed geotechnical investigation sites: Lake Borumba water line.

These figures have been updated in the Preliminary Documentation to reflect changes to the Exploratory Works. Copies of the above-listed figures are included in Appendix B of this report for ease of reference.

The footprint of geotechnical investigations are indicated on the maps and in the legends as a solid colour with a grey border (Figure 10). Some geotechnical investigations will be undertaken within access tracks or the footprint of other proposed infrastructure and may not be represented on the maps.

A geotechnical investigation footprint may contain multiple boreholes, depending on the investigation's needs and size of the drill pad. The precise location of the geotechnical investigations indicated on the maps is subject to change depending on accessibility and site conditions including the presence of large trees (diameter at breast height (DBH) >40 cm). The final location of geotechnical investigations will avoid large trees, where possible, as these are more likely to host hollows used by glossy black-cockatoos, greater gliders or yellow-bellied gliders.

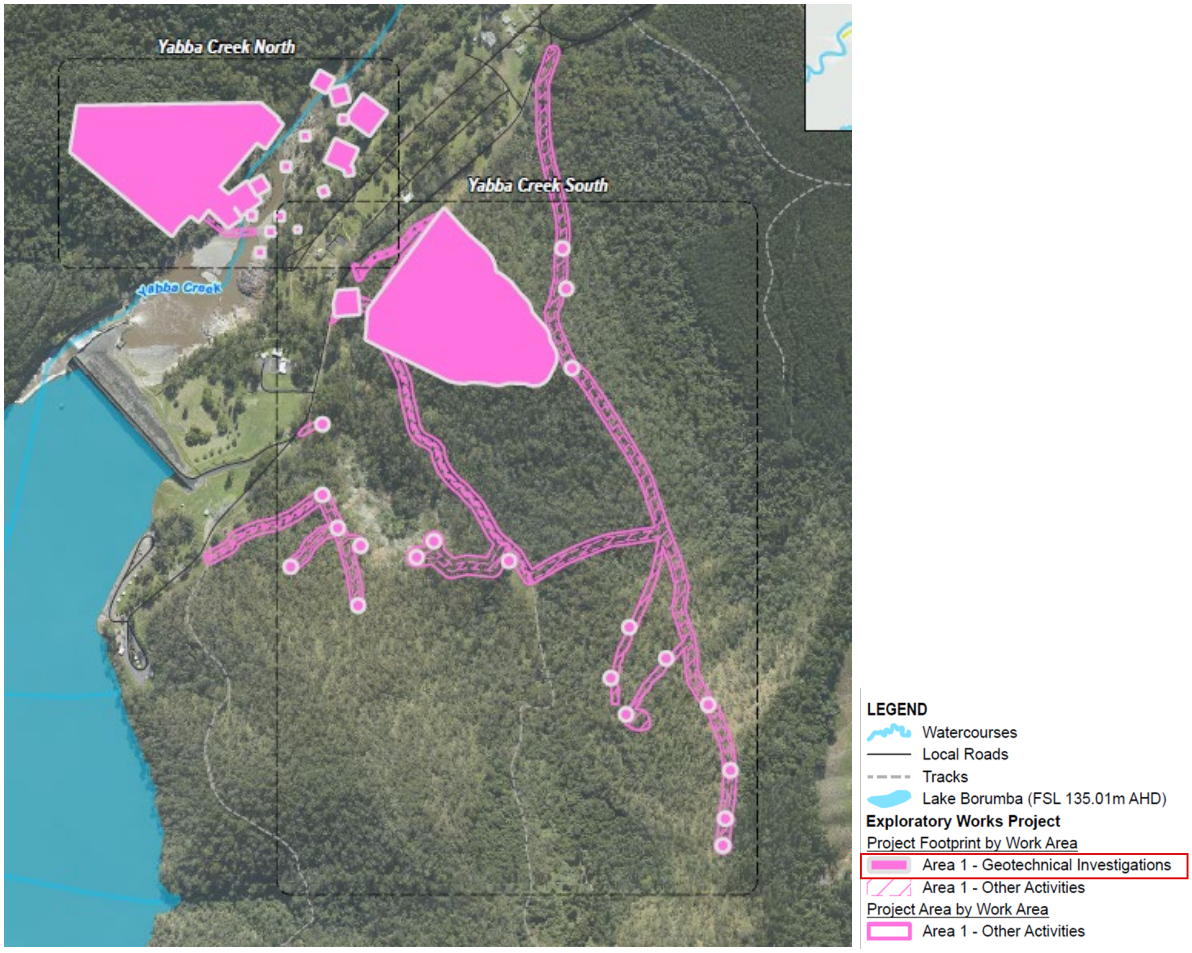


Figure 10: Geotechnical investigation sites at Area 1

3.2.6.3 Backpack drilling and heli-drilling

Backpack drilling and heli-drilling are described in Sections 2.3.1.4 and 2.3.1.5 of the Preliminary Documentation, respectively.

Heli-drilling would comprise the transfer of equipment to a geotechnical investigation site by helicopter from a landing area in an existing cleared location outside the Exploratory Works Project area (e.g. paddock). The equipment would be lowered to a pad within the geotechnical investigation area, without the helicopter landing as shown in Photo 1. Heli-drilling is a contingency drilling method reserved for situations where other methods, (e.g. conventional drilling, backpack drilling) are not feasible due to access constraints associated with difficult terrain or environmental constraints.



Photo 1: Example of heli-drilling

Backpack drilling may be employed where further information is needed in areas assessed through seismic testing. It will complement the seismic data with information on subsurface conditions in challenging locations, where required. Backpack drilling provides small core samples (generally ranging from 25-51 mm in diameter) from the subsurface and are designed to operate in constrained and challenging environments (e.g. steep, rugged, or densely vegetated areas). These rigs are lightweight and portable and capable of performing a range of drilling techniques, including direct push and rotary drilling. Where used, backpack drilling will be to a depth of up to 25 m.

3.2.6.4 Investigation areas for quarries

The quarry locations for the Main Works are not yet determined. Investigative geotechnical drilling will be done near the historical quarry location for Borumba Dam (south of the dam in Area 1 – refer to Figure 10 in the Preliminary Documentation and Appendix B of this report).

3.2.6.5 Access tracks

Access tracks are required for the Exploratory Works. These may be either existing tracks that need to be upgraded, or new tracks to be constructed.

Some of the tracks shown on Figure 10 and Figure 11a-11c in the published Preliminary Documentation did not appear to lead to geotechnical investigation areas. This has been amended in the revised Preliminary Documentation. However, it is noted that geotechnical investigations may occur along the access tracks, but the disturbance will be contained within the track footprint, with no additional disturbance area required.

3.3 Existing environment

3.3.1 Survey effort

Summary of comments
Number of submissions referencing theme: 5

Public comments included concerns about ecological survey effort and timing. Specific concerns were raised regarding the survey methods and scope for a range of MNES, including the following:

- limited spatial coverage of the surveys within the nominated Borumba PHES survey area
- poor timing of surveys with regard to the seasonal survey requirements of specific faunal groups and breeding times
- use of outdated or low-detection methods for arboreal mammals, particularly greater gliders and koalas
- lack of best-practice koala detection surveys including the use of thermal cameras on drones
- survey outcomes and interpreting the survey results.

The following public comments are representative examples of this theme:

- *"Best practice koala surveys for several years now have included the use of thermal drones to gauge location of individuals and density of population. The project to date as shown in survey documentation utilises largely outdated and ineffective Koala Spot Assessment Techniques (SAT) which are subjective and rely extensively on the expertise of individual ecologists."*
- *"No spotlighting surveys occurred in Spring and as such the life-cycle and maternal stages of the species were not covered adequately."*
- *"Subtropical Eucalypt Floodplain Forest of the New South Wales North Coast and South East Queensland "A total of 4.6 ha of the field validated TEC is present within the Exploratory Works Survey area, while 14 ha is present within the Borumba PHES Survey area. The Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions TEC is not present within the Project footprint." The above conclusion seems to be contradictory."*

Response to comments

3.3.1.1 Ecological survey effort

The ecological survey programme for the Exploratory Works was designed in accordance with the conservation advices and guidelines outlined in Section 4.1.1 of the Preliminary Documentation, which included, but was not limited to the following:

- Commonwealth Survey Guidelines for Australia's Threatened Species
- Commonwealth Listing Advice on Lowland Rainforest of Subtropical Australia (TSSC, 2011)
- 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)
- Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 7.0 (Neldner, et al., 2023)
- Queensland Flora Survey Guidelines (DES, 2020)
- Biocondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Manual (Eyre, 2015)
- Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (DES, 2022).

These standards recognise that, within extensive survey boundaries, exhaustive coverage is neither practicable nor necessary. Therefore, surveys systematically sample representative landforms, vegetation communities and microhabitats, with results extrapolated to unsampled areas of similar condition and/or where anthropogenic activities may influence the data (e.g. roads and access tracks). This approach to surveying large areas and representative habitat (which has been applied to the Exploratory Works) is consistent with the above standards and consequently considered suitable and adequate.

Spatially stratified fauna habitat assessments and secondary and quaternary vegetation surveys were undertaken across the broader PHES Survey Area (defined in Section 2.2.1 of the Preliminary Documentation). The resulting coverage, as illustrated in Figure 11, is considered sufficient to characterise vegetation structure, floristic composition, and fauna habitat diversity relevant to the Exploratory Works.

Secondary and quaternary plot surveys were used to ground-truth (GTRE) mapping, consistent with Queensland Herbarium protocols and TEC mapping consistent with the relevant conservation advice and/or listing advice; this enabled the production of a GTRE map for the PHES Survey Area.

In areas of potential threatened flora species habitat, targeted meander searches were undertaken at an intensity recommended by survey guidelines. Where a listed species was located, the surrounding habitat was intensively searched to delineate the local population extent and to inform mitigation design.

The fauna habitat assessment surveys focused on identifying structural and micro-habitat attributes (e.g. coarse woody debris, dense litter layers, exfoliating bark, rock piles) that underpin occupancy by threatened species highlighted in the desktop assessment. This information was used to verify and refine species habitat mapping which is presented in Appendix E of the Preliminary Documentation. Species for which suitable habitat was demonstrably absent were excluded from further impact evaluation, in line with risk-based assessment principles. In addition to fauna habitat assessments a range of fauna surveys were also undertaken (refer to Figure 12).

The number of individuals of each threatened species identified during surveys is detailed in Section 7 of the Preliminary Documentation.

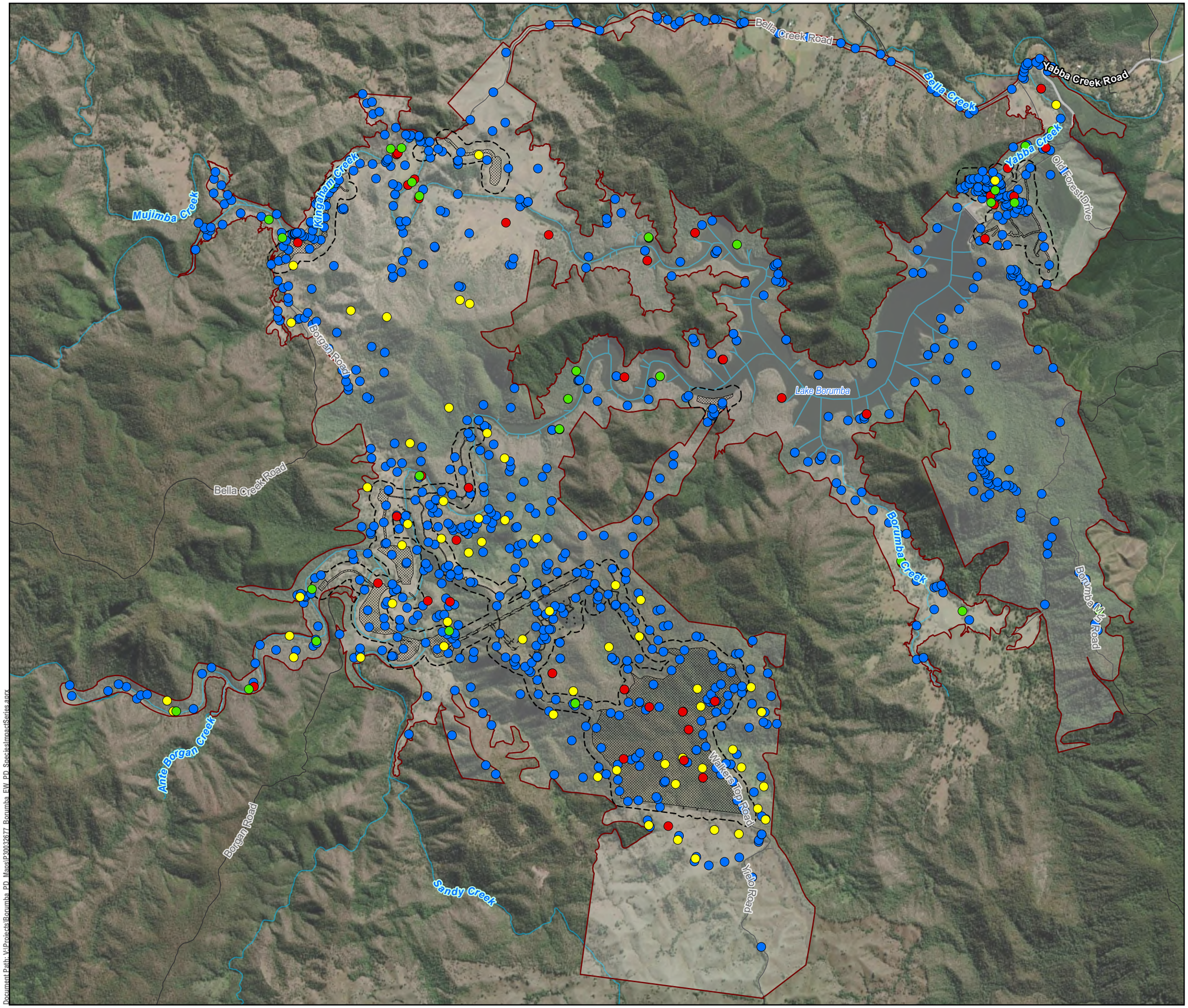
3.3.1.2 Outcomes of survey effort

Surveys were undertaken within the Borumba PHES and Exploratory Works Survey areas (as defined in Section 2.2.1 of the Preliminary Documentation) to identify threatened ecological communities.

The Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions TEC (Subtropical eucalypt floodplain forest TEC), the Subtropical eucalypt floodplain forest TEC was recorded as follows:

- extent within the broader Borumba PHES Survey area – 14 ha in total
- extent within the Exploratory Works Survey area – 4.6 ha in total
- extent within the Exploratory Works footprint – none present.

While the Subtropical eucalypt floodplain forest TEC is present within the Borumba PHES and Exploratory Works Survey areas, the Subtropical eucalypt floodplain forest TEC is not present in the Exploratory Works footprint and will therefore not be directly impacted by the Project.



Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

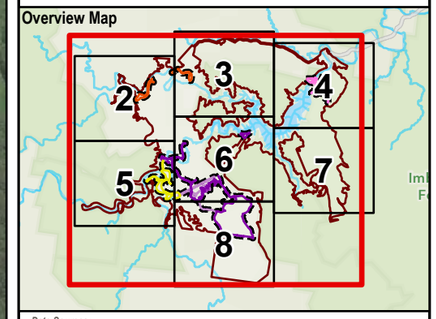
Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map



Data Sources:
1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC, 2025
3. GTRE / GT TEC/ GT SPECIES @ Umwelt and Attexo, 2024
4. World Imagery Basemap @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Exploratory Works Project
Preliminary Documentation

FLORA SURVEYS
PAGE 1 OF 8

PROJECT #:	30032677
CREATED BY:	CW
LAST MODIFIED:	NC17428, 17/10/2025
REVISION:	A

FIGURE 11

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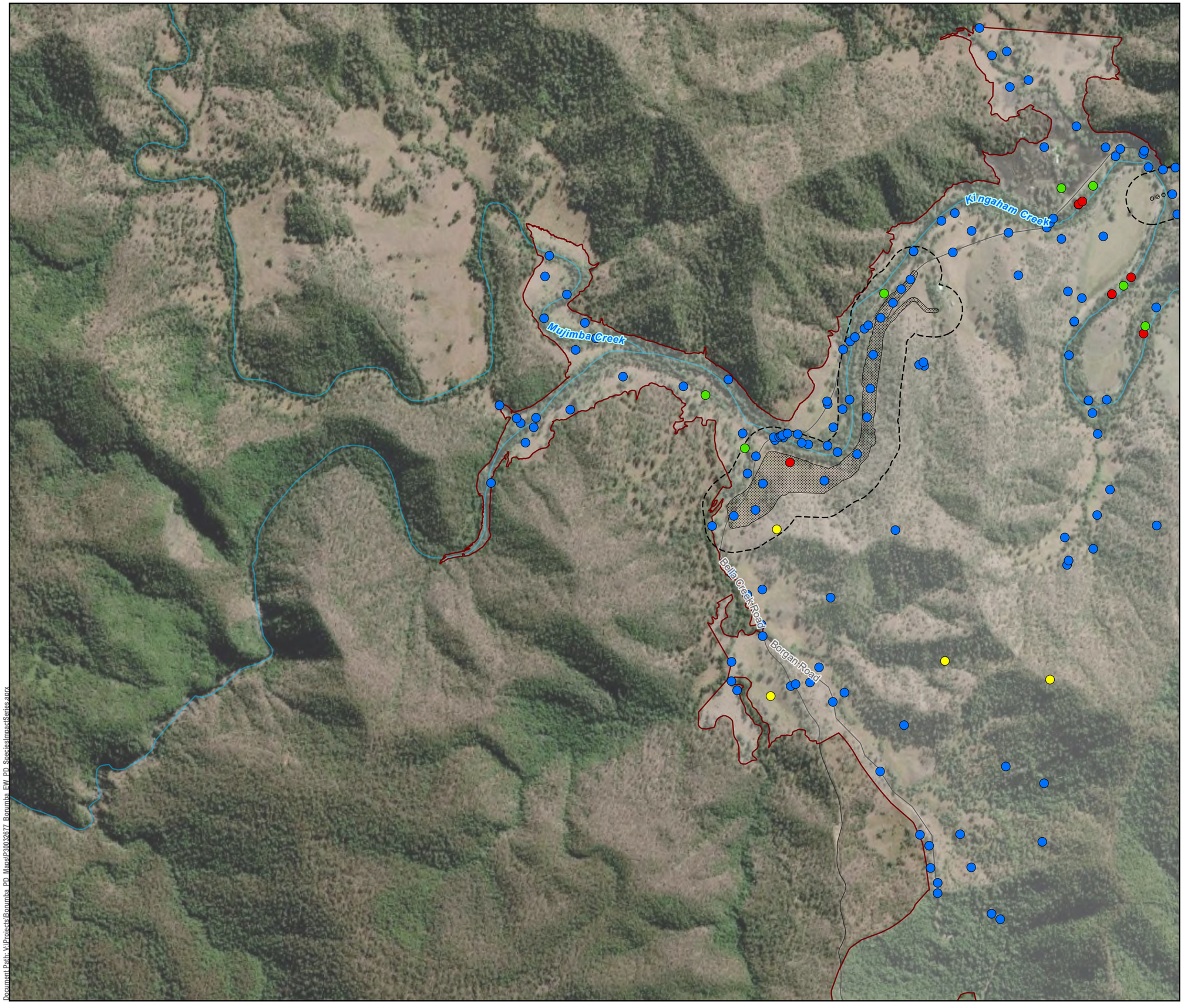

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area

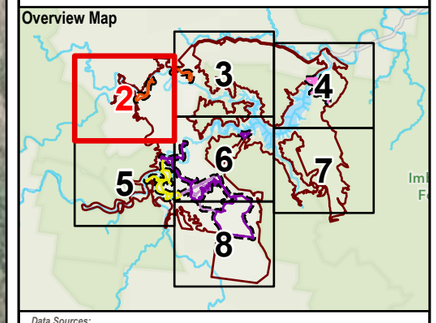
Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map



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Exploratory Works Project
Preliminary Documentation

FLORA SURVEYS
PAGE 2 OF 8

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FIGURE 11

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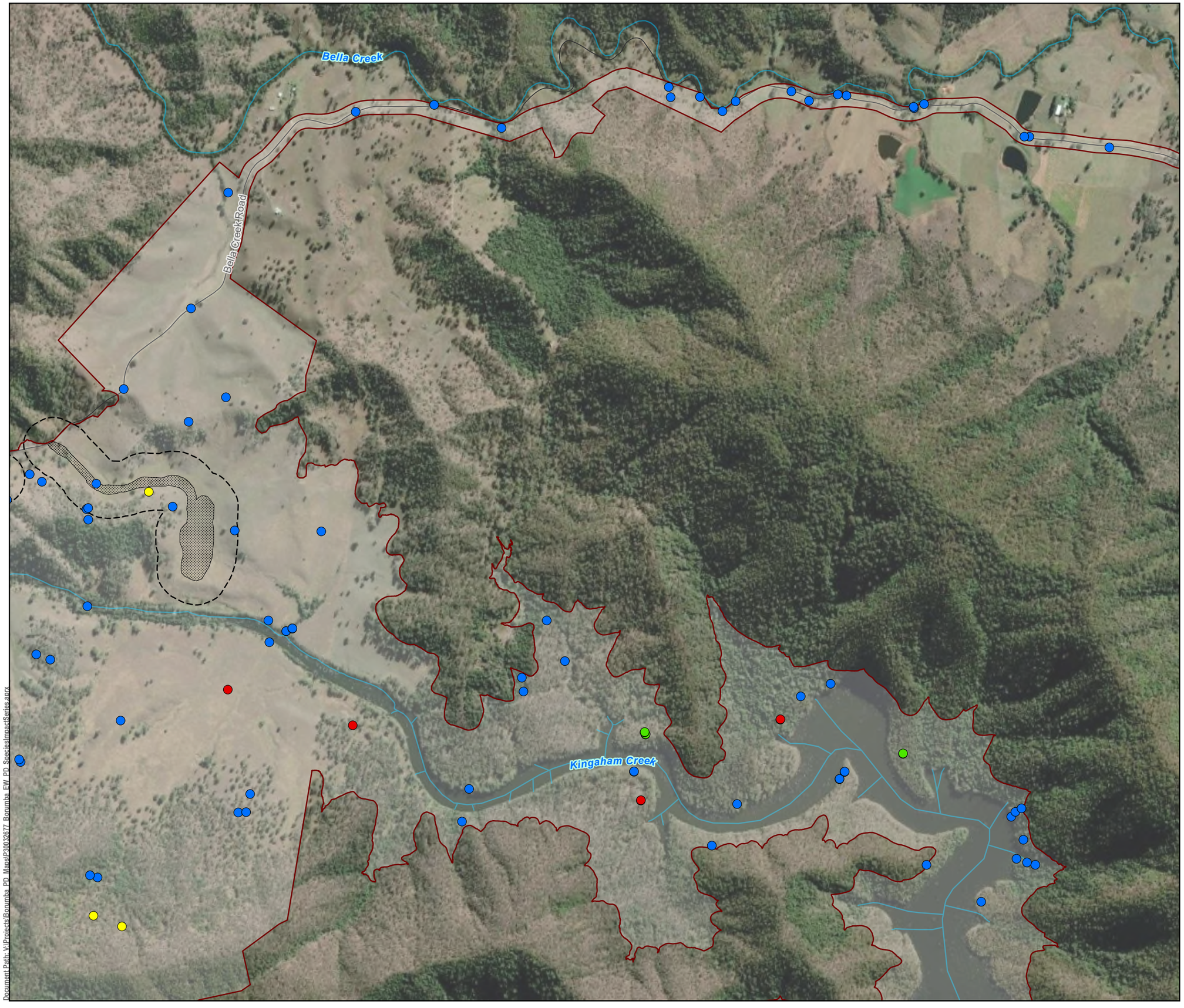

Queensland Hydro

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LEGEND

Exploratory Works Project

Project Area

Survey Areas

Exploratory Works Survey Area

Borumba PHES Survey Area

Flora surveys undertaken

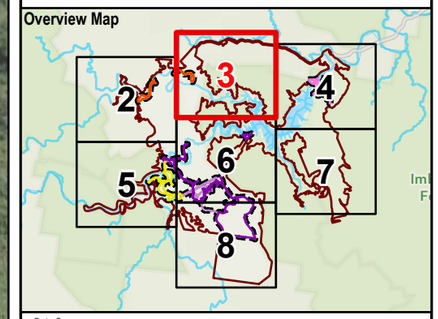
BioCondition

Habitat Quality Assessment

Quaternary

Secondary

Overview Map



Data Sources:

1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC, 2025
3. GTRE / GT TEC/ GT SPECIES @ Umwelt and Attexo, 2024
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LAST MODIFIED:	NC17428, 17/10/2025
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FIGURE 11

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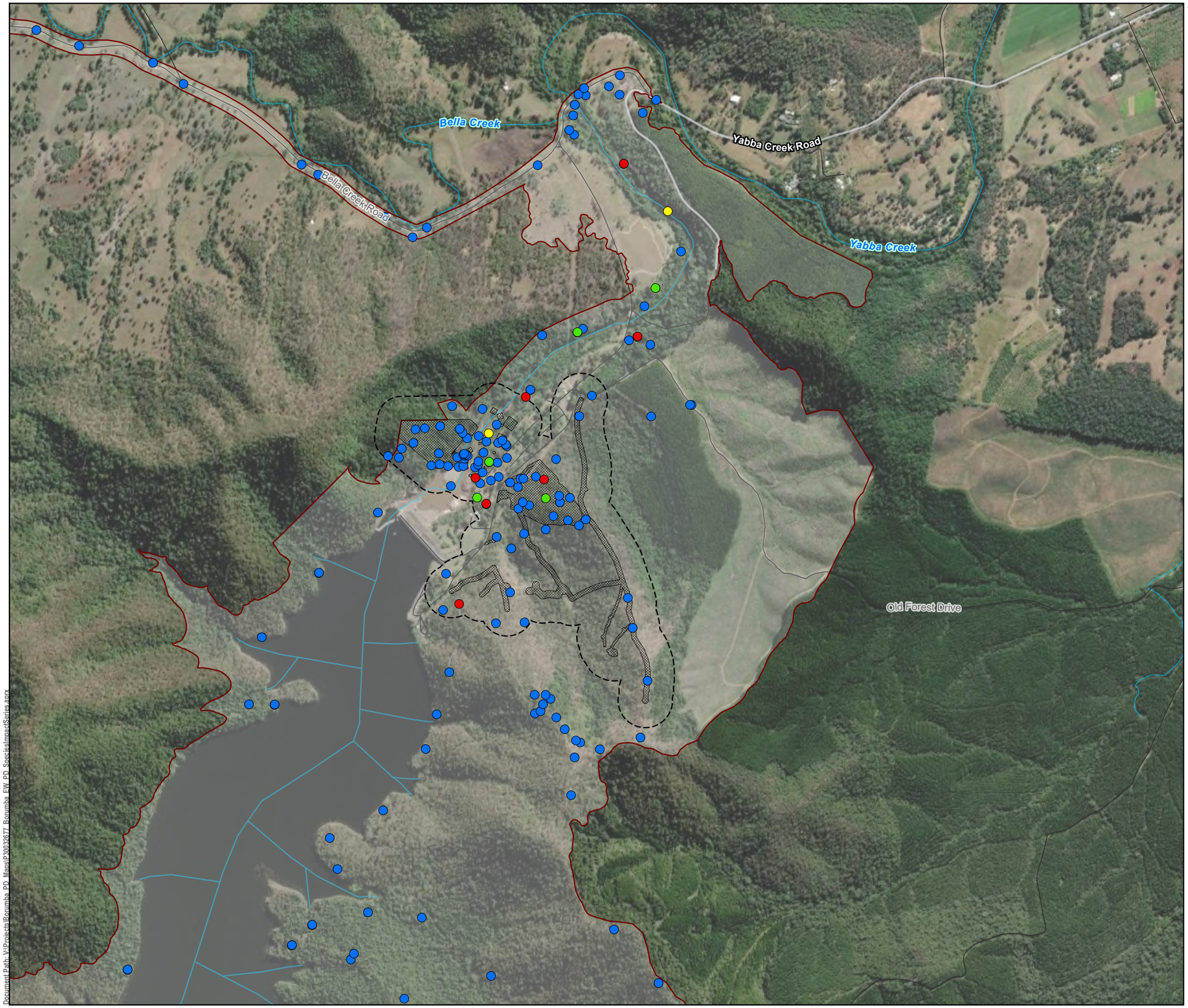

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area

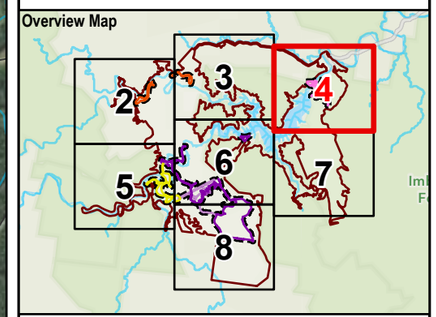
Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map



Data Sources:

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FIGURE 11

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Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map

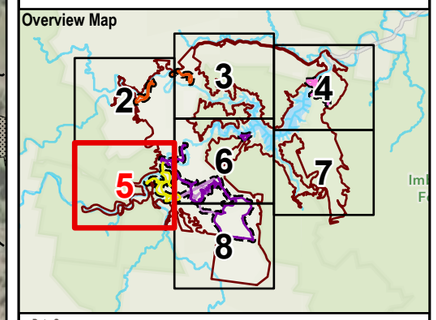

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FIGURE 11

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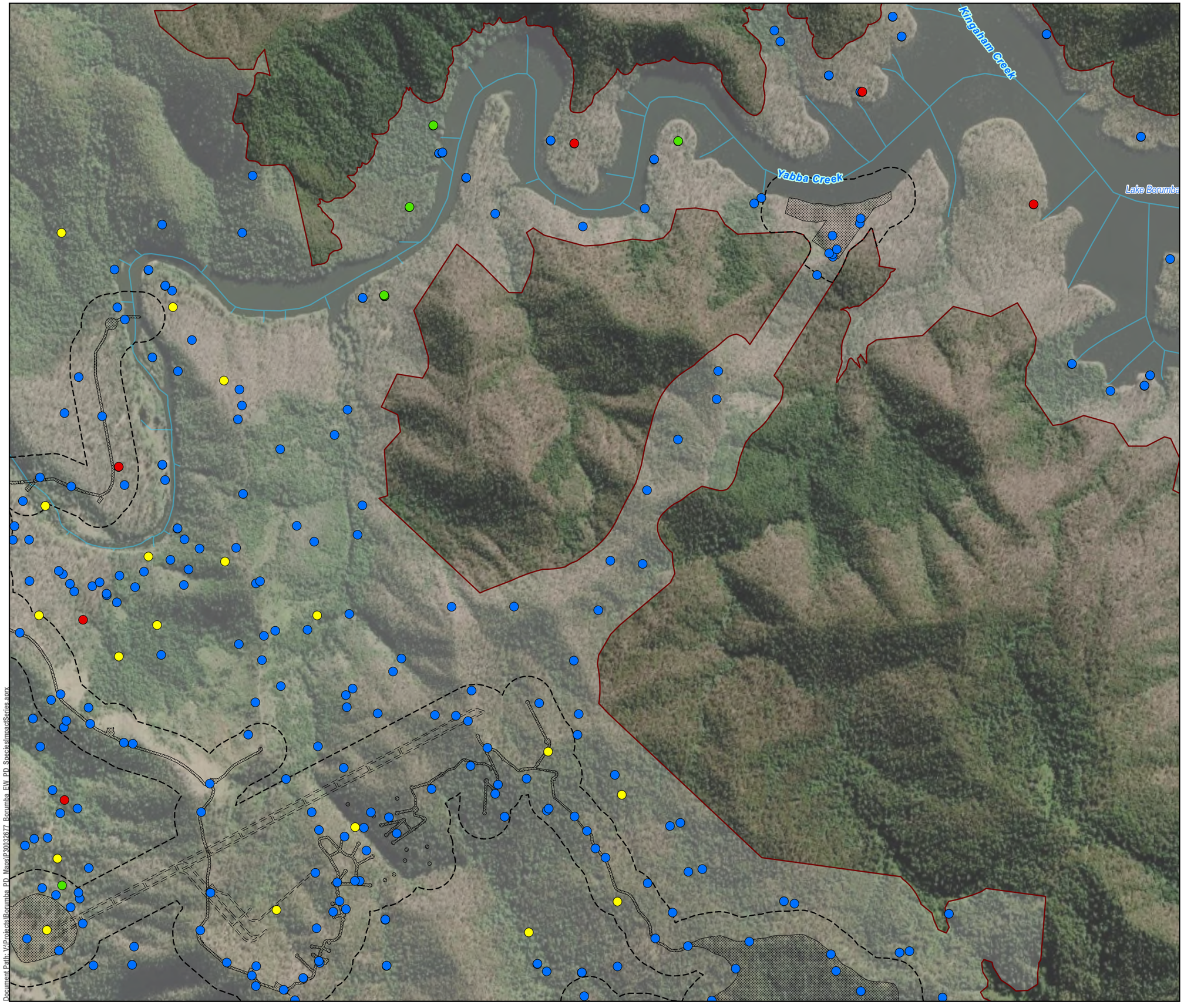

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Queensland Hydro

GDA2020 MGA Zone 56

0 0.2 0.4 Km

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map

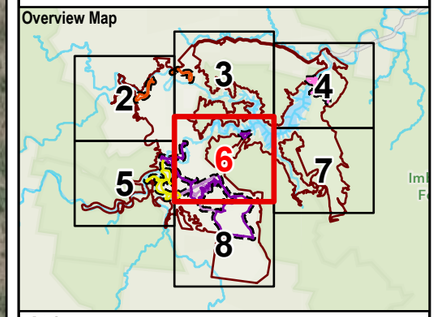

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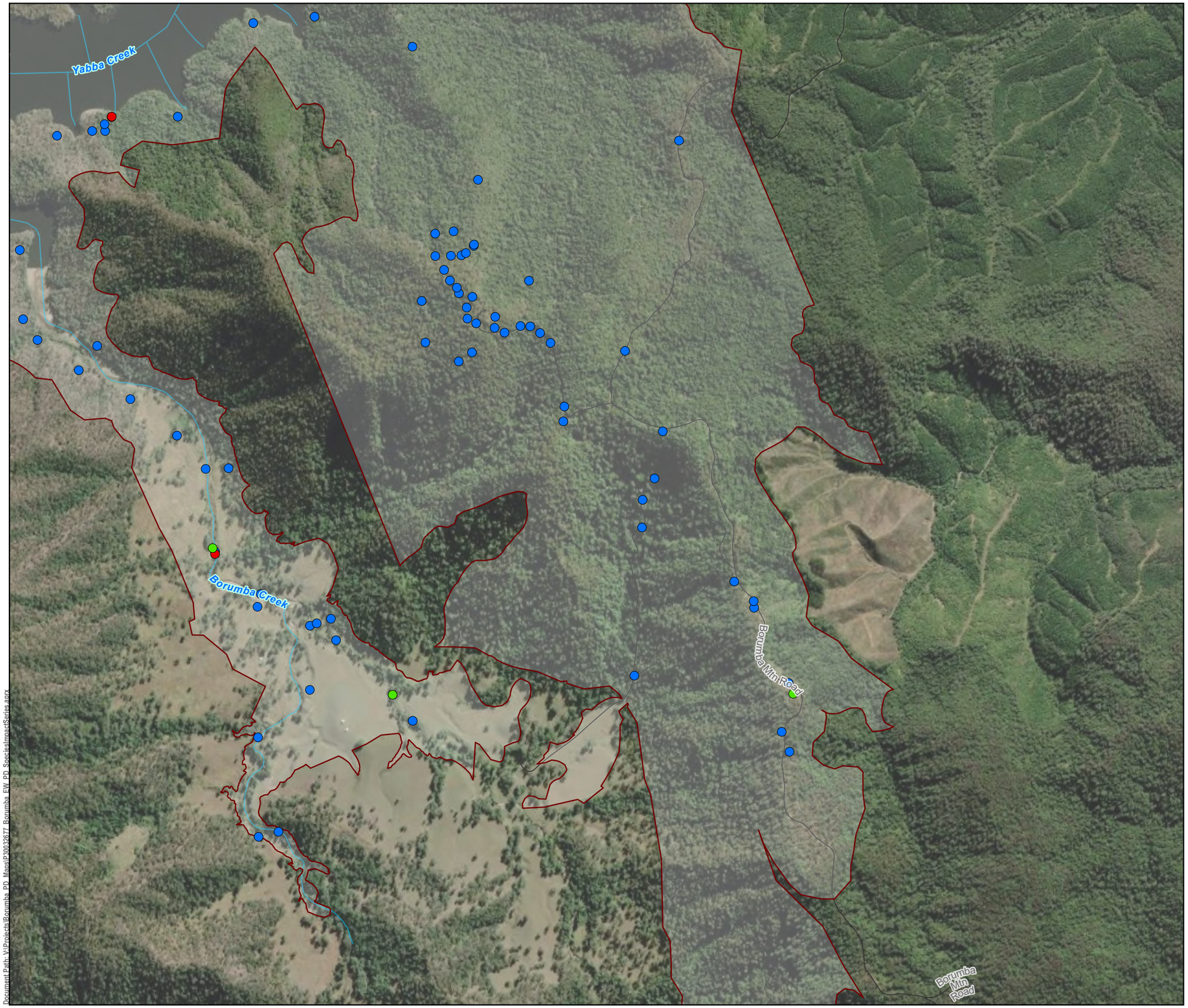
FIGURE 11



Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Borumba PHES Survey Area

Flora surveys undertaken

- BioCondition
- Quaternary
- Secondary

Overview Map

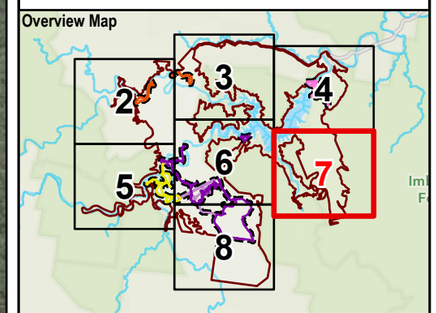

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FIGURE 11

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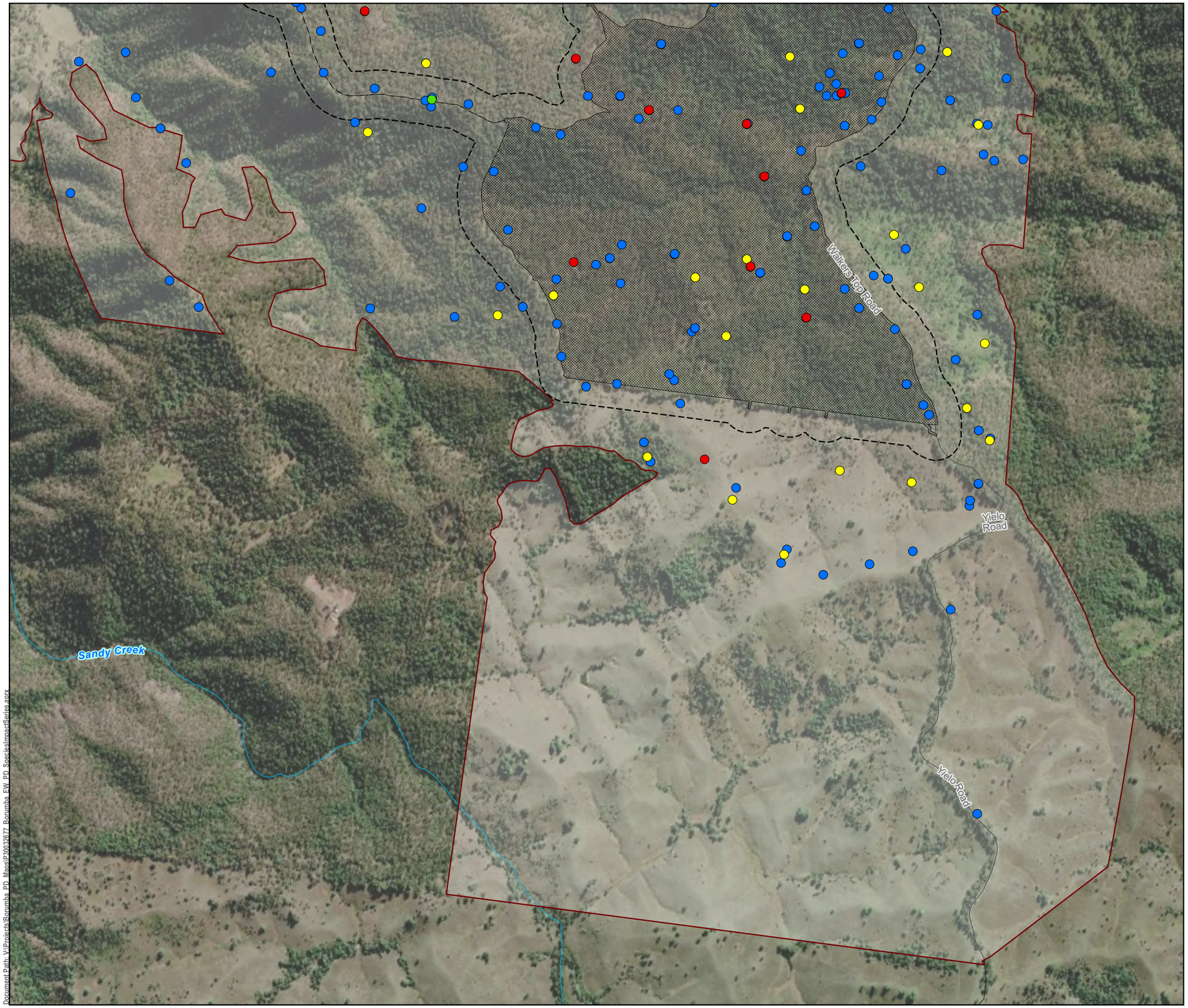

Queensland Hydro

GDA2020 MGA Zone 56

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1:15,000 (when printed @ A3)

LEGEND

Exploratory Works Project
- Project Area
- Project Area (Underground)

Survey Areas
- Exploratory Works Survey Area
- Borumba PHES Survey Area

Flora surveys undertaken
- BioCondition
- Habitat Quality Assessment
- Quaternary
- Secondary

Overview Map

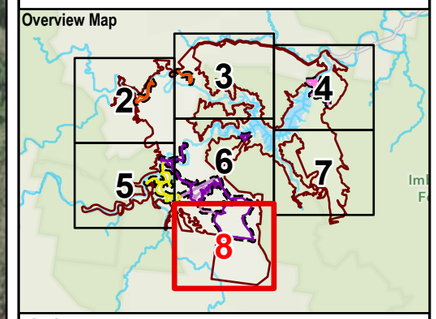

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FIGURE 11

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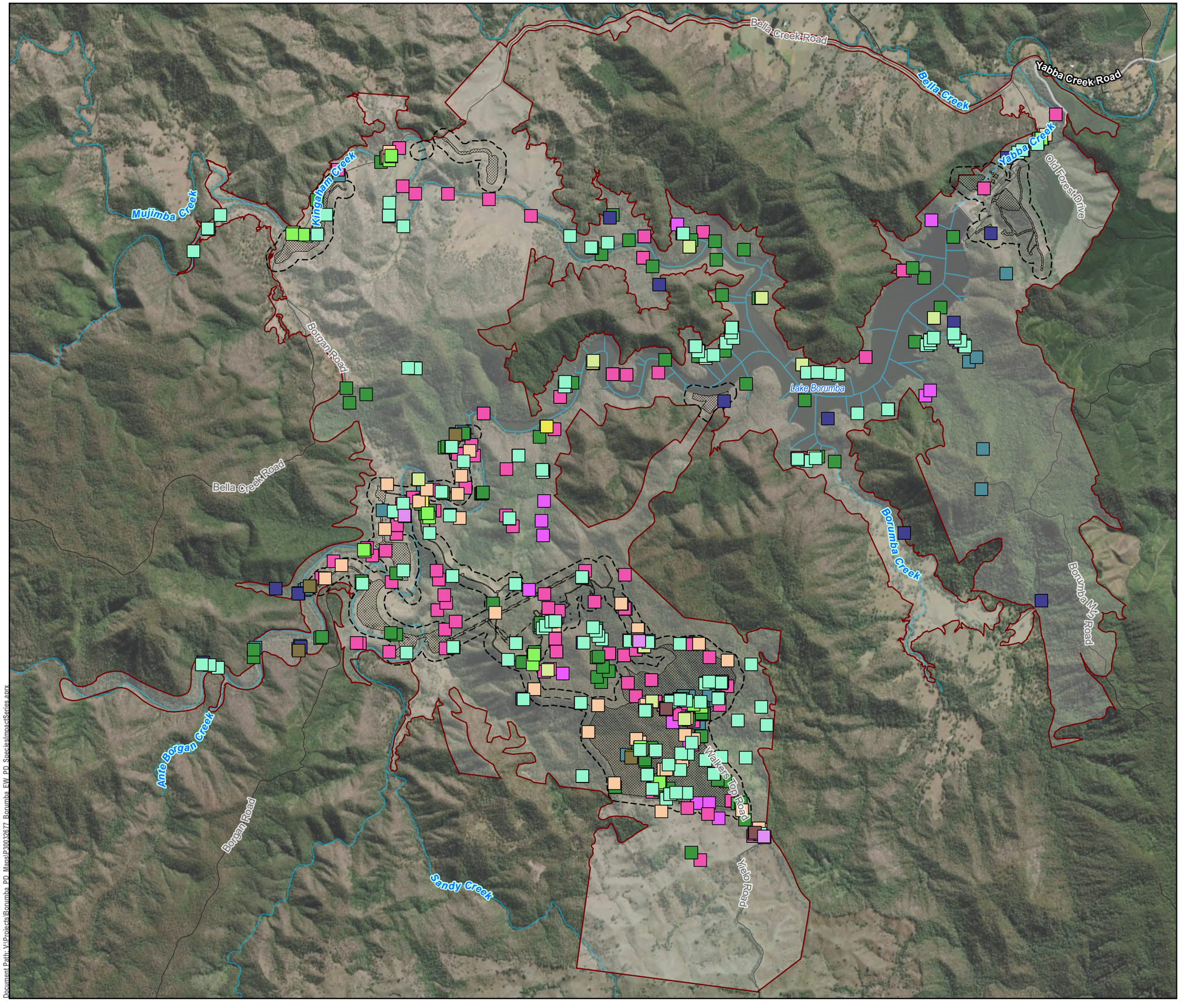

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project
- Project Area
- Project Area (Underground)

Survey Areas
- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken
- Active Diurnal Searches
- Amphibian Habitat Assessment
- Fauna Habitat Assessment
- Bird Survey
- Anabat Survey
- Bioacoustic Survey
- Terrestrial Spotlighting Survey
- Koala SAT
- Funnel or Pitfall Trapping
- Elliot Trapping
- Camera Trapping
- Mammal Trapping
- Systematic Trapping

Overview Map

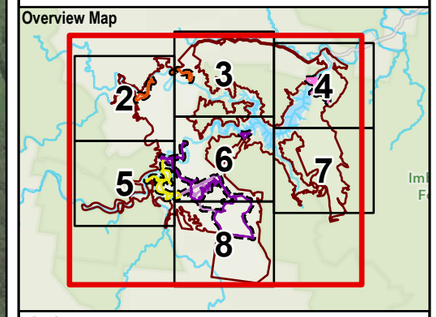

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FIGURE 12

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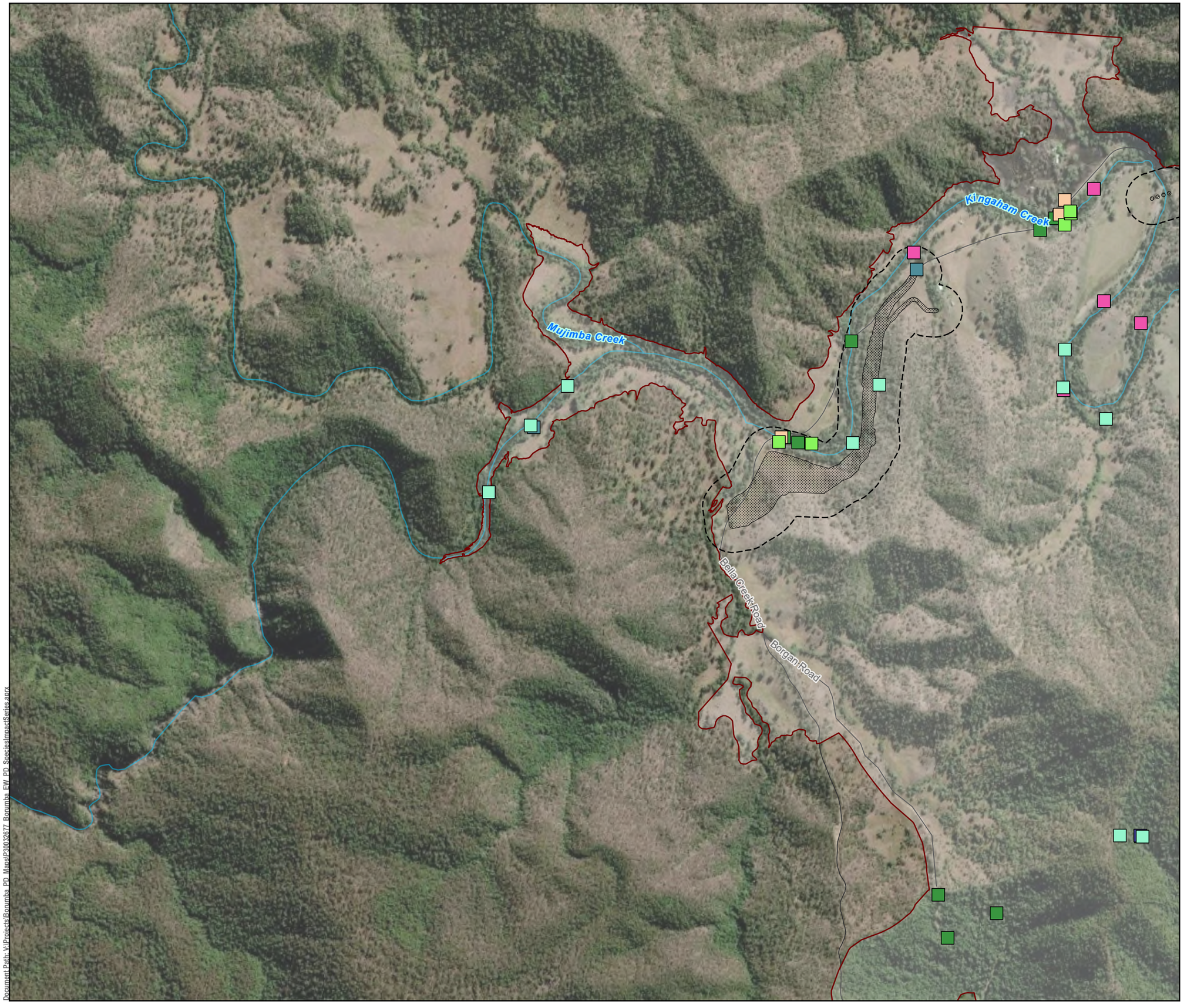

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken

- Active Diurnal Searches
- Fauna Habitat Assessment
- Bird Survey
- Bioacoustic Survey
- Terrestrial Spotlighting Survey
- Elliot Trapping
- Camera Trapping

Overview Map

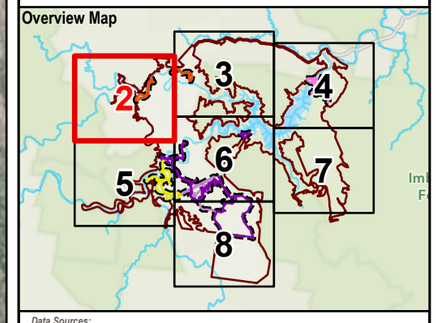

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FIGURE 12

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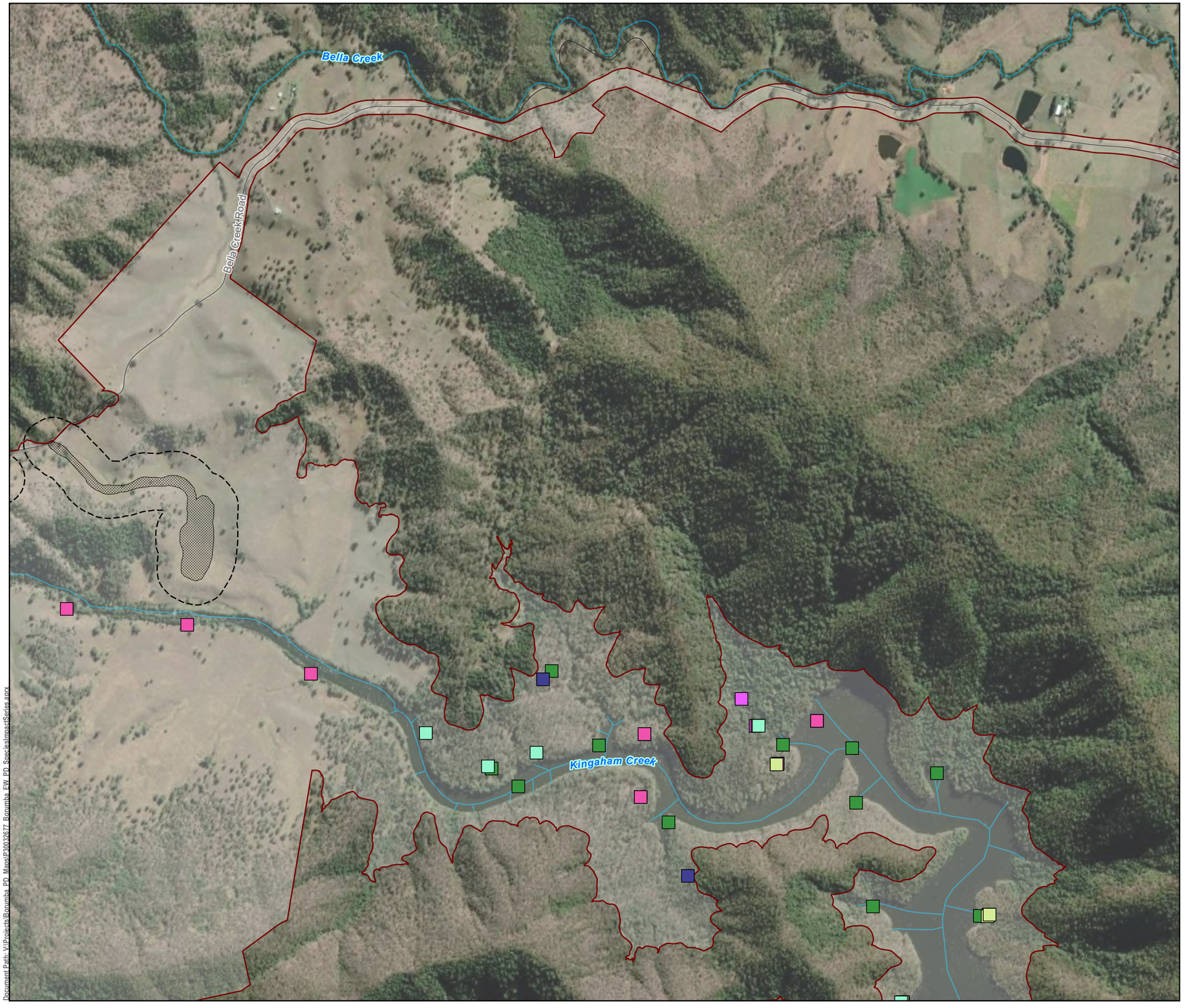

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken

- Amphibian Habitat Assessment
- Fauna Habitat Assessment
- Bird Survey
- Bioacoustic Survey
- Koala SAT
- Camera Trapping

Overview Map

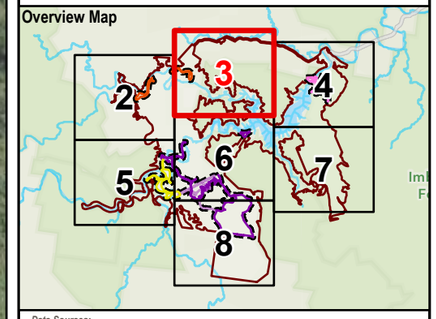

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FIGURE 12

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Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken

- Active Diurnal Searches
- Amphibian Habitat Assessment
- Fauna Habitat Assessment
- Bird Survey
- Anabat Survey
- Bioacoustic Survey
- Terrestrial Spotlighting Survey
- Koala SAT
- Elliot Trapping
- Camera Trapping

Overview Map

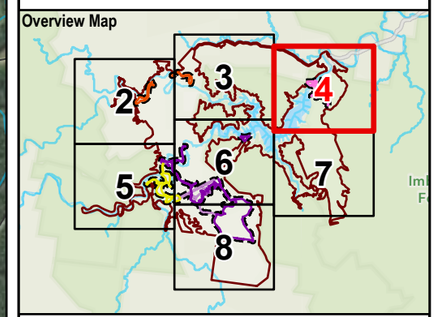

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FIGURE 12

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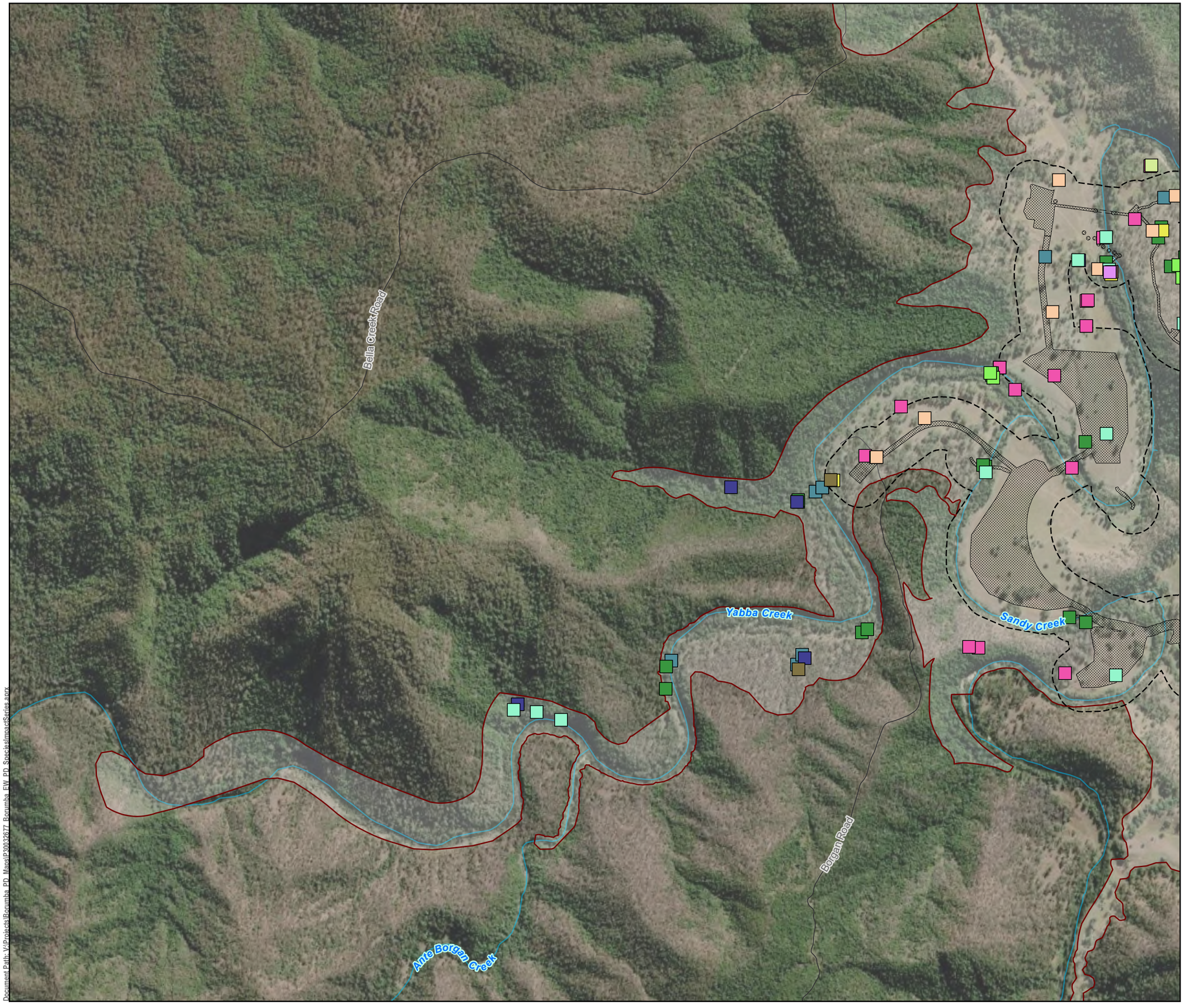

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken

- Active Diurnal Searches
- Fauna Habitat Assessment
- Bird Survey
- Anabat Survey
- Bioacoustic Survey
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- Funnel or Pitfall Trapping
- Elliot Trapping
- Camera Trapping
- Mammal Trapping
- Systematic Trapping

Overview Map

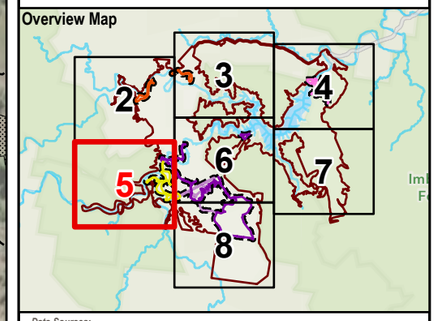

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FIGURE 12

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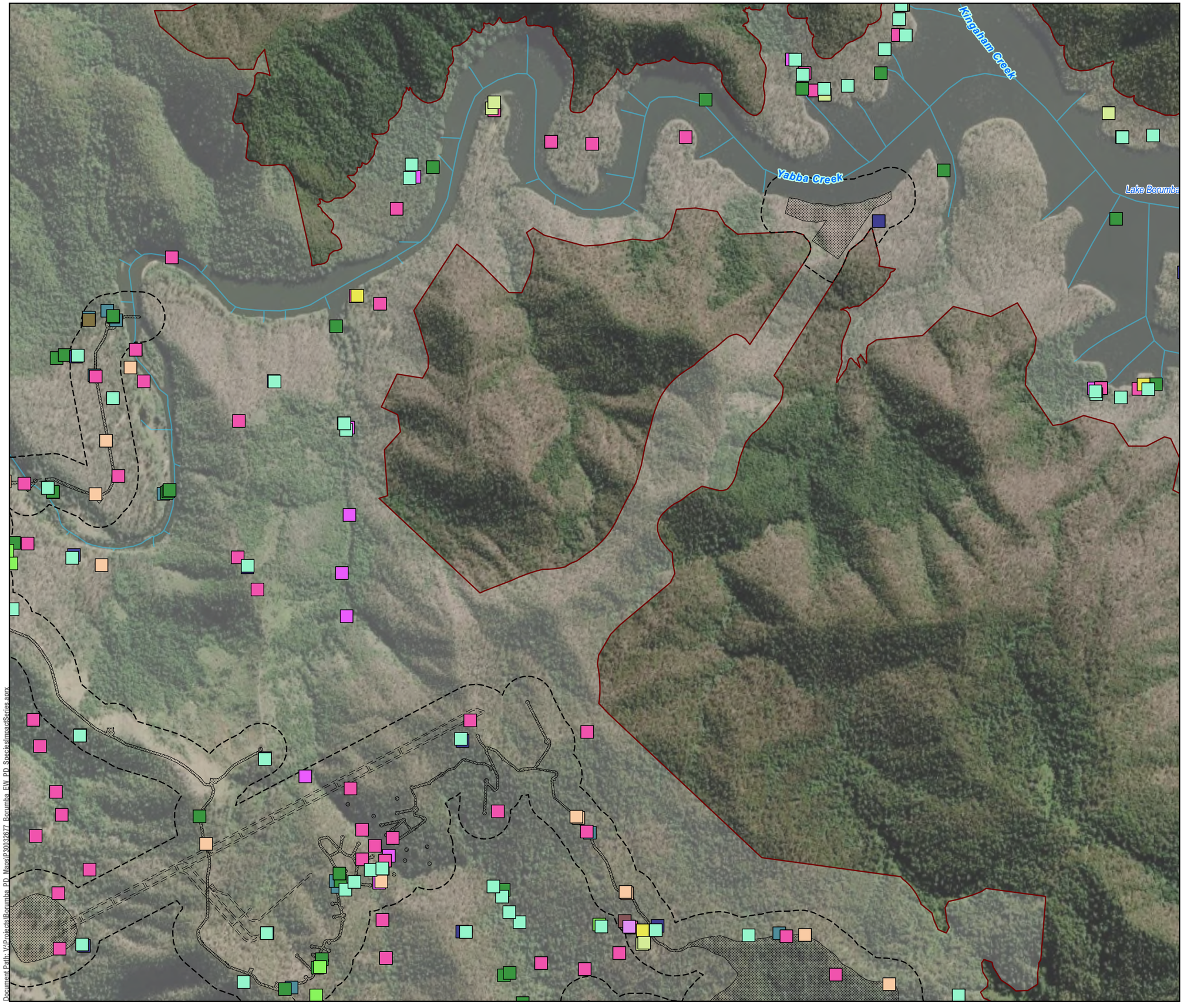

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

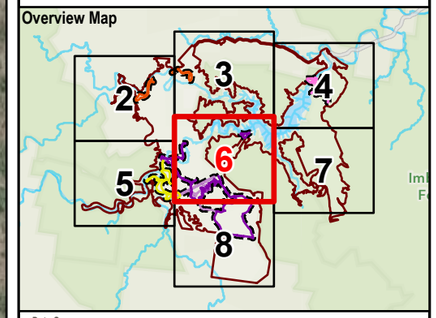
Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Fauna Surveys Undertaken

- Active Diurnal Searches
- Amphibian Habitat Assessment
- Fauna Habitat Assessment
- Bird Survey
- Anabat Survey
- Bioacoustic Survey
- Terrestrial Spotlighting Survey
- Koala SAT
- Funnel or Pitfall Trapping
- Elliot Trapping
- Camera Trapping
- Mammal Trapping
- Systematic Trapping

Overview Map



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1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC, 2025
3. GTRE / GT TEC/ GT SPECIES @ Umwelt and Attexo, 2024
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Exploratory Works Project
Preliminary Documentation

TERRESTRIAL FAUNA SURVEYS
PAGE 6 OF 8

PROJECT #:	30032677
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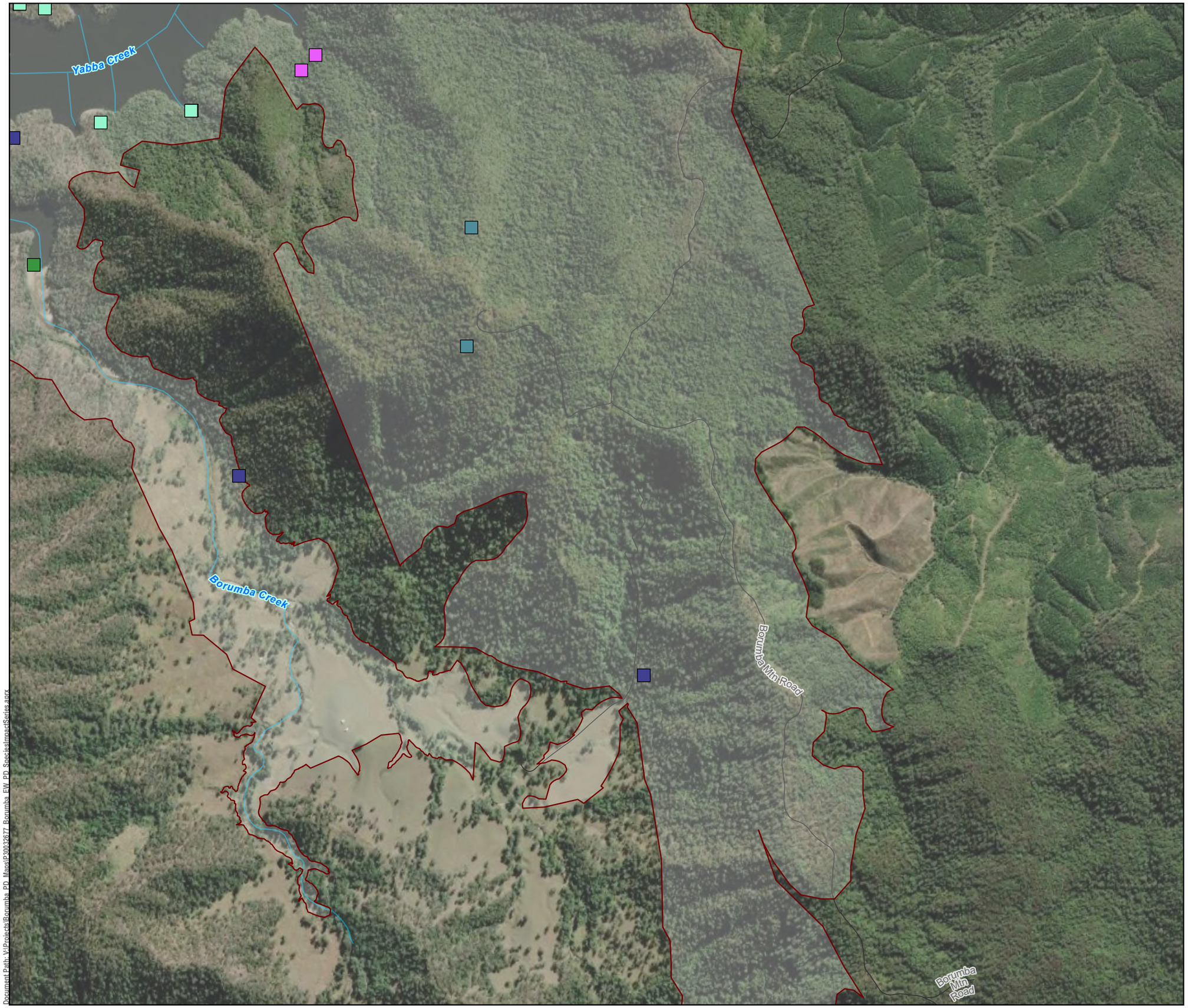
REVISION:	A

FIGURE 12

Document Path: V:\Projects\Borumba PD Maps\P30032677_Borumba_EW_PD_SpeciesImpactSeries.aprx



Queensland Hydro

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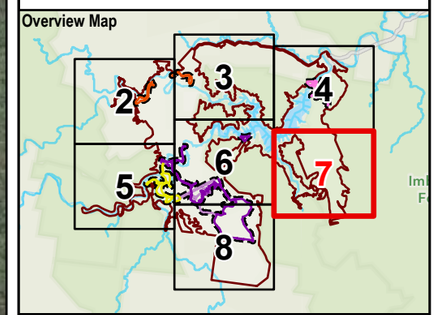
LEGEND

Borumba PHES Survey Area

Fauna Surveys Undertaken

- Active Diurnal Searches
- Amphibian Habitat Assessment
- Fauna Habitat Assessment
- Bird Survey
- Bioacoustic Survey
- Camera Trapping

Overview Map



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TERRESTRIAL FAUNA SURVEYS
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FIGURE 12

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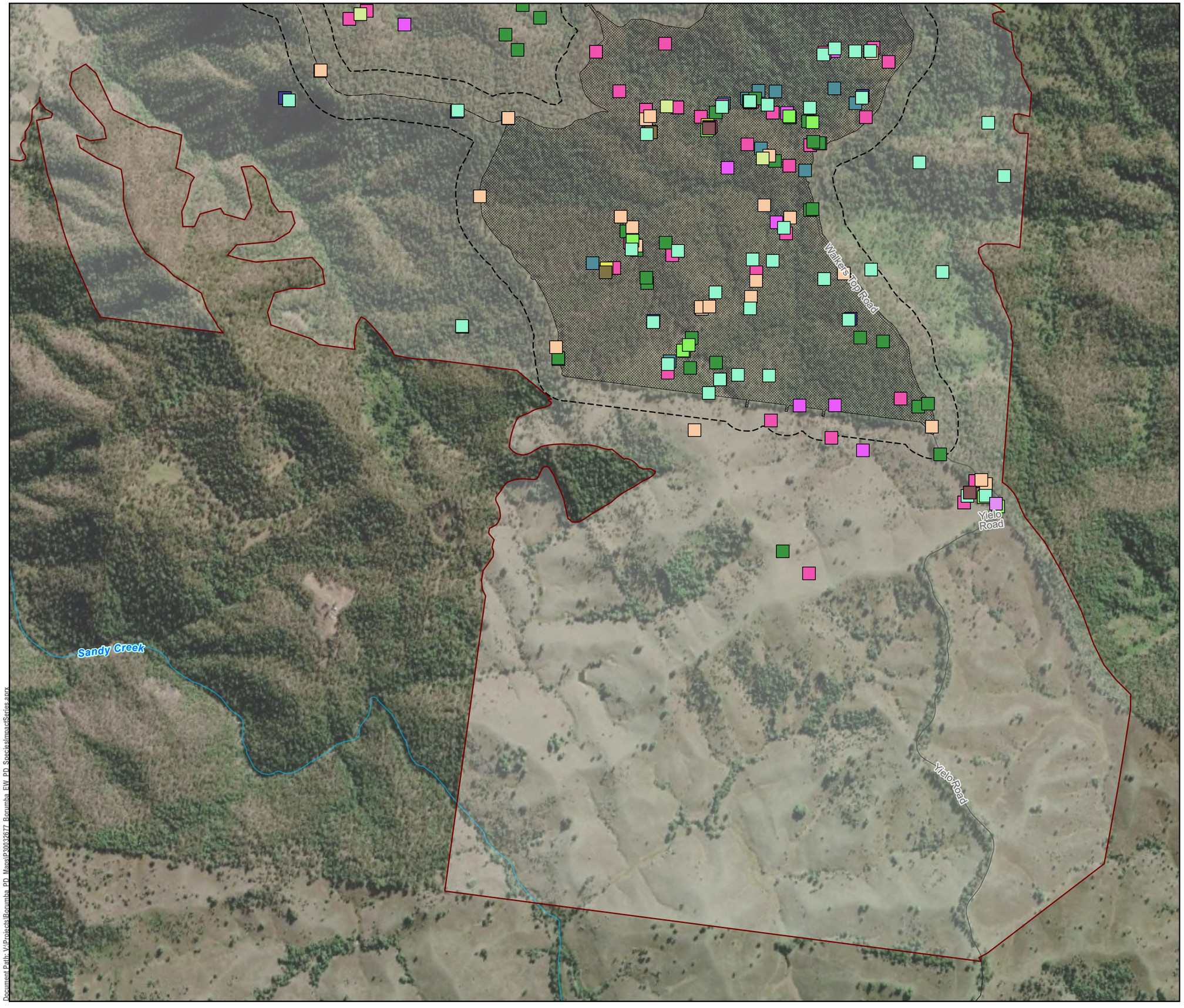

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LEGEND

Exploratory Works Project

- Project Area
- Project Area (Underground)

Survey Areas

- Exploratory Works Survey Area
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Fauna Surveys Undertaken

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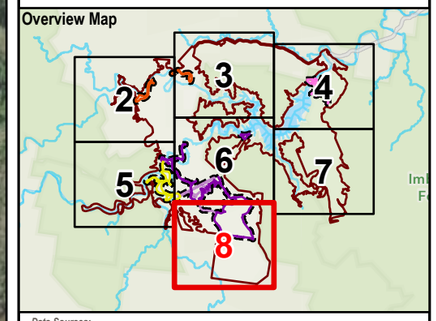
Overview Map



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3. GTRE / GT TEC/ GT SPECIES @ Umwelt and Attexo, 2024
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Exploratory Works Project
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FIGURE 12

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3.3.1.3 Ecological survey timing

The timing of flora surveys typically depends on the target species and can vary according to the detectability of individual flora species. The threatened species targeted during the flora surveys can all be confidently identified based on vegetation features such as leaf shape and arrangement, and bark type. Flowers are generally not required to identify woody species. Some species, such as some orchids (e.g. *Phaius australis,* which is considered unlikely to occur) require flowers to confidently identify the *Phaius* genus to species level. If a potential threatened flora species that can only be identified by flower or other fertile material (e.g. fruit), additional surveys during the flowering time were undertaken. Additional surveys will also be required under Queensland legislation (i.e. protected plant surveys) prior to clearing, noting that the surveys are generally valid for 12 months if used to support a clearing permit. Refer to Section 4.1.1.1 and Appendix M of the Preliminary Documentation for further information.

The fauna surveys were undertaken in accordance with seasonal survey requirements in the relevant species' survey guidelines and are considered appropriate to detect the target species (refer to Section 4.1.1.2 and Appendix M of the Preliminary Documentation).

3.3.1.4 Fleay's frog

The survey guidelines for Fleay's frog (DEWHA, 2010) identify that visual encounter surveys and call surveys should be conducted during the known calling period of Fleay's Frog, which is between July and March. A range of amphibian specific surveys (bioacoustic surveys, targeted surveys, habitat assessments) were undertaken in December 2023, and January, February, and June 2024, which is within the survey window of the species and therefore the surveys are appropriate for the detection of the species. This species was not detected within the Exploratory Works Survey area or the Borumba PHES Survey area during targeted surveys and has never been recorded within the Yabba Creek catchment; therefore, it is considered unlikely to occur within the Exploratory Works Survey area.

3.3.1.5 Australian lungfish

Seasonal surveys for the Australian lungfish were undertaken as part of the broader aquatic ecology assessments for the Borumba PHES Project. These were conducted by Hydrobiology in 2022, 2023 and 2024 and included targeted surveys for aquatic MNES species and detailed aquatic and riparian habitat assessments. These surveys resulted in Australian lungfish being recorded in Yabba Creek, upstream and downstream of Lake Borumba, Kingaham Creek, and Lake Borumba and suitable habitat mapping for the species being developed. The targeted surveys and detailed habitat assessments are sufficient to inform suitable habitat mapping for the species, inform an impact assessment, and inform the suite of mitigation measures required for the Project. The management plans developed for the Project reflect the records of this species upstream and downstream of the dam wall.

Further research into the spawning population of Australian lungfish in Yabba Creek and the Mary River system is unlikely to add knowledge to inform the impact assessment or mitigation measures for the Exploratory Works and is therefore not proposed for the Exploratory Works. However, Queensland Hydro is proposing to undertake targeted population assessments and modelling for the Main Works where this information will benefit impact assessments and mitigation measures for the Main Works.

3.3.1.6 Mary River cod

The survey effort for the Mary River cod involved seasonal eDNA surveys, fyke netting, cathedral trapping, electrofishing (backpack and boat-based electrofishing), snorkelling, angling, and box trapping over multiple seasons and aquatic habitats. Surveys also included aquatic ecologists recording any opportunistic visual observations of the species while kayaking in Kingaham, Yabba, and Sandy creeks for detailed habitat assessments. The results of the surveys and detailed habitat assessments informed the development of suitable habitat mapping, which is discussed in Section 3.9.2.6 of the Preliminary Documentation and identifies that Yabba Creek provides suitable habitat for the Mary River cod.

The species has been recorded in Yabba Creek (both upstream and downstream of the dam wall), as well as within Lake Borumba, with suitable habitat being mapped in these areas. Whilst the species was not recorded, suitable habitat was identified and the species is expected to occur in Kingaham and Sandy creeks. The management plans developed for the Project reflect the records of this species downstream of the existing dam wall.

Queensland Hydro has also been in consultation with the fish stocking associations and note that there have been a large number of stocking events in Lake Borumba. However, the stocking associations have limited evidence of the species successfully establishing in the lake, with limited cod being captured by recreational anglers.

Queensland Hydro have not relied on data from other cod species to inform Mary River cod spawning behaviour, particularly as they relate to the use of undercut banks for spawning. There is no documented evidence that Mary River cod use undercut banks for spawning, with hollow logs presumed to be used for spawning (TSSC, 2016). Current conservation advice for a similar species, Murray cod (*Maccullochella peelii peelii*), indicates that spawning for this species typically occurs on hard surfaces (rocks) in upland rivers and on logs or clay banks in lowland rivers (National Murray Cod Recovery Team, 2010). However, Queensland Hydro acknowledge that undercut banks are used for foraging and have included these areas in the foraging habitat mapping developed for the Project.

3.3.1.7 Mary River turtle

As with the other aquatic species, a wide range of survey techniques have been deployed across multiple seasons and aquatic habitats since 2022. The species was recorded along Yabba Creek (both upstream and downstream of the dam), and within Lake Borumba, Sandy Creek, and the Mary River. The species is also expected to be present in Kingaham Creek. This data, along with habitat assessments, have been used to develop a robust habitat mapping dataset across waterways relevant to the Exploratory Works.

It is noted that for nesting habitat a conservative 100 m buffer from the water's edge was applied, with Micheli-Campbell *et al*. (2013) report the maximum observed nesting distance for Mary River turtle from the water's edge is 43.6 m.

As this species has been recorded downstream of Exploratory Works Area 1 at Yabba Creek, key habitat attributes have been mapped at this location and the management plans developed for the Project reflect the records of this species downstream of the dam wall.

3.3.1.8 Giant barred frog

The surveys for giant barred frog (*Mixophyes iteratus*) considered the suitability of habitat within the Exploratory Works Survey area and the broader PHES Survey area. The assessment of potential habitat outside the nominated survey areas was not considered as this was outside the scope of the Exploratory Works. Whilst giant barred frogs inhabit lowland wet forests and rainforest, there are other factors that influence the suitability of their habitat, such as deep leaf litter and course woody debris – the presence of 'rainforest' vegetation is, in and of itself, not the only determining factor for habitat suitability. When determining the extent of suitable habitat for this species within the survey areas, all habitat requirements were considered.

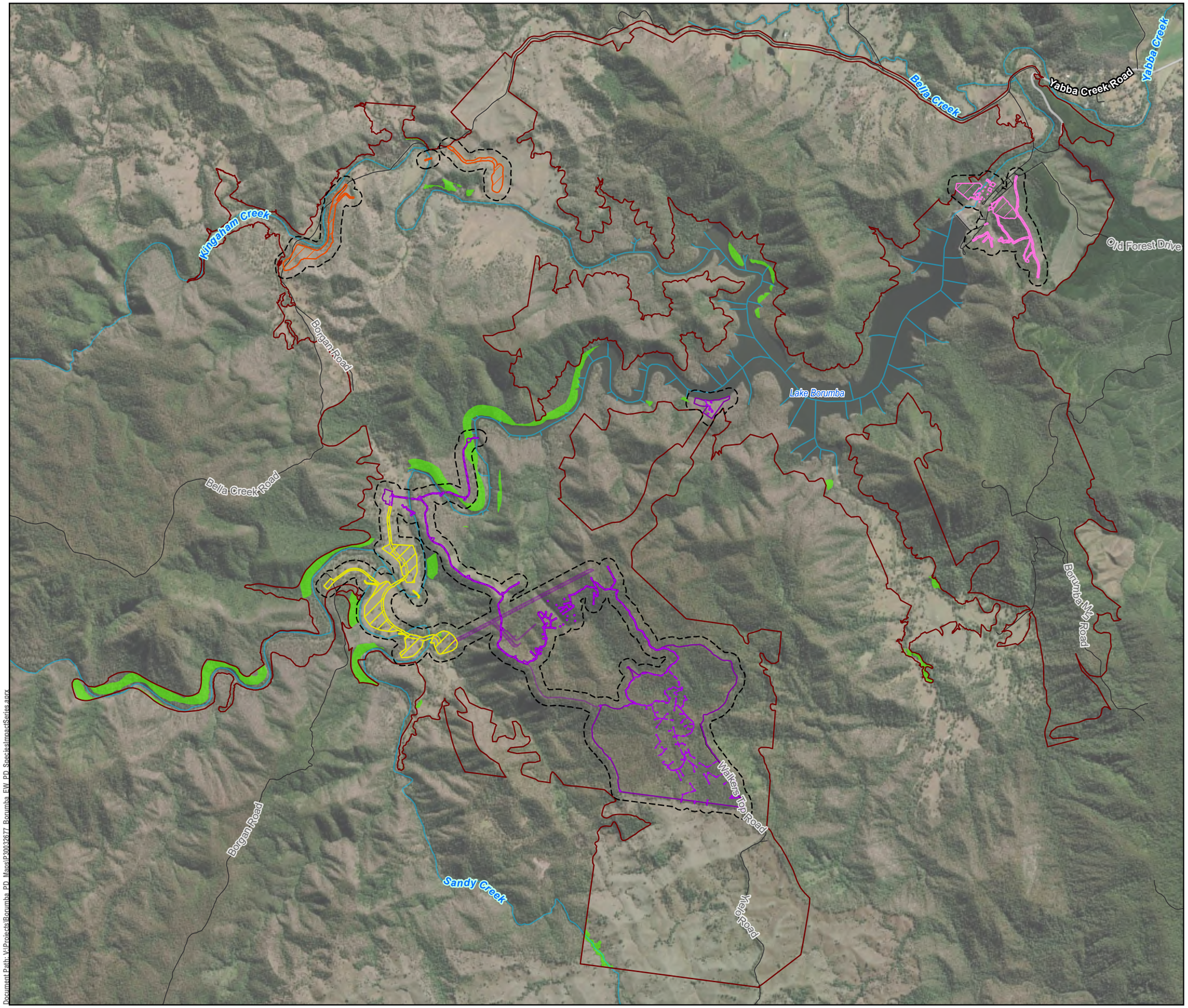
It is recognised that giant barred frogs have low dispersal ability (DAWE, 2021) and therefore populations outside of the survey areas – in habitat that is not directly connected to suitable habitat within the survey areas – have a low probability of dispersing into these areas.

The Preliminary Documentation acknowledges that suitable habitat features for the giant barred frog are present within parts of the Borumba PHES Project survey area, particularly along Yabba Creek. While the targeted amphibian surveys conducted in December 2022 did not detect the species, Queensland Hydro recognises that the seasonal conditions at the time, which were characterised by below average rainfall, may not have been optimal for acoustic detection, potentially reducing the likelihood of call recordings or observations. However, the terrestrial ecology program post 2022 has applied a multi-method approach that mirrors the key techniques set out in the Commonwealth's Survey Guidelines for Australia's Threatened Frogs (DEWHA, 2010), namely call-playback, active nocturnal searches and detailed habitat assessment. Across the various field surveys, seven representative riparian sites along Yabba Creek and its tributaries were sampled, with search effort explicitly concentrated in February 2024 when temperatures are warm enough for *M. iteratus* activity. The survey timing therefore intersected the species' recognised breeding window of September–March, capturing the seasonal peak when adult males are most likely to respond to call playback or be detected during spotlighting.

While the survey results indicated that the Exploratory Works footprint is unlikely to contain habitat critical to the survival of the giant barred frog, for the purposes of assessment under the EPBC Act Queensland Hydro used a conservative approach that assumed the survey areas support 'potential' habitat, rather than definitively classifying it as 'unlikely'. As such, the mitigation measures (including restricted clearing, maintenance of riparian vegetation, and restoration of disturbed areas) are relevant to any areas of 'potential' habitat, which will minimise potential impacts to this habitat (if present). Furthermore, hygiene protocols to prevent the spread of chytrid fungus, a known threat to amphibian populations, will be rigorously applied during the Project. Although a significant impact is not

anticipated based on available evidence, Queensland Hydro is committed to incorporating new information, including verified records and habitat observations, into ongoing adaptive management processes for the Exploratory Works.

Figure 13 shows the locations of suitable habitat for giant barred frog.



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LEGEND

Watercourses
Local Roads
State Controlled Roads

Exploratory Works Project

Project footprint by work area
- Area 1 - Borumba Dam
- Area 2 - Kingaham Creek
- Area 3 - Walkers Top
- Area 4 - Borgan

Project area by work area
- Area 1 - Borumba Dam
- Area 2 - Kingaham Creek
- Area 3 - Walkers Top
- Area 3 - Walkers Top (Underground)
- Area 4 - Borgan

Survey Areas
- Exploratory Works Survey Area
- Borumba PHES Survey Area
- Giant barred frog potential habitat

Data Sources:
1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC, 2022
3. Cadastre © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
4. Vegetation management regional ecosystem map - version 12.02 © State of Queensland (Department of Resources) 2022-11-07 (publication)
5. GTRE / GT TEC/ GT SPECIES @ Umwelt and Attexo, 2022
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Exploratory Works Project
Preliminary Documentation

GIANT BARRED FROG SUITABLE HABITAT

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Figure 13

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3.3.1.9 Greater glider

It is acknowledged that there are limitations to spotlighting surveys for greater gliders, as there are limitations associated with all survey methods (SEWPaC, 2011). The targeted surveys for greater gliders were supplemented with habitat surveys to assess the extent of suitable habitat for the species, noting that as per the conservation advice for the species, areas with specific tree species that have a 30 cm DBH could be considered habitat for this species. The outcomes of these surveys were used to develop the habitat mapping for the species used in the Preliminary Documentation. The suitable habitat mapping identifies that the majority of the Borumba PHES Project Survey area has been mapped as suitable denning/foraging habitat for the species, regardless of whether an individual glider was observed. The extent of suitable habitat for greater gliders is unlikely to change (i.e. unlikely to add more areas) with further survey effort, as most of the Survey area has already been mapped as suitable habitat.

The Preliminary Documentation erroneously associated 'sap trees' with greater glider habitat; however, Queensland Hydro accepts that 'sap trees' are used by yellow bellied gliders and are therefore not a relevant indicator of suitable foraging resources for greater gliders. The flora and fauna management plan (Appendix F of the Preliminary Documentation) has been updated to reflect this.

3.3.1.10 Koala

Surveys for the koala were consistent with Commonwealth survey guidelines, which includes the use of a variety of survey methods including SAT surveys, habitat assessments, spotlighting, call play-back, active diurnal searches, and bioacoustics surveys. The surveys undertaken across the broader PHES Survey area include surveys within the Exploratory Works Survey area and the results of all surveys have been used to inform the habitat assessments and mapping, and the impact assessments.

The combined results of these surveys informed the development of the suitable habitat mapping for the species, though for the most part a conservative approach has been adopted based on the presence of koala trees and the mapping areas of cleared land and patches of rainforest as dispersal habitat. Additional surveys are therefore unlikely to change the extent of suitable habitat for the koala (as most of the Project area has already been mapped as suitable habitat).

Surveys for koalas have been undertaken in the broader Borumba PHES Project Survey area using drones and the University of the Sunshine Coast detection dogs (refer to Section 4.1.1.2 of the Preliminary Documentation). However, the results of these surveys were not fully available at the time of publication of the Preliminary Documentation and so have only partially been included in the documentation. The complete results will inform the implementation of releasing mitigation measures during the Exploratory Works, with the results to be incorporated into the Main Works EIS. However, it should be noted that the inclusion of more koala records (from drone surveys or detection dog surveys) is unlikely to change the extent of suitable habitat mapping for the species for the Exploratory Works.

Bioacoustics recording devices (BAR) were deployed across the Exploratory Works Survey area along creek lines. This is primarily associated with suitable habitat for the detection of threatened amphibian species; however, the BAR also records non-target species such as koalas. BAR devices were set to a night-time schedule that recorded for 10 minutes every hour from sunset to sunrise for a total of 50 minutes per night, which is suitable to detect bellowing koalas.

The Exploratory Works surveys focused on identifying the presence of koalas, with assessments centred on habitat, direct sightings, and evidence such as scats and scratches. While general observations on the condition of individuals, such as obvious signs of poor health, were made during surveys, the scope of the assessment did not include detailed health evaluations, such as diagnosing disease presence or conducting laboratory testing of scats for pathogens or koala retrovirus. Queensland Hydro acknowledges that disease is a significant threat to koala populations and that assessing health status can provide information for understanding population resilience. However, disease surveillance typically requires specific skills that are beyond the scope of standard ecological field surveys. Queensland Hydro has educated staff regarding the signs of disease in koalas and what actions to undertake passed on existing government literature. Further the works being undertaken by the University of the Sunshine Coast as part of the Main Works is looking at the presence of disease and this information will inform the management actions to be implemented as part of the Exploratory Works.

The identification of heavily used koala food trees was not undertaken due to the absence of clear criteria or methodologies within Commonwealth Survey guidelines or other relevant survey protocols. These guidelines provide limited direction on how to quantify or verify 'heavily used' trees beyond general observations of koala

presence or scats. As such, ecologists undertaking micro-siting assessments for infrastructure placement will have insufficient information to reliably differentiate between lightly and heavily used feed trees. Consequently, attempts to avoid 'heavily used food trees' during micro-siting are unlikely to be successful or defensible, and reliance on visual indicators alone risks underestimating the habitat value of specific trees to koalas.

3.3.1.11 Yellow bellied glider

It is acknowledged that there are limitations to spotlighting surveys for yellow bellied gliders, as there are limitations for all surveys (SEWPaC, 2011). The targeted surveys for arboreal fauna (including yellow bellied gliders) were supplemented by bioacoustic monitoring and drone surveys, along with habitat assessments to confirm the extent of suitable habitat for this species in the PHES Survey area. The survey outcomes were used to develop the suitable habitat mapping presented in Appendix E of the Preliminary Documentation. The habitat mapping shows that most of the Exploratory Works Survey area is suitable denning/foraging habitat. Therefore, the extent of suitable habitat for yellow bellied gliders is unlikely to change following further survey effort.

As per the FFMP, pre-clearance surveys of the Exploratory Works footprint will include the mapping of all sap trees with any type of sap scar to account for the wide variety of sap groove patterns. The Project will implement micro-siting protocols with the intent to avoid these trees.

3.3.2 Non-MNES species

Summary of comments
Number of submissions referencing theme: 14

Public comments identified that several species were not assessed in the Preliminary Documentation, including species that were uplisted[4] or recently added to the threatened species list under the EPBC Act and species listed in the Protected Matters Search Report in Appendix N of the Preliminary Documentation. Species mentioned include:

- cascade tree frog (*Litoria pearsoniana*)
- Conondale spiny crayfish (*Euastacus hystricosus*)
- Nangur skink (*Nangura spinosa*)
- regent honeyeater (*Anthochaera phrygia*)
- platypus (*Ornithorhynchus anatinus*).

Response to comments

Under the EPBC Act, the assessment of MNES is limited to those matters (e.g. threatened species, threatened ecological communities, etc.) that are listed, along with their conservation status, at the time of the controlled action decision for a proposed action. The EPBC Act only protects species listed under that Act. Therefore, species that are not listed under the EPBC Act are not assessed in the Preliminary Documentation. This includes species that may be protected under the Queensland *Nature Conservation Act 1994*, but not the EPBC Act, such the cascade tree frog (*Litoria pearsoniana*) and platypus (*Ornithorhynchus anatinus*). The Conondale spiny crayfish (*Euastacus hystricosus*) was listed under the EPBC Act in September 2024.

A likelihood of occurrence (LOO) assessment for MNES listed species and threatened ecological communities (Appendix D of the Preliminary Documentation) was undertaken for the Project based on:

- the Protected Matters Search Report and Species Profile and Threats Database
- information from relevant conservation advices, recovery plans, draft referral guidelines and listing advices, and threat abatement plans
- recent scientific information available for each species, including verified records on the Atlas of Living Australia
- records from field surveys undertaken for the Project
- ground-truthed regional ecosystem mapping, which indicates potentially suitable habitat for MNES.

The LOO determined whether MNES were either known, likely, possible or unlikely to occur. MNES determined to be either known, likely or possibly occurring in the Exploratory Works Survey area were assessed in the Preliminary Documentation.

3.3.2.1 Uplisted or new MNES listings

The MNES that have been uplisted on or added to the threatened species list under the EPBC Act following the controlled action decision are summarised in Section 1.4.2 of the Preliminary Documentation. In accordance with the requirements of the EPBC Act, the assessment provided in the Preliminary Documentation only considered the MNES listed and the relevant conservation status of those matters at the time of the controlled action decision.

For example, the Mary River turtle (*Elusor macrurus*) was listed as endangered at the time of the controlled action decision (30 March 2023) and uplisted to critically endangered on 4 September 2024. In accordance with the EPBC Act, the Preliminary Documentation assesses the Mary River turtle as per its listing status (endangered) at the time of the controlled action decision. It is noted that the significant impact assessment criteria for an endangered species are the same as that for a critically endangered species. Therefore, the assessment presented in Table 99 for the Mary River turtle in Section 7.3.10 of the Preliminary Documentation is consistent with a significant impact assessment for a critically endangered species.

[4] MNES listed species and communities are described as 'uplisted' when their conservation status has been upgraded, e.g. from vulnerable to endangered.

Further, the Conondale spiny crayfish, (*Euastacus hystricosus*) was not listed at the time of the controlled action decision. The species was listed under the EPBC Act as endangered on 4 September 2024. In accordance with the EPBC Act, this species was not assessed in the Preliminary Documentation (section 1.4.2, Preliminary Documentation). It is noted that several public comments referred to the 'freshwater crayfish'. This response assumes those submissions are referring to the Conondale spiny crayfish.

No Conondale spiny crayfish or habitat has been identified from the Exploratory Works survey area or the broader assessment area despite targeted surveys, including eDNA.

3.3.2.2 MNES that are unlikely to occur

References in submissions to the 'Nangur skink' are assumed to be a reference to the critically endangered Nangur spiny skink (*Nangura spinosa*).

The Nangur spiny skink and regent honeyeater (*Anthochaera phrygia*), which are both MNES listed at the time of the controlled action decision, were considered in the LOO (Appendix D of the Preliminary Documentation) and were determined to be unlikely to occur.

The LOO (Appendix D of the Preliminary Documentation) found that nominally suitable habitat (associated with RE 12.12.16, of which there is 31.6 ha in the Borumba PHES Project Survey area) for the Nangur spiny skink is present within the Exploratory Works Survey area. However, the species has a range restricted to discreet populations at Oakview National Park and Nangur National Park, which are approximately 45 km and 70 km northwest of the Exploratory Works area, respectively. Both the Oakview National Park and Nangur National Park populations have suffered sharp declines (State of Queensland, 2024). There have been extensive surveys for this species in the region and no new populations have been discovered (State of Queensland, 2024). There has been a successful and well publicised captive breeding program for the species that has released captive-bred individuals into controlled release sites within its historical distribution (State of Queensland, 2024). There is no evidence that this species occurs within 30 km of the Exploratory Works Survey area, and therefore it is unlikely to occur.

The LOO (Appendix D to the Preliminary Documentation) found that there was only a single recent record of the regent honeyeater (from 2020) approximately 10.5 km east of the Exploratory Works Survey area at Moy's Pocket (ALA, 2023). This species forages in a range of eucalypt woodland and forest types, including those associated with the Exploratory Works Survey area, but shows a preference for drier woodlands dominated by box and ironbark eucalypt species. Although suitable foraging habitat occurs in the area, the species is considered an occasional, primarily winter, non-breeding visitor to south-east Queensland (east of the Great Dividing Range), with only four known key breeding areas for the species remaining (located in New South Wales and Victoria). The species could occur in the area as a vagrant, however, due to its small population size, which is mostly restricted to its core range (northern Victoria and central New South Wales), the likelihood of vagrancy in any given year is extremely low. As such, the species was determined as unlikely to occur.

3.3.2.3 Species not listed under the EPBC Act

The cascade tree frog (*Litoria pearsoniana*) and platypus (*Ornithorhynchus anatinus*) are not listed under the EPBC Act and are therefore not within scope of the EPBC Act assessment process. They are, however, listed under the Queensland *Nature Conservation Act 1992* as follows:

- cascade tree frog (*Litoria pearsoniana*) – vulnerable
- platypus (*Ornithorhynchus anatinus*) – special least concern.

The Project's potential impacts on these species, which are matters of state environmental significance (MSES) are assessed under the relevant processes under Queensland legislation. Impacts to MSES will be, or have been, assessed through Queensland Government approvals processes, that include but are not limited to the following:

- Environmental authority for a prescribed (environmentally relevant activity (ERA) – Extractive and screening activities (ERA 16), *Environmental Protection Act 1994.*
- Operational work for clearing native vegetation on prescribed land, *Planning Act 2016* and *Vegetation Management Act 1999.*
- Operational work for constructing or raising waterway barrier works, *Planning Act 2016* and *Fisheries Act 1994.*
- Protected plant clearing permit, *Nature Conservation Act 1994*.

A high-risk species management program (SMP) that covers species protected under the *Nature Conservation Act 1992* (Qld), including the cascade tree frog and platypus, is in place for the Exploratory Works. Noting that to date the cascade tree frog has not been recorded from the Exploratory Works survey area despite the presence of suitable habitat, while platypus have been confirmed as inhabiting Yabba Creek (upstream and downstream of the. Dam wall), Sandy Creek and Kingaham Creek.

In addition, management plans prepared for the Works Regulation under the *State Development and Public Works Organisation Act 1971* for the Exploratory Works also include measures to avoid, mitigate and manage potential impacts to MSES. These management plans must be prepared to the satisfaction of the Coordinator-General. A complete list of approvals required under Queensland Government legislation is included in Table 12 of the Preliminary Documentation.

It should be noted that the suite of mitigation measures developed are likely to mitigate potential impacts to both the cascade tree frog and platypus.

3.3.3 National parks

Summary of comments
Number of submissions referencing theme: 9

Several comments stated that the Borumba PHES Project area includes the Conondale National Park and borders the Wrattens National Park.

Other comments pointed out that the Preliminary Documentation did not explain that the tenure of small areas of the Conondale National Park were changed to facilitate the Exploratory Works.

Public comments also sought clarity around the location of exclusion and no-go zones and how they relate to national parks and other tenures.

The following public comments are representative examples of this theme:

- *"The area includes both Conondale and Wratten's National Parks (and a number of outliers of each)."*
- *"…there is no mention of the fact that parts of a National Park were revoked for the geotechnical studies (Exploratory Works). Sections of the Conondale National Park were excised out to gain the right to access for the Exploratory Works of the lower dam reservoir west wall and subsurface infrastructure installed for the tunnels and waterways."*
- *"Figure 49b…(n)eeds some annotation and text to understand why the "No Go Zones" boundaries are where they are shown on the map… National Park? State Forest? Private land?"*

Response to comments

3.3.3.1 Location of the Exploratory Works in relation to national parks

Figure 26 from the Preliminary Documentation shows the location of Exploratory Works areas in relation to Conondale National Park and Conondale Resources Reserves. The Exploratory Works are neither within Conondale National Park nor Wrattens National Park.

3.3.3.2 Conondale Resources Reserves

The Queensland Government revoked a section of Conondale National Park in 2022, with the area then dedicated as part of Conondale Resources Reserve. The revocation was to facilitate the assessment of proposed geotechnical investigations on areas that are associated with the Borumba PHES Project.

The Exploratory Works program has minimised works in the Conondale Resources Reserve areas to avoid and minimise potential impacts to the reserve and on the MNES that utilise these areas as far as possible.

The Queensland Government Department of the Environment, Science and Innovation approved Queensland Hydro to undertake geotechnical investigation works on Lot 3 on AP23628 in the Conondale Resources Reserve (Authority ID P-S34-100682142). Conditions attached to the approval under the *Nature Conservation Act 1992* to undertake exploratory works in the Conondale Resources Reserve require Queensland Hydro rehabilitate the 'authority area' and the adjoining land (as the case may be) by completing works in accordance with the Project's Rehabilitation Plan. The Rehabilitation Plan must be approved by the Chief Executive of the department before works begin on the lot.

A second authority will be required to allow for recent changes to the Exploratory Works program (refer to Section 1.3 of this document), specifically geotechnical works within the Conondale Resources Reserve on Lot 6 on AP23765.

3.3.3.3 Exclusion zones and national parks

Exclusion zones and buffer zones will be established as part of the Exploratory Works, with exclusion zones being areas where no clearing will occur and buffer zones being areas where clearing is to be minimised as much as possible or preferably avoided.

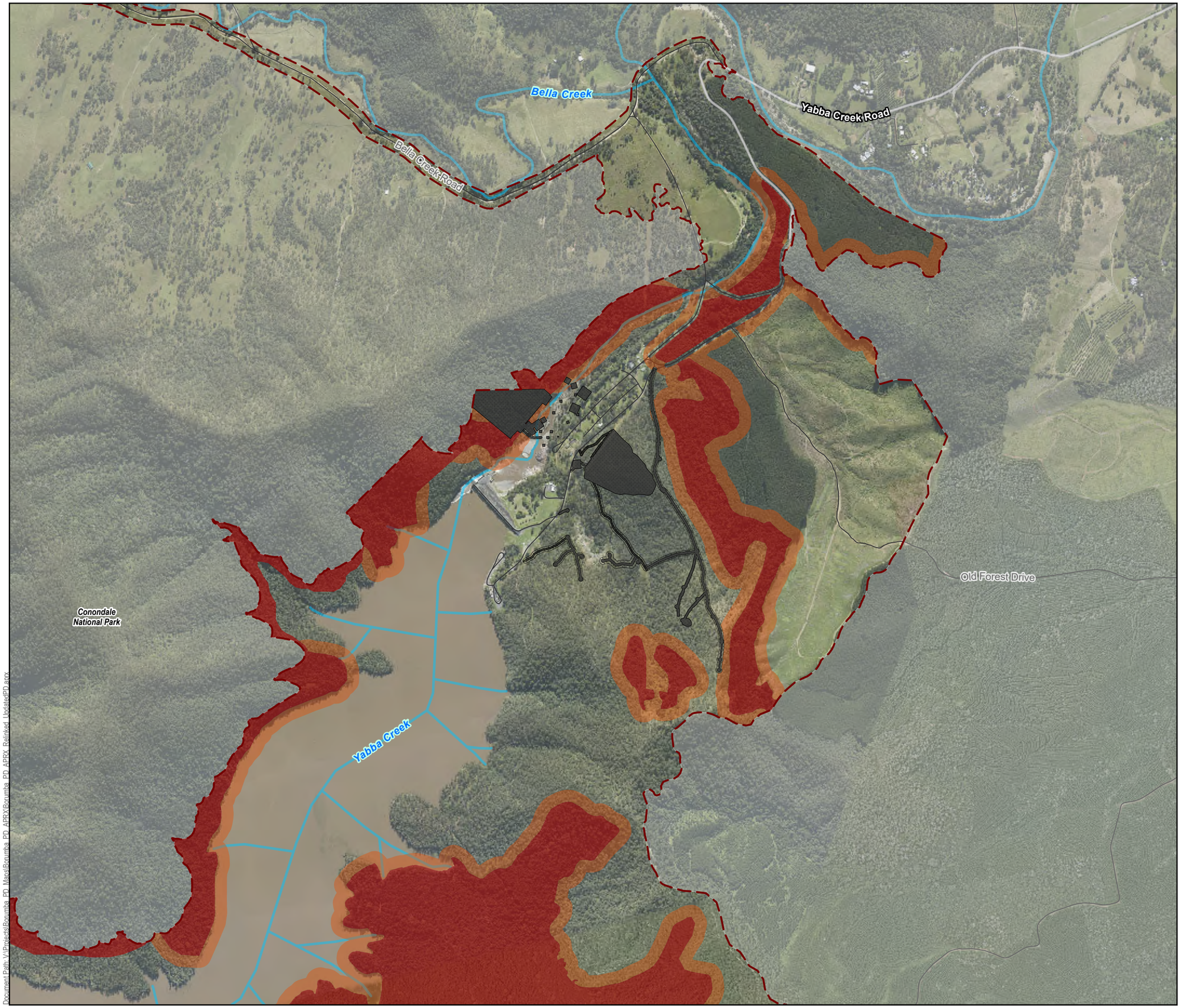
Exclusion zones include national park, Conondale Resources Reserve lots where no works are proposed, and areas with specific values such as TECs, known populations of native guava and *Coleus torrenticola,* and their 'known' habitat (as defined in Appendix E of the Preliminary Documentation).

Buffers zones are based on the TEC buffer zones and known populations of scrub turpentine and brush sophora, and their 'known habitat' (refer to Section 6.2.3 of the Preliminary Documentation). Figure 14 (below) and Figure 49 in the Preliminary Documentation show the exclusion zones and buffer zones in and around the Project area.

Other restricted areas, including exclusion and buffer zones, may also be established during the Exploratory Works in response to the outcomes of on-going site assessments and pre-clearance surveys. In addition to the protection of the environmental values associated with exclusion and buffer zones, restricted areas may also be established to protect or prevent the disturbance of culturally sensitive areas, existing contamination from past activities, areas beyond the limit of clearing, or other matters, and to support mitigation measures outlined in the FFMP.

Mitigation measures outlined in the FFMP that will be supported by restricted areas will include:

- In accordance with the legislation, any tree in which a koala is present, or has a crown overlapping a tree where a koala is present, is not cleared until the koala is confirmed to have moved out of the clearing area.
- Appropriate habitat links are maintained within the clearing site and between the site and its adjacent areas, to allow animals living on the site to move out of the site.
- Procedures will be put in place to ensure impacts are minimised through retention of hollow-bearing trees or nesting places for another 24-48 hours while adjacent trees are cleared. This will provide opportunity for species to vacate the area overnight. Where physically practical, the FSC will check trees to ensure the animals have vacated.
- Relocated nests, hollows and breeding places will be recorded and if required an exclusion or buffer zone established.



Queensland Hydro

GDA2020 MGA Zone 56

0 200 400 m

1:15,000 (when printed @ A3)

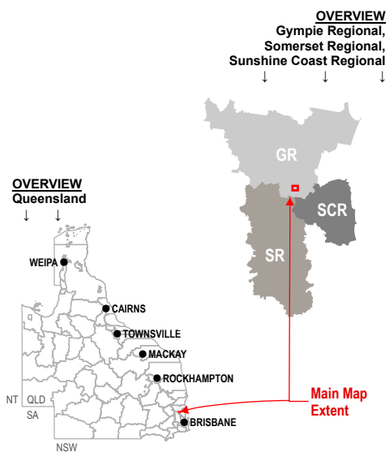
LEGEND

- Watercourses
- Local Roads
- State Controlled Roads

Exploratory Works Project

- Project Footprint
- Project Area
- Borumba PHES Survey Area
- Exclusion Zones
- Buffer Zones
- Beyond Borumba PHES Survey Area

Note: This figure shows exclusion and buffer zones for the Exploratory Works Project only. These zones are not relevant the Main Works Project.



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2. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
3. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
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Exploratory Works Project
Preliminary Documentation

EXCLUSION AND BUFFER ZONES (AREA 1 - BORUMBA DAM)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 24/09/2025
REVISION:	B

FIGURE 14a

Document Path: V:\Projects\Borumba_PD_Maps\Borumba_PD_APRX\Borumba_PD_APRX_Relinked_UpdatedPD.aprx

Queensland Hydro

GDA2020 MGA Zone 56

0 200 400 m

1:15,000 (when printed @ A3)

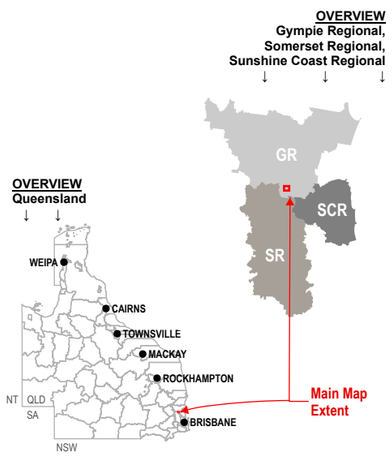
LEGEND

- Watercourses
- Local Roads

Exploratory Works Project

- Project Footprint
- Project Area
- Borumba PHES Survey Area
- Exclusion Zones
- Exclusion Zone (Offset Area)
- Buffer Zones
- Beyond Borumba PHES Survey Area

Note: This figure shows exclusion and buffer zones for the Exploratory Works Project only. These zones are not relevant the Main Works Project.



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Exploratory Works Project
Preliminary Documentation

EXCLUSION AND BUFFER ZONES (AREA 2 - KINGAHAM CREEK)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 24/09/2025
REVISION:	F

FIGURE 14b

Document Path: V:\Projects\Borumba_PD_Mapsi\Borumba_PD_APRX\Borumba_PD_APRX_Relinked_UpdatedPD.aprx

Bella Creek Road

Borgan Road

Yabba Creek

Sandy Creek

Borgan Road

Walkers Top Road

Conondale National Park

Offset Area A

Walkers Top Road

Queensland Hydro

GDA2020 MGA Zone 56

N

0 300 600 m

1:23,000 (when printed @ A3)

LEGEND

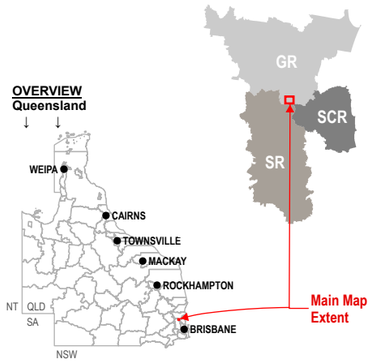
- Watercourses
- Local Roads

Exploratory Works Project

- Project Footprint
- Project Area
- Borumba PHES Survey Area
- Exclusion Zones
- Exclusion Zone (Offset Area)
- Buffer Zones
- Beyond Borumba PHES Survey Area

Note: This figure shows exclusion and buffer zones for the Exploratory Works Project only. These zones are not relevant the Main Works Project.

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



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Exploratory Works Project
Preliminary Documentation

EXCLUSION AND BUFFER ZONES (AREA 3 - WALKERS TOP AND AREA 4 - BORGAN)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 24/09/2025
REVISION:	F

FIGURE 14c

Document Path: V:\Projects\Borumba PD_Maps\Borumba PD_APRX\Borumba PD_APRX Relinked_Updated\PD.aprx

3.4 MNES

3.4.1 Lowland Rainforest of Subtropical Australia threatened ecological community

Summary of comments

Number of submissions referencing theme: 3

Comments noted that the Project could significantly impact the Lowland Rainforest of Subtropical Australia TEC. Key concerns raised in the comments included:

- direct clearing of remnant rainforest, and indirect impacts from edge effects and fragmentation that would further erode ecological integrity
- upslope gully erosion disrupting sensitive rainforest processes
- heightened risk of weed invasion leading to shifts in species composition.

The following public comments are representative examples of this theme:

- *"The risk assessment clearly identifies that the TECs have minimal weed threat at present, by only identifying lantana, corky passion vine and noogurra burr as weed threats. These weeds are relatively easily controlled compared to Sub Tropical Lowland Rainforest (STLR) transformer weeds such as Cat's claw vine and Madeira vine."*
- *"Table 38 Assessment of potential impacts and mitigation options for Lowland Rainforest of Subtropical Australia TEC Changes to habitat quality as a result of erosion and sedimentation"*

Response to comments

Queensland Hydro has aimed to avoid patches of Lowland Rainforest TEC during the development of the Exploratory Works, having relocated the portal and geotechnical investigations from known patches of TEC into other areas (refer to Section 6.1 of the Preliminary Documentation). It is however acknowledged that a patch of Lowland Rainforest TEC will be directly impacted as a result of the geotechnical investigations planned for Area 1, with the impact to be offset.

3.4.1.1 Direct and indirect impacts changing ecological integrity

The importance of protecting and restoring Lowland Rainforest TEC, particularly within riparian corridors, is well understood and reflected in the management approach outlined in the FFMP for the Project (Appendix J of the CEMP, which is Appendix F of the Preliminary Documentation). The Project recognises the vulnerability of rainforest patches to weed invasion and fragmentation, especially where edges are exposed by construction activities. To address this, clearing has been minimised to the smallest practical footprint, and extensive exclusion zones have been established to protect the Lowland Rainforest TEC where it is adjacent to the Exploratory Works. The CEMP and FFMP form part of the environmental management framework for the Project, and require regular weed surveillance, early intervention, and targeted control measures to prevent weed establishment and spread. To ensure that, post works, areas are not left in a state that would result in environmental harm, a Decommissioning and Rehabilitation Strategy (Appendix C of the Preliminary Documentation) has been developed for the Project. The overarching long-term objective of the strategy is to re-instate native vegetation in all temporarily disturbed areas.

Direct impacts to TEC for the Project are confined to works on Lot 3 on AP23628 in the Conondale Resources Reserve, The Queensland Government Department of the Environment, Science and Innovation approved Queensland Hydro to undertake works in this area (Authority ID P-S34-100682142) with conditions attached to the approval requiring rehabilitation of the 'authority area' and the adjoining land (as the case may be) in accordance with an approved Rehabilitation Plan (refer to Section 3.3.3.2 of this report for more detail).

Queensland Hydro acknowledges that genuine rehabilitation of complex rainforest ecosystems is a long-term process and is committed to ongoing monitoring and adaptive management to support the resilience and recovery of these areas.

3.4.1.2 Upslope gully erosion

The dispersal of soil from upslope gully erosion into areas of the TEC that are outside the Project footprint is not expected when appropriate management measures are implemented. As described in the PESCP (Appendix G of the CEMP, which is Appendix F of the Preliminary Documentation), erosion and sediment control measures will be implemented for all Exploratory Works work areas (likely on a sub-catchment basis) in accordance with IECA guidelines. If impacts do occur outside the Project footprint due to upslope erosion, these are likely to be localised in nature and will be mitigated through the adaptive management measures outlined in the CEMP. As such, erosion is unlikely to extend into or cause material additional disturbance to areas supporting the TEC. Impacts to TEC patches outside the Project footprint have not been included in the significant impact assessment on the basis that any impacts would be minor, localised, and subject to active on-site management.

3.4.1.3 Weed invasion changing species composition in the TEC

A known threatening process to this TEC is invasive species including the weed species identified in the relevant submissions. Habitat quality assessments have considered this matter.

For all activities within 50 m of each TEC patch, weeds (including cat's claw and Madeira vine) will be actively monitored and managed.

In the significant impact assessment for the TEC, the assessment of "substantial" (i.e. 'cause a substantial change in the species composition' or 'cause a substantial reduction in the quality') is assessed in accordance with the Significant Impact Guidelines 1.1 (Department of the Environment, 2013). While a strict numerical threshold is not provided in the Significant Impact Guidelines 1.1 (Department of the Environment, 2013), the Preliminary Documentation evaluates whether changes in composition would be ecologically significant enough to alter the function or survival of Lowland Rainforest TEC patches or result in changes to the community such that the community would no longer meet the key diagnostic characteristics of the TEC. As noted in Table 39 of the Preliminary Documentation, the assessment concludes that impacts are "unlikely" to meet the 'substantial' threshold. While edge effects have the potential to alter species composition along the edge of the TEC (including edges created by the Project), these impacts are not anticipated to be sufficient to alter the species composition of the entire TEC, as the density of weeds along the edge of the TEC would not alter composition, structure, or function of the broader TEC community nor would they be of a density that would lower the condition class of the TEC.

3.4.2 Australian lungfish

Summary of comments

Number of submissions referencing theme: 15

The public comments highlighted the potential for the Exploratory Works to adversely affect the Australian lungfish (*Neoceratodus forsteri*). Comments pointed to possible disruption of critical spawning habitat, the creation of barriers that could impede movement and gene flow, and shortcomings in the depth of the impact assessment undertaken to date. Submitters emphasised the need for effective fish-passage infrastructure and aquatic offsets and noted that cumulative water quality pressures may further impact the species.

The following public comments are representative examples of this theme:

- *"Aquatic species like the Mary River cod, Mary River turtle, and Australian lungfish are particularly vulnerable to changes in water quality and flow. These species are unique to the region and depend on clean, slow-moving rivers and undisturbed habitats for breeding and feeding. Increased sedimentation from soil relocation, runoff from heavy machinery, and water pollution threaten these species by degrading their spawning grounds, reducing oxygen levels, and introducing toxins."*
- *"The Site Environmental Plan (SEP) for Area 1 (Borumba Dam) must detail site specific constraints and key environmental management measures that minimise all potential interactions with lungfish, Mary River turtles and Mary River cod during the construction, operational and decommissioning phase of the Exploratory works. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the SEP. Details of the Erosion and Sediment Control Plan are also required for assessment during the Exploratory Works phase to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream."*

Response to comments

3.4.2.1 Impacts to water quality

Impacts to water quality are discussed in Section 3.5.3 of this report.

A detailed Erosion and Sediment Control Plan (ESCP) cannot be developed at this stage of the Project as detailed project design has not been finalised and will depend on various factors including construction methods, final site layout, phasing and scheduling. A Preliminary ESCP (PESCP) has been developed to establish the expectations for the standards that will apply to the Exploratory Works and will be the basis for a detailed ESCP. A detailed ESCP for the Exploratory Works will be prepared in accordance with IECA best practice to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream. The detailed ESCP may cover all works, or multiple detailed ESCPs may be prepared for distinct work areas.

Potential leachate-laden water from the spoil disposal area will be captured and managed in accordance with the Spoil Management Plan, which is included in Appendix H of the CEMP (Appendix F of the Preliminary Documentation), and the mitigation measures identified in the Preliminary Documentation, which includes a geotextile liner placed at the spoil disposal area to prevent seepage of leachate into any groundwater. Refer to Section 3.5.3 of this report for more information on the mitigation measures relevant to the spoil disposal area.

3.4.2.2 Management Plans

Queensland Hydro recognises that aspects of Australian lungfish ecology—particularly juvenile foraging and sheltering requirements—are not fully understood but has assessed the Exploratory Works as being unlikely to significantly reduce available habitat overall. The Preliminary Documentation and associated management plans, including the CEMP and the FFMP (Appendix F of the Preliminary Documentation), sets out precautionary measures to protect Australian lungfish across all life stages. These include pre-construction surveys in potential breeding or foraging habitat, installation of silt curtains or other sediment controls, and rapid incident-response protocols if Australian lungfish are observed. While this approach cannot fully eliminate uncertainties around juvenile habitat—acknowledged as a broader knowledge gap in lungfish research – it does include flexible monitoring and adaptive management that allow Queensland Hydro to adjust if new data on juvenile Australian lungfish needs or habitat use emerges during the Project.

A Site Environmental Plan (SEP) for all areas of the Exploratory Works Project. For Area 1 (Borumba Dam) the SEP will provide additional details on the site-specific constraints and key environmental management measures to minimise all potential interactions with Australian lungfish during the Exploratory Works.

The SEP for each area will include the management of all potential impacts to threatened species from the proposed works, including any waterway crossings and bridge construction.

3.4.2.3 Impacts to potential habitat

The critical importance of potential breeding habitat for Australian lungfish in Yabba Creek is understood and Queensland Hydro recognises the value of maintaining healthy riverine habitats to support viable lungfish populations, particularly areas with dense macrophyte beds that provide essential spawning habitat. Whilst the mapping of macrophyte beds has not been undertaken, the spawning/foraging habitat for the species mapped in the Preliminary Documentation (provided in Appendix E of the Preliminary Documentation) is based on a requirement for the presence of aquatic plants. As such, the spawning/foraging mapping can be seen as a proxy for the mapping of aquatic plants.

The Exploratory Works have been designed to avoid direct disturbance to aquatic habitats wherever possible. While the assessment of impact centres on the relatively small, localised in-stream disturbance associated with bed-level creek crossings and short-term water quality risks (e.g., increased turbidity) near the work areas, a conservative approach has been taken to management measures. As noted in Section 3.4.2.2, the CEMP and FFMP appended to the CEMP (Appendix F of the Preliminary Documentation), set out precautionary measures to protect Australian lungfish across all life stages and minimise impacts to all waterways.

In Area 4 (Borgan) and Area 2 (Kingaham Creek), particular care is being taken to manage erosion and sedimentation, and protect water quality and riparian vegetation, through the use of diversion channels and sediment basins. Detailed sediment and erosion control measures proposed to prevent the release of spoil or leachate into waterways, including:

- segregating material for contamination testing, and appropriate treatment before being placed in the stockpiles or disposed of at a suitable facility
- lining spoil areas with a geogrid layer
- locating the spoil areas above the above the 1% AEP flood area
- adhering to IECA best practice for erosion and sediment controls and having these certified by an appropriately qualified Certified Professional in Erosion and Sediment Control.

To reduce water quality impacts and further reduce potential interaction with aquatic species, Queensland Hydro have amended the design of temporary bed level crossings required to support the construction of temporary bridges. Queensland Hydro is now proposing to install appropriately designed temporary culverts, which consider flow velocities and aquatic fauna passage (refer to Photo 2), on the alignment of the existing crossings for the duration of bridge construction. After bridge construction, the temporary culverts will be removed and concrete bed level crossings installed. The proposed temporary culverts and concrete bed level crossings will comply with fish passage requirements under the Queensland *Fisheries Act 1994*.

The timing of the construction of bed-level stream crossings in Areas 1 and 4 has been carefully considered to avoid impacts to threatened aquatic species during critical breeding and nesting periods. As detailed in the Exploratory Works Preliminary Documentation, in-stream works will be scheduled for the dry season wherever practical, typically between May and August, which falls outside the spring to early summer spawning and nesting periods for Australian lungfish. This timing minimises risks to aquatic fauna and reduces the likelihood of adverse impacts from high-flow storm events. These measures, along with specific sediment and erosion control strategies outlined in the Project's CEMP, will protect water quality and downstream ecosystems.

Section 7.3.1 of the Preliminary Documentation has been updated to address the potential impacts of the new bed level crossing designs on the Australian lungfish. The assessment found that there is no significant impact on the species.

Ongoing monitoring of water quality and aquatic habitat condition will form part of the project's environmental management, ensuring that any potential impacts are rapidly identified and addressed. Queensland Hydro is committed to preserving the ecological integrity of riverine systems that support lungfish populations and acknowledges the need for continued vigilance to sustain recruitment and population viability into the future.



Photo 2: Example of a temporary piped culvert crossing design

3.4.2.4 Spawning and nesting periods

The known spawning/nesting periods of threatened aquatic species, including the Australian lungfish, is presented in Appendix L of the Hydrobiology Report and replicated below.

Table 8: Known spawning / nesting periods of aquatic MNES fauna that occur in the Borumba PHES Project survey area

Species	Common name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Neoceratodus orsteri	Australian lungfish												
Maccullochella mariensis	Mary River cod												
Elseya albagula	White-throated snapping turtle												
Ornithorhynchus anatinus	Platypus												

Source: Hydrobiology (2022)

3.4.3 Black-breasted button-quail

Summary of comments
Number of submissions referencing theme: 15

Public comments were concerned with potential impacts on the black-breasted button-quail. A primary area of concern raised was the effects of the Project on the species' habitat, particularly mature vine thicket and dry rainforest ecosystems, due to habitat destruction or degradation. Indirect impacts, such as fragmentation of habitat were the subject of some comments.

The following public comments are representative examples of this theme:

- *"Lantana removal has to be managed carefully at the margins of forested patches- removal that is too rapid destroys useful habitat for several MNES species (e.g. black breasted button quail and potoroos) before replacement understory structure is in place, and often opens up patches for invasion from much higher risk weeds such as hamil guinea grass."*
- *"The Exploratory project has a total footprint of 85.3 ha and is known or likely to impact threatened fauna such as black breasted button quail (vulnerable)"*
- *"Discrepancies were found regarding the breeding season of BBBQ in the document. The breeding season is 9 months (September to May). The document states, "To mitigate the impacts of clearing on breeding, the clearing of potential habitat will be timed to avoid the species breeding period (May June), where possible," which is incorrect.*
- *Mitigation of airborne particles includes "regular wetting down" p.344. Wetting down could eliminate platelets and therefore evidence of BBBQ presence in the area. Will Qld Hydro check areas for platelets before "wetting down" occurs?*

Response to comments

The Project recognises that dense lantana thickets can function as interim shelter and foraging habitat for black breasted button quail (*Turnix melanogaster*) and other MNES. However, both the Draft National Recovery Plan (DCCEEW, 2022) for the species and broader weed management guidelines emphasise that such cover is neither ecologically sustainable nor desirable in the long term. Consistent with these recommendations and in line with the advice provided in the submission, lantana control at forest edge margins known or likely to support the black-breasted button quail and/or the long-nosed potoroo will be minimised, with clearing in these areas using a staged approach that will aim to remove lantana over several phases to minimise impacts to suitable black breasted button quail and long-nosed potoroo habitat whilst also ensuring that the risk of other weed proliferation is effectively managed. Section 7.3.2 of the Preliminary Documentation and Table 12 in the FFMP has been updated to include this measure.

Queensland Hydro has updated the FFMP to reflect that the Conservation Advice (TSSC, 2015) for the black breasted button quail (*Turnix melanogaster*) states that the breeding season generally occurs from September to April-May.

Wetting down (being the act of spraying water from a water truck for the purposes of dust suppression) will be restricted to roads, access tracks, relevant cleared areas such as construction laydown areas, to minimise dust impacts to surrounding areas. The wetting down of vegetated areas outside of roads, access tracks, laydown areas, or other construction related areas is not proposed – this includes the wetting down of areas that may provide suitable habitat for the black breasted button quail.

Although records of this species and large tracts of habitat exist within the broader Borumba PHES Survey area, Section 7.3.2 of the Preliminary Documentation identifies that there is 0.2 ha of habitat suitable for black-breasted button-quail habitat within the Exploratory Works footprint. This area of habitat comprises three narrow, linear areas associated with access tracks in Area 3 – Walkers Top (as shown in Figure E-14 in Appendix E of the Preliminary Documentation). In the areas near this proposed disturbance, contiguous sections of potential habitat will be retained around the proposed works, which will provide similar habitat values.

Suitable habitat was previously referenced as being present near the Borumba Dam wall in Area 1 (as described in Section 7.3.2 of the Preliminary Documentation). The management plans have been updated and now do not include the Borumba Dam (Area 1) as suitable habitat for the species.

3.4.4 Giant barred frog

Summary of comments

Number of submissions referencing theme: 11

The public comments questioned whether the Project adequately safeguards the giant barred frog, emphasising three main issues:

- the appropriateness of the risk ratings assigned to the species
- the potential for hydrological barriers and associated habitat loss to restrict movement and breeding
- the combined threats posed by altered water quality and heightened disease transmission.

The following public comments are representative examples of this theme:

- *On page 4 (Relevant MNES section) the list of MNES does not include the endangered Giant barred frog as a potential species impacted by WQ contamination from the project. Given this species spends a part of its lifecycle instream, and habitat exists in the project area, impacts from WQ contamination on this species and potentially the Cascade treefrog should be considered.*
- *Assess the potential external impacts to the Giant barred frog from increased human, vehicle and threats eg. potentially increased pig threat due to more human disturbance, and chytrid fungus spread at higher elevations."*

Response to comments

The Preliminary Documentation assessed potential impacts to the giant barred frog (*Mixophyes iteratus*) through a combination of desktop review and targeted field surveys. While no individuals were detected within the Exploratory Works Survey area, it is acknowledged that it is within the altitudinal range where the species is known to persist, and that recent records from nearby catchments such as Coonoongibber Creek suggest suitable habitat may exist in the broader landscape. Although the Exploratory Works footprint was assessed as unlikely to contain habitat critical to the survival of giant barred frog, Queensland Hydro recognises the species' sensitivity to habitat fragmentation and low dispersal ability. To mitigate risk, the Exploratory Works have been designed to minimise vegetation clearing, preserve riparian zones where possible, maintain natural hydrological patterns, and implement robust sediment, erosion, and hygiene controls to reduce the potential spread of pathogens such as chytrid fungus.

Two discrete areas of potential habitat along Yabba Creek will be impacted by temporary water infrastructure. The design has been refined to minimise disturbance and no permanent above-ground barriers to fauna movement are proposed. Following the completion of temporary works, all disturbed areas will be rehabilitated to facilitate the natural movement of fauna, including ground-dwelling species like the giant barred frog. While the creation of additional landscape corridors falls outside the scope of the Exploratory Works, the management framework aims to protect existing ecological connectivity and avoid long-term impacts on riparian and rainforest communities that support species recovery.

Queensland Hydro acknowledges the feedback regarding recent species observations and the evolving understanding of the regional distribution of giant barred frog. This information will be considered during ongoing monitoring and adaptive management throughout the Project. However, based on current survey results, habitat assessments, and the scale and nature of the proposed activities, the Exploratory Works are unlikely to result in a significant impact on the giant barred frog; therefore no environmental offsets are proposed. The Project remains committed to minimising disturbance and supporting the resilience of sensitive habitats during and after construction.

Queensland Hydro accepts that impacts to water quality are an impact pathway for the giant barred frog (refer to Section 5.3.8 of the Preliminary Documentation). Note that Section 7.3.3 of the Preliminary Documentation has been updated to address the potential impacts of the new bed level crossing designs on the giant barred frog. Risk assessment identified that, while initially a high risk, with the incorporation of mitigation measures, the post control risk rating was low. Further the significant impact assessment (which considers impacts to water quality) found that there is no significant impact on the species.

3.4.5 Glossy black-cockatoo

Summary of comments

Number of submissions referencing theme: 22

Comments on the potential impacts on the glossy black-cockatoo related to several key issues. A central issue was the species' very specific habitat requirements (i.e. casuarina trees and mature hollow-bearing eucalypts) and the perceived risk of habitat loss and fragmentation. Several comments highlighted that the area where the Borumba PHES Project is located contains critical feeding grounds and potential nesting sites for the species and that damage to this habitat may be highly significant and irreversible. Concerns about the adequacy of targeted surveys for glossy black-cockatoo species were raised in several comments.

The comments also provided recommendations for impact minimisation and mitigation. This included avoiding known habitat during design and construction, mapping and preservation of key feeding and nesting trees and implementing habitat restoration and offset programs. However, many comments strongly emphasised that offsets are not an adequate replacement for the permanent loss of critical habitat.

The following public comments are representative examples of this theme:

- *"The glossy black-cockatoo faces comparable threats* [to other terrestrial MNES]*, as it depends on specific tree species for nesting hollows and requires native casuarina trees for food. The loss of mature trees and surrounding vegetation disrupts their breeding cycles and reduces their already dwindling population. Given that glossy black-cockatoos exhibit strong site fidelity—meaning they return to the same nesting and feeding areas year after year—the destruction of these areas could permanently displace local populations, leaving them vulnerable to starvation and reproductive failure."*
- *"Glossy black cockatoos have a highly specialised diet, with a preference for individual feed trees. They nest only in very old trees with large hollows, which can take centuries to form. They are a long lived species with a slow breeding cycle."*
- *"Glossy black cockatoo populations are known from within the Conondale Ranges, and the properties that adjoin these ranges. Given the extensive prime habitat of she-oak and large eucalypt trees throughout the Conondales it could be considered an important population."*

Response to comments

For assessment purposes under the EPBC Act, "important populations" are those defined either within a species' conservation advice, recovery plan, or by applying the generic criteria outlined in the Significant Impact Guidelines 1.1 (Department of the Environment, 2013). The assessment presented in Table 79 of the Preliminary Documentation concluded that individuals recorded within the Borumba PHES Project Survey area do not constitute an "important population" for the glossy black-cockatoo under the EPBC Act, as they did not satisfy the relevant criteria.

Surveys for the glossy black-cockatoo utilised standard and appropriate methods; this included daytime (diurnal) bird surveys based on visual and acoustic detections, as well as active searches for feeding evidence (orts) in areas where *Allocasuarina* species were present in the canopy, sub-canopy, and understorey. Bioacoustics devices were also deployed across the landscape and across multigenerational years, with these devices analysed for cockatoo calls. No active hollows or feed trees have been identified within the Project footprint or within 50 m of the footprint.

However, suitable habitat which is based on the presence of key habitat features requires for the species is present, refer to Figure E-16 of Appendix E of the Preliminary Documentation. The impact assessment is informed by this habitat mapping.

The design of the Exploratory Works has been refined to minimise the clearing footprint as much as possible, with a strong emphasis on avoiding mature hollow-bearing trees wherever feasible. Strict no-go zones have been established to protect sensitive vegetation communities and critical habitat features that are not within the Project footprint. The Project has also included an allowance for micro-siting of Exploratory Works activities, which will aim to identify and avoid – where possible – trees and limbs with hollows and feed trees. Where the removal of habitat is unavoidable, additional measures such as pre-clearing surveys, fauna spotters, and staged clearing will be employed to reduce risks to wildlife.

Measures to mitigate the loss of tree hollows, which are critical nesting resources for hollow-dependent fauna, are outlined in the tree hollow replacement strategy (Appendix D of the FFMP, which is within Appendix F of the Preliminary Documentation). The monitoring, maintenance, and reporting requirements for replacement hollows are detailed in Section D-4-1 of the FFMP, ensuring that hollow availability is maintained and that replacement efforts are subject to ongoing oversight. The tree hollow replacement strategy identifies the strategic placement of nest boxes (artificial hollows) and includes the use of nest box options as recommended by Glossy Black Cockatoo Conservation Sunshine Coast, which includes a PVC pipe nest box similar to the branded “cockatubes”. However, the strategy has also been updated to include the option to use ‘cockatubes’. Monitoring of both natural and artificial hollows will be undertaken, drawing on established frameworks such as those outlined in the Habitat Survey for Bushfire Recovery for Wildlife and Habitat Community Grants Program (Croft, 2020) to guide effective placement and maintenance.

Environmental offsets have been provided for residual significant impacts to glossy black-cockatoo habitat; however, there has been a focus on avoidance and minimisation as a first priority. Any offsetting required under the EPBC Act has been designed to achieve long-term conservation outcomes, including the protection and enhancement of existing high-value habitats, rather than relying solely on new plantings. The Project’s broader environmental management framework also includes measures to control invasive species, manage edge effects, and support the resilience of adjacent ecosystems to reduce the risk of cascading biodiversity loss. The protection of critical habitat for species already under pressure remains a central consideration in all aspects of project planning and delivery.

Queensland Hydro acknowledges the recommendations regarding the strategic placement of artificial hollows based on an understanding of natural hollow availability; however, a dedicated study of natural nest hollow abundance and distribution will not be undertaken as part of the Exploratory Works. Instead, mitigation measures will focus on the identification and recording of hollow-bearing trees during pre-clearance surveys and the strategic installation and monitoring of artificial hollows to maintain available nesting resources.

3.4.6 Greater glider

Summary of comments
Number of submissions referencing theme: 24

Public comments indicated that the Project may pose unacceptable risks to the greater glider, citing three principal issues:

- the scale of habitat loss predicted
- the likelihood that resulting fragmentation and edge effects would further degrade remaining forest
- the view that the significance ratings applied to these impacts are unduly low.

The following public comments are representative examples of this theme:

- *"As identified on p.369 this location is prime habitat for the species and there will be 33.9 ha of habitat clearing, coupled with much increased traffic and human interaction causing fragmentation which could propel species decline to the point of local extinction. We note on p.371 that tracks and disturbance will "only" be 6m wide. However the presence of vehicles, machinery, humans, light and noise (at various decibels) will likely cause broader fragmentation (indirect fragmentation) and unnatural 'dispersal' of the species to retreat from these previously high quality habitats."*
- *"Confirmed endangered species inhabiting the exploratory site include Koalas, Glossy Black-cockatoos, Greater Gliders, Northern Long-nosed Potoroos, White-throated Needletails, and Yellow-bellied Gliders. Given these considerations, our unique habitat and threatened wildlife are too valuable to gamble on the Borumba Pumped Hydro project. I urge that the exploratory works be rejected and that the project be halted altogether."*

Response to comments

Queensland Hydro recognises the difficulty in detecting hollows (visually from the ground) and therefore the CEMP and FFMP have been updated to require the soft felling (slow drop) of all trees with a DBH >30 cm. If a greater glider is located within a hollow, and if the animal can be safely removed, the fauna spotter/catcher (FSC) will obtain the animal in a safe and ethical manner and retain in a crate in a cool, quiet location until dusk when it will be released into suitable habitat. Hollows acquired will be inspected by a suitably qualified person for integrity and dimensions, salvaged and installed on suitable trees in accordance with Offset Area Management Plan and the hollow replacement strategy in Appendix D of the FFMP. Due to the time between tree/hollow felling and re-mounting hollows in suitable trees, hollows are unlikely to be re-mounted on the same day. Any hollow suitable for remounting will be re-mounted as soon as practical in accordance with Offset Area Management Plan and the hollow replacement strategy. Any wildlife captured is unlikely to be replaced in the same hollow due to the time between the tree felling and the mounting of the hollow; however, where this is possible, it will be undertaken.

The Preliminary Documentation and CEMP both identify bushfire risk as a potential threat to habitat for greater gliders and require specific measures to mitigate that risk. The bushfire management section of the CEMP addresses the need for on-site fire mitigation strategies and, during the bushfire season, the fire danger status will be monitored daily through the Rural Fire Service website.

The Preliminary Documentation acknowledges that approximately 35 ha of greater glider habitat is anticipated to be cleared across various work areas and states that some hollow-bearing trees cannot be completely avoided. The Preliminary Documentation also explains that each proposed road, track, and pipeline corridor will be 'micro-sited' to minimise vegetation removal, avoid large habitat trees where practicable, and reduce further fragmentation.

The Exploratory Works Project generally comprises narrow linear clearing (access tracks are no wider than 6 m). In areas of suitable habitat for the greater glider, the width of clearing in greater glider habitat is therefore unlikely to exceed the mean gliding distances of the species (typically up to 1.2 times the height of the adjacent canopy (Taylor, 2009)) and present a barrier to glider movement/dispersal. Impacts from noise and lighting are likely to be low risk given the isolated and temporary nature of the works. As such indirect impacts from the Project are unlikely to cause individuals to retreat from habitat areas, with no evidence that this has occurred due to the works onsite to date.

If required, gliders will be handled and relocated in accordance with relevant Codes, along with the relevant management plans and the approved high-risk species management program. The preference will be for the species to naturally disperse as a result of the clearing methods being adopted (e.g. sequential clearing). However, where individuals and the hollow (where applicable) need to be relocated as a result of the Project, if it is safe to do so, they will be moved to suitable habitat directly adjacent to the Project footprint (i.e. within the species home range) under the supervision of a suitability qualified person and/or FSC.

The CEMP requires:

- specific micro-siting checks to retain hollow-bearing trees wherever feasible
- a qualified FSC to supervise all clearing, ensuring hollows are salvaged and, if practical, relocated
- mitigation measures such as restricting clearing footprints, minimising canopy separation, and maintaining buffers around the largest habitat trees
- a bushfire management approach aimed at preserving remaining habitat and mitigating disturbance.

With respect to glider hollows, the Preliminary Documentation and FFMP acknowledges that artificial hollows must be installed and managed properly (including the timing and orientation of carved hollows) to mitigate excessive heat build-up. Furthermore, the Preliminary Documentation commits to offsetting unavoidable impacts by securing and improving suitable greater glider habitat, thereby maintaining a viable local population in the long term.

3.4.7 Koala

Summary of comments
Number of submissions referencing them: 28

Comments were concerned about the impacts of the Project on koalas. Many public comments expressed strong concerns about the anticipated extent and scale of habitat disturbance and fragmentation. In addition to habitat impacts, comments also referred to direct and indirect impacts to local koala individuals and populations due to noise, vibration, clearing, and increased vehicle traffic in the Project area. There was dissatisfaction expressed for the adequacy of proposed mitigation measures and calls for the use of more advanced detection methods (e.g. the use of thermal drones to survey for the species). There were also several comments regarding cumulative impacts specifically applying to koala.

The following public comments are representative examples of this theme:

- *"Koalas (Phascolarctos cinereus) – Borumba is part of one of the last strongholds for Queensland's koalas, which are under increasing threat due to habitat destruction and fragmentation (Queensland Government, 2023)."*
- *"Land clearing is one of the most damaging activities associated with industrial projects. The proposed works will require removing vast stretches of native vegetation, leading to:*
  - *Irreversible loss of habitat for koalas (Phascolarctos cinereus), greater gliders (Petauroides volans), and spotted-tailed quolls (Dasyurus maculatus), among other species...*
  - *Fragmentation of wildlife corridors, preventing species from safely migrating between feeding and breeding grounds...".*

Response to comments

3.4.7.1 Habitat

Section 7.3.7 of the Preliminary Documentation acknowledges that the Project is located within koala habitat and that the broader area surrounding the Exploratory Works is likely to play a role in maintaining habitat connectivity between major conservation areas. Queensland Hydro recognises the importance of maintaining landscape connectivity to support koala gene flow and long-term population resilience.

3.4.7.2 Survey methods

Section 4.1.1.2 and Table M-2 of Appendix M of the Preliminary Documentation include details of survey methods used to detect koala presence and koala habitat during the ecology field survey program for the Exploratory Works. The methods used were in accordance with Commonwealth survey guidelines and documentation and included habitat assessments, koala spot assessment technique, active diurnal searches, spotlighting surveys, call playback, bioacoustics surveys, camera trapping, and thermal drones and detection dogs. The methods employed during the ecology field survey program were consistent with state and Commonwealth expectations and survey guidelines.

It is unlikely that additional survey would increase the extent of mapped habitat identified for this species with a conservative approach to mapping adopted based on habitat features rather than the presence of koalas. The habitat mapping informed the Project design and the significant impact assessment for the species. Additional surveys for koalas (including thermal drone surveys) have been undertaken to support the Main Works since the completion of the survey program for the Exploratory Works; however, the results from these surveys were not available when the Exploratory Works documentation was published, with this data to be included in the assessment documentation prepared for the Main Works.

The FFMP (within Appendix F of the Preliminary Documentation) has been updated to include the use of drones in pre-clearance surveys to identify koala (and greater glider) individuals prior to clearing works. The use of detection dogs in pre-clearing surveys will be explored and, if viable and practical, will be implemented. However, it is noted that detection dogs are primarily used to detect scat, rather than individuals and thermal drone surveys are likely to be a more effective and practical method for the purposes of detecting arboreal fauna during pre-clearing surveys.

3.4.7.3 Impact mitigation

As part of designing the Exploratory Works footprint, disturbance to koala habitat has been minimised as much as practicable, with no-go zones established to protect habitat and movement corridors (see Section 7.3.7 of the Preliminary Documentation and Section 6.1 of the FFMP). While some clearing and temporary human activity will occur, strict mitigation measures, including pre-clearance fauna surveys, phased clearing under fauna spotter-catcher supervision, and post-construction rehabilitation, have been incorporated to reduce direct and indirect impacts on koalas.

Impacts to koalas during clearing will be managed in accordance with relevant legislation and policies, including:

- Clearing of vegetation must be undertaken in a manner that allows fauna to move out of the clearing area of their own accord.
- Where a clearing area is less than three hectares, a qualified ecologist and a licensed FSC will ensure that:
  - clearing will be undertaken in a staged manner which ensures fauna are provided enough time to move out of the site without human intervention
  - any tree in which a koala is present or has a crown overlapping a tree where a koala is present, is not cleared until the koala is confirmed to have moved out of the clearing area
  - appropriate habitat links are maintained within the clearing site and between the site and its adjacent areas, to allow animals living on the site to move out of the site.
- If the clearing area is greater than 3 ha the following will be undertaken:
  - clearing will be carried out in stages
  - if less than 6 ha, no more than 50% of the area will be cleared in one stage
  - if more than 6 ha, no more than 3 ha or 3% of the area (whichever is the greater) will be cleared in one stage
  - between each stage and the next there is at least one period of 12 hours (starting at 6pm on a day and ending at 6am on the following day) during which no trees are cleared on the site
  - while the clearing is being undertaken, the clearing must be carried out in a way that ensures appropriate habitat links are maintained within the area being cleared and the adjacent area to ensure any animals occupying the site can safely move off of the site
  - any tree in which a koala is present or has a crown overlapping a tree where a koala is present, is not cleared until the koala is confirmed to have moved out of the clearing area.
- Only sick or injured koalas will be moved as the process of relocation is stressful and can cause the koala to become sick.

The potential impacts of noise, vibration, and human presence have also been considered, with measures to limit disturbance outside of necessary working areas (see Section 3.5.3 of this report for more detail) and to manage vehicle speeds to reduce collision risks. The impact of additional vehicle movement within the Project area is considered in Sections 5.2.2 and 5.3.3 of the Preliminary Documentation and in the FFMP. A range of measures have been developed to mitigate vehicle threats, including limiting vehicle speeds. Although the Exploratory Works is limited in scale and duration, Queensland Hydro remains committed to minimising disturbance to koalas and supporting the ecological function of the surrounding landscape throughout the project lifecycle.

Establishing formal agreements with volunteer wildlife groups, while desirable, is not a regulatory requirement and must be balanced against the broader Project context and the availability of trained personnel in the region. Nonetheless, Queensland Hydro will ensure that injured fauna (including koalas) are triaged appropriately and, where necessary, transported to established wildlife hospitals such as those at Eumundi or Beerwah. Queensland Hydro will engage with wildlife hospitals and volunteer wildlife groups and enter into agreements with them, where appropriate.

Section 5.5 of the Preliminary Documentation considers cumulative impacts regarding existing and approved developments. The assessment concludes that the potential cumulative impacts of the Exploratory Works on MNES, including the koala, are expected not to be significant at either the local or regional scale. As detailed in Section 3.1 of this report, while some public comments refer to broader infrastructure such as the Main Works and Powerlink's Transmission Connections project, which have been referred separately under the EPBC Act. If progressed, these future developments will each be subject to their own environmental impact assessments and approval processes under applicable legislation, including detailed consideration of potential cumulative impacts.

Queensland Hydro considers that the measures currently proposed, focused on minimising clearing, staged tree-felling under spotter-catcher supervision, and implementing rapid response procedures for fauna welfare, in addition to using drones in pre-clearance surveys to identify koala individuals before clearing, are sufficient to manage the limited and temporary impacts associated with the Exploratory Works. While we acknowledge the concerns raised, the Project's approach remains proportionate to the scale and temporary nature of the Exploratory Works activities, and consistent with the relevant environmental legislation and guidance.

3.4.8 Mary River cod

Summary of comments

Number of submissions referencing theme: 16

Public comments raised concerns that the Exploratory Works threaten the Mary River cod, citing four inter-related risks:

- loss or alteration of key spawning habitat
- establishment of barriers that could restrict movement and gene flow including light pollution
- a decline in water quality within affected reaches
- perception that the provisional, "temporary" characterisation of these impacts underestimates their true magnitude and duration.

The following public comments are representative examples of this theme:

- *Mary River cod (Maccullochella mariensis) – A rare and vulnerable freshwater fish found in the Mary River, susceptible to water quality degradation (Queensland Government, 2023).*
- *One of the most alarming aspects of the Borumba Pumped Hydro Exploratory Works is its potential to severely impact water systems. The region's hydrology is particularly sensitive to disruptions, and the introduction of industrial-scale excavation, chemical use, and altered water flows will create lasting damage. Key concerns include:*
  - *Sedimentation of water bodies—Cleared land will be highly susceptible to erosion, with loose soil washing into nearby creeks and rivers, reducing water quality and suffocating aquatic species such as the Mary River cod (Maccullochella mariensis) (Queensland Government, 2023).*

Response to comments

Many of the discussion points raised in Section 3.4.2 (Australian lungfish) of this report are also relevant to the Mary River cod, including impacts on water quality and potential habitat. These points have not been re-addressed in this section.

Consideration for fish passage has been included in the design of the waterway crossings to allow for the passage of fish, including Mary River cod. Fish passage requirements will be designed with reference to State requirements for waterway barrier works under the *Fisheries Act 1994*. Whilst traffic has the potential to temporarily impact fish passage of Mary River cod, this impact will not be permanent and is unlikely to completely restrict fish passage at all times of the day. Bridges have been used where practical to minimise instream works and reduce the potential for creating barriers to fish passage. Section 7.3.9 of the Preliminary Documentation assesses the potential impacts of waterway crossing designs on the Mary River cod. The assessment found that with the adoption of mitigation measures such as temporary bridges, exclusion zones and restricted areas, and micro-siting of works, there is no significant impact on the species.

Light pollution from vehicles crossing waterways is anticipated to be minor and unlikely to act as a barrier to the movement of Mary River cod. Additionally, lighting impacts will be temporary and will not permanently impact individuals or the quality of habitat.

Contamination via petroleum-based oils during vehicles crossing has been identified as a potentially minor impact to water quality and habitat quality; however, if this occurs, it is unlikely to impede fish passage or render entire sections of the waterways unsuitable for Mary River cod. Queensland Hydro acknowledges the risks associated with the construction of waterway crossings, including risks to water quality associated with spills or leaks; however, with the implementation of the suite of mitigation measures, the risks are considered to be low.

While there may be localised impacts to water and habitat quality, and the loss of a limited area of potential spawning habitat, for the purposes of assessment under the EPBC Act, the Exploratory Works were assessed as being unlikely to lead to a long-term decrease in the size of a population (Table 96 of the Preliminary Documentation).

Queensland Hydro is committed to reducing impacts to aquatic species, including the Mary Rive cod, via iterative design and adaptive management processes that incorporate the most up-to-date survey results, community feedback, and design constraints.

3.4.9 Mary River turtle

Summary of comments
Number of submissions referencing theme: 21

Public comments were concerned that the Exploratory Works could adversely affect the Mary River turtle, citing the loss of nesting banks, impacts to water quality, impacts to potential habitat, and barriers to movement. Concerns were also raised over pre-clearing surveys and rehabilitation.

The following public comments are representative examples of this theme:

- *"I have a massive concern with this project up stream of our pristine Yabba creek and Mary river. For instance if we have a major weather event dumping 1000mm of rain or even just our regular floods we have each season and the Project is in the building stage (7 years?) with large areas of stripped vegetation , you will not be able to keep back the flood water with massive amounts of Silt, Dirt, Sand, Top Soil being washed from that open ground down our Pristine Yabba creek and Mary River this will have a devastating impact on the Already fragile ECO System."*
- *"The Site Environmental Plan (SEP) for Area 1 (Borumba Dam) must detail site specific constraints and key environmental management measures that minimise all potential interactions with lungfish, Mary River turtles and Mary River cod during the construction, operational and decommissioning phase of the Exploratory works. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the SEP. Details of the Erosion and Sediment Control Plan are also required for assessment during the Exploratory Works phase to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream."*
- *"In the Survey area: Quoted from the document: "Nesting habitat for the Mary River turtle includes unconsolidated sediments, particularly alluvial sand banks, within 100m of pool habitat." Unsure about the reference to within 100m of pool habitat, while it is highly likely, unsure that there is research evidence. Predated nests have been observed on suitable sandbanks in the upper reaches and fringing habitat of Lake Borumba."*
- *"Present threats: on page 421 the document is quoted "invasive weeds including Lantana camara, passionflower, Noogoora burr, Crofton weed, and mistflower grow in riparian zones degrading habitat"; while these species are some minor concern, they rarely impact on the turtle given their nesting habitat occurs on dynamic fluvial features (sand banks) in the river system which is regularly naturally reset by low to medium streamflows. Thus this regular resetting (accretion or retreat of the sand banks) rarely allows these weed species to colonise on these banks. This is not a key threat – very minor. As identified in the Conservation Advice, and on page 420, the key threat is predation of eggs in nests by foxes. Feral cats and Dingoes have minimal impact upon the Mary River turtle. Vegetation clearing, creation of road/track networks and increased human activity are likely to increase fox populations and movement, and directly impact upon the long-term turtle population."*

Response to comments

Many of the discussion points raised in Section 3.4.2 (Australian lungfish) of this report, such as impacts to water quality, management plans, and impacts to potential habitat are applicable to the Mary River turtle and are not re-addressed in this section.

3.4.9.1 Impacts to water quality

Refer to Section 3.4.5 of this report for a detailed discussion on impacts to water quality and erosion and sediment control measures. Potential impacts to aquatic MNES fauna from water quality impacts are addressed in Section 3.4.2 (Australian lungfish) of this report.

The Site Environmental Plan (SEP) for Area 1 (Borumba Dam) will detail site specific constraints and key environmental management measures that minimise all potential interactions with threatened aquatic fauna during the Exploratory works. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing will be detailed in the SEP. Noting that the banks and instream habitat has augmented as a result of dam remediation works undertaken by Seqwater. No bridge construction is proposed in Area 1 (Borumba Dam); however, four temporary bridges are proposed in Area 4 (Borgan). As for Area 1, the SEP

for Area 4 (Borgan) will address site specific constraints and key environmental management measures that minimise all potential interactions with threatened aquatic fauna during the Exploratory works activities.

3.4.9.2 Impacts to potential habitat and barriers to movement

The Preliminary Documentation recognises the presence of potential habitat for the Mary River turtle in the Project area and outlines a range of mitigation measures aimed at managing potential risks. Mapping of suitable habitat for the species is provided in Figure E20 of Appendix E of the Preliminary Documentation, and the basis for this mapping is also provided in Appendix E. Queensland Hydro acknowledges the importance of riverine sandbanks for nesting (as indicated by the basis of mapping for nesting habitat), and accepts that factors such as increased human activity, track creation, and vegetation clearing are likely to enhance the threat posed by fox populations, a key predator of turtle nests.

Queensland Hydro has designed the Exploratory Works to avoid known nesting areas (refer to Figure E20 of Appendix E to the Preliminary Documentation) where possible and to maximise the use of existing access points across watercourses. Queensland Hydro will also undertake pre-clearance surveys (including in Yabba Creek and Sandy Creek) for turtle nesting habitat ahead of any disturbance. Fauna exclusion fencing will be installed at creek banks around key nesting reaches and turtle nesting sites. Exclusion fencing will remain in place until the turtles emerge, which can exceed 80 days depending on weather conditions, and disperse or they can be safely relocated. Fenced areas will be inspected daily for adult and hatchling turtles. Should turtle nests be found in areas at risk of disturbance, relocation by qualified and experienced freshwater turtle ecologists will be considered in accordance with best practice protocols and in consultation with DCCEEW, DETSI, Kabi Kabi, and other stakeholders (Table 12 of the FFMP).

Queensland Hydro recognises concerns regarding the construction and use of bed level crossings over an extended period, particularly during the turtle nesting season. To manage this, the crossings will be designed to maintain low profiles and allow aquatic passage, with regular monitoring and maintenance to prevent elevated crossings or excessive sediment release. To further reduce impacts to aquatic passage, potential interactions with aquatic species, and reduce water quality impacts, Queensland Hydro have amended the design of temporary bed level crossings required to support the construction of temporary bridges. Queensland Hydro is now proposing to install appropriately designed temporary culverts, which consider flow velocities and aquatic fauna passage (refer to Photo 2), on the alignment of the existing bed level crossings. After bridge construction, the temporary culverts will be removed, and concrete bed level crossings will be installed. All crossings will be constructed to comply with fish passage requirements under the Queensland *Fisheries Act 1994,* with the construction of all crossings except bridges expected to be completed in 14 days or less. Section 7.3.10 of the Preliminary Documentation addresses the potential impacts of the new bed level crossing designs on the Mary River turtle. The assessment found that there is no significant impact on the species.

Nest predation by foxes, rather than by feral cats and dingoes or weed intrusion into suitable breeding habitat, is acknowledged as the primary threat for the Mary River turtle (*Elusor macrurus*) and Section 7.3.10 of the Preliminary Documentation and the FFMP have been updated accordingly.

Queensland Hydro accepts that maintaining natural dark cycles is critical to the nocturnal behaviours of some turtles. The Project's lighting management will adhere to best practice guidelines to minimise light spill into riparian zones, minimising disruption to species sensitive to artificial light during nesting and hatching. Protecting the Mary River turtle and maintaining the integrity of its breeding habitat remains a priority throughout all phases of the Exploratory Works.

Whilst it is noted that the Mary River turtle has specific nesting habitat requirements, which may restrict suitable breeding habitat to only 1 to 2 ha within some waterways, the temporary impact to 0.1 ha of potentially suitable nesting habitat is unlikely to lead to a long term decrease in the size of a population; particularly with the inclusion of mitigation measures that will identify and avoid suitable breeding places outside the disturbance footprint. Micro-siting of infrastructure to avoid areas of higher quality habitat during construction will further minimise impacts to potentially suitable foraging and nesting habitat.

3.4.9.3 Pre-clearing surveys and turtle relocation

During the construction phase, the following measures described in the FFMP will be implemented where potential breeding places for Mary River turtle are identified during pre-clearing surveys or other works:

- A minimum of 30 m upstream and downstream of the work area will be inspected, with no bank or instream disturbance to be undertaken until a suitably qualified person has checked the banks for suitable breeding places.
- Where the suitably qualified person identifies suitable breeding places for Mary River turtle, exclusion and/or buffer zones will be established around the suitable breeding places.
- Exclusion and buffer zones will be established before works begin and will be maintained for the entire duration of the works.
- Exclusion and buffer zones will be demarcated using high visibility temporary fencing or bunting.
- Nests will be protected from predators by fixing 70-100 cm plastic or wire mesh covers with 5-10 cm grid-size over nests, which will be kept in place with turf pegs, tent pegs or something suitably similar.

Queensland Hydro does not propose to establish exclusion and buffer zones or mesh around any turtle nests that are identified outside the Project footprint, as they are unlikely to be directly impacted by the works. The detailed pre-clearing surveys are considered sufficient to identify suitable breeding places and the demarcation of these areas as exclusion and buffer zones with high visibility fencing is considered appropriate to minimise the potential of nests and potentially suitable breeding places being impacted. Queensland Hydro may install predator proof mesh on these nests in consultation with DETSI, Kabi Kabi and other stakeholders.

3.4.9.4 Rehabilitation

The rehabilitation of exposed areas will be undertaken as soon as practicable and will be guided by the Decommissioning and Rehabilitation Strategy, as well as the commitments within the CEMP and FFMP, along with relevant approval conditions. The rehabilitation will consider the inclusion of sowing a grass cover crop immediately to establish ground cover and minimise the potential for erosion in riparian habitats.

3.4.10 White-throated snapping turtle

Summary of comments
Number of submissions referencing theme: 13

Public comments identified that the Project may place the white-throated snapping turtle at risk through the loss of critical nesting habitat, elevated sediment loads and associated water quality degradation, and the creation of movement barriers between key reaches. The breeding season for the species was questioned and alignment sought with published literature.

The following public comments are representative examples:

- *"Many of the actions detailed by MRCCC for the Mary River turtle also apply for the White throated snapping turtle. Nesting season differs from the Mary River turtle as they nest in the Autumn to winter months."*
- *"Changes to habitat quality…: Same as notes as for the Mary River Turtle."*
- *"Injury and Mortality: Qld Hydro states March – August breeding season. Recovery Plan (pg 12) states May – June."*
- *"We suggest that the impact to these turtle species has been underestimated. The nesting habitat for the White throated snapping turtle seems to be broader than that of the Mary River turtle with nesting occurring on sand banks closer to the water's edge and higher on the streambank in places with heavier soil content. Predicting White throated snapping turtle nesting habitat can be difficult."*

Response to comments

The discussion regarding water quality, barriers to movement, impacts to habitat and habitat quality, timing of works, pre-clearance surveys in Section 3.4.2 (Australian lungfish), Section 3.4.8 (Mary River cod), and Section 3.4.9 (Mary River turtle) of this report are applicable to the white-throated snapping turtle. That text has not been included in this response.

The Recovery Plan for the white-throated snapping turtle identifies that the species' breeding season is from May to June (DAWE, 2020). However, the Mary River Water Plan review published in 2023 (DNRME, 2019) states that, in the Mary River catchment, partnering/mating occurs from March–May and nest building occurs from May–July. Therefore, Queensland Hydro has adopted a breeding season of March to August (inclusive), which incorporates the period identified in the recovery plan, for the purposes of minimising instream activities and the potential for impacts on nests and hatchlings.

It should be noted that the Exploratory Works comprise low-impact activities such as geotechnical drilling, upgrades to existing access tracks, new access tracks, and temporary infrastructure. These activities are being implemented solely to inform the future design and environmental assessment of the proposed Main Works and do not form part of the Main Works. The Exploratory Works do not include vegetation clearing for permanent infrastructure associated with the Main Works or inundation. Most of the instream works are in areas where there is already an existing track traversing a watercourse, with exception being three of the four bridge crossings planned as part of the Exploratory Works.

3.4.11 Yellow-bellied glider

Summary of comments

Number of submissions referencing theme: 3

Public comments raised concerns that the Project could impact the yellow-bellied glider (*Petaurus australis*) by causing extensive, irreplaceable loss of suitable forest habitat, fragmenting the remaining habitat and intensifying edge effects, and exposing individuals to heightened disturbance during critical life-history stages such as denning and breeding.

The following public comments are representative examples of this theme:

- *"I have serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders, Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site."*
- *"The acknowledgment in the Borumba Pumped Hydro Exploratory Works Preliminary Documentation that the remnant vegetation provides critical foraging, breeding, denning, nesting, sheltering, and dispersal habitat for threatened fauna, as well as the presence of threatened flora species, underscores the unacceptable risk posed by the exploratory works to these irreplaceable native species. The fact that mature trees with hollows—essential for species such as the greater glider, yellow-bellied glider, and glossy black-cockatoo—are present within the project area is particularly alarming, as these habitats take decades to centuries to form and cannot be easily replaced once destroyed."*

Response to comments

Similar to the greater glider, the Exploratory Works has been assessed as being likely to result in a significant impact on the yellow-bellied glider (*Petaurus australis*). Many of the issues raised regarding the greater glider are relevant to the yellow-bellied glider (refer to Section 3.4.6 of this report).

Queensland Hydro acknowledges the concern regarding the potential impact of the Exploratory Works on habitat for the yellow-bellied glider. This species has been recorded within the Exploratory Works Survey area and is known to rely on mature eucalypt forest containing tree hollows, sap trees, and gliding corridors for foraging, denning, and movement.

The Exploratory Works comprise mostly temporary activities, such as geotechnical drilling, and temporary supporting infrastructure, such as new and upgraded access tracks. These activities are being implemented solely to inform the future design and environmental assessment of the proposed Main Works. The Exploratory Works do not include vegetation clearing for permanent infrastructure associated with the Main Works or inundation.

To minimise potential impacts to yellow-bellied gliders, Queensland Hydro has adopted a range of avoidance and mitigation measures, as outlined in the FFMP and CEMP (refer to Appendix F of the Preliminary Documentation), including:

- pre-clearance surveys to identify habitat trees, den sites, and potential sap feed trees
- retention of hollow-bearing trees and large mature trees through micro-siting wherever practicable
- FSC attendance during any vegetation clearing to manage and safely relocate fauna, where applicable (noting that the preference is for fauna to naturally disperse to adjacent areas)
- where fauna is required to be handled and relocated, the works will be undertaken in accordance with relevant Codes

- if relocation is required, fauna will be relocated into suitable habitat and, where safe to do so, placed in areas directly adjacent the footprint (i.e. within the species likely home range to mitigate risks around such issues as carrying capacity, disease and mortality)
- timing of works to avoid key activity periods, where feasible
- post-disturbance rehabilitation of temporary disturbance areas to support long-term habitat connectivity.

The Preliminary Documentation clarifies that “sap trees” for yellow-bellied gliders (i.e., eucalypt species in which they feed) will be retained where possible.

3.5 Impact assessment

3.5.1 General

Summary of comments
Number of submissions referencing theme: 70

Public comments included concerns about the assessment of impacts to MNES. Specific concerns were raised regarding the environmental management framework, uncertainty in the management of impacts, impacts to riparian vegetation, impacts to fauna, and impacts to areas mapped as suitable habitat.

The following public comments are representative examples of this theme:

- *"Large-Scale Land Clearing and Habitat Destruction Land clearing is one of the most damaging activities associated with industrial projects. The proposed works will require removing vast stretches of native vegetation"*
- *"The instream habitat and riparian vegetation at Area 1 are of high quality and value. One Permit to disturb riparian vegetation has already been issued, however the location is not provided. A request for further information for the location of the Permit is requested in order to assess other areas of riparian vegetation yet to be assessed. Severe soil degradation due to the removal of tree cover and root structures, leading to increased erosion and desertification (Williams et al., 2020)."*
- *"The Project is anticipated to clear 2.7 ha of potential habitat for the Floydia praealta in Area 1 – Borumba Dam for geotechnical works and access tracks. The Project will not clear any known habitat where individuals have been identified. potential impacts, and mitigation options for Floydia praealta Clearing in this location is unavoidable, as geotechnical works are required for the new Borumba Dam wall and topography in the area requires some levelling and stabilisation to allow the works to proceed." The statement above appears to be a contradictory statement about clearing Floydia praealta"*
- *"What contingency plans are in place to relocate MNES fauna species found on the site? o Use of' blade and grubbing clearing methods' (pp369) is not recommended. Employing these methods can lead to gullies occurring in dispersive country. What methods will contractors employ if these commonly used techniques are not to be used?"*

Response to comments

3.5.1.1 Nature and scope of the Exploratory Works

Queensland Hydro acknowledges the range of concerns raised regarding the potential environmental impacts of the Exploratory Works Project. It is important to clarify that the Exploratory Works are of a temporary, small-scale, and largely linear nature, designed solely to inform the design and approvals process for any future Main Works. The proposed activities include geotechnical investigations, upgrades to and new access tracks, and establishment of temporary infrastructure; the Exploratory Works do not include any dam construction, flooding, or permanent infrastructure associated with the Main Works.

3.5.1.2 Avoiding and minimising impacts

The design of the Exploratory Works has deliberately sought to avoid areas of high environmental value, including known habitat for threatened species and TEC. The implementation of these avoidance and mitigation measures is expected to limit the scale, intensity, and duration of impacts and ensure that the environmental footprint of the works remains as small as possible. All commitments are subject to ongoing monitoring and adaptive management to respond effectively to changing site conditions and emerging risks.

Section 6.1 of the Preliminary Documentation outlines a clear commitment to avoid and minimise impacts wherever possible, supported by a range of mitigation measures embedded in the CEMP and supporting management plans. These include micro-siting to avoid sensitive environmental features, pre-clearance surveys, exclusion and buffer zones, erosion and sediment control, dust suppression, fauna management protocols, and progressive rehabilitation of disturbed areas.

3.5.1.3 Impact management and environmental management framework

Section 6.2 of the Preliminary Documentation emphasises that a culture of high environmental standards and continuous improvement is core to the Exploratory Works. The various management plans provided provide clear lines of accountability through the appointment of a dedicated Environmental Manager, regular performance monitoring, and strict reporting and corrective action protocols. The Preliminary Documentation details how vegetation clearing, erosion and sedimentation, and potential impacts to threatened species and sensitive zones (e.g. riparian areas) will be minimised. The CEMP requires all staff, including subcontractors, to undergo comprehensive environmental awareness training and adhere to site-specific procedures. By embedding transparency, collaboration, and proactive environmental stewardship into contractual obligations, Queensland Hydro demonstrates that protecting local ecosystems and maintaining best-practice environmental outcomes are priorities equal to meeting time and budget demands.

The Preliminary Documentation and associated management plans outline a risk-based, adaptive management approach that can increase monitoring during higher-risk periods (e.g., heavy rainfall or intensive clearing) rather than relying solely on fixed, quarterly or annual audits. The CEMP sets out a framework for escalating monitoring frequencies as conditions or project phases change, and it requires regular site inspections, record-keeping in higher-risk situations, and a clear process for taking swift corrective action if issues arise. The management plans emphasise continuous improvement and accountability by mandating site-specific inductions, incident reporting, and formal lines of communication between Queensland Hydro, the contractor, and stakeholders. This ensures that, if a breach or non-compliance is detected, there is an immediate response system for implementing corrective measures and adjusting future monitoring intervals, thereby embedding an ongoing cycle of performance review and improvement from the outset.

The Preliminary Documentation and CEMP both require that the SEPs are treated as “living” documents, that are updated regularly in response to new findings or changing circumstances. The CEMP states that each SEP must clearly mark areas of ecological sensitivity (e.g., MNES locations) and that the contractor’s Environmental Manager is responsible for ensuring this information stays current, accurate, and readily accessible to all personnel. Under the contractor management framework, there are defined procedures for rapid communication, so if any MNES constraints or exclusion or buffer zones require amendment, they can be logged as a change request and revised in the SEP on short notice. In this way, Queensland Hydro will ensure there is minimal ambiguity about environmental obligations. Further, the combination of routine monitoring, immediate reporting of potential breaches, and a structured change-control process helps maintain accountability and allows for quick turnaround when site conditions or risk profiles shift. This approach is intended to minimise the risk of uninformed actions on the ground and maintain high environmental standards throughout the Exploratory Works.

The CEMP is designed to be flexible and able to respond to events or clearing methods which are not working or leading to increased erosion. Where the use of ‘blade and grubbing clearing methods’ is leading to gullies in dispersive country, the works will stop, and alternative clearing methods will be used to minimise soil loss or additional erosion and sediment controls will be installed.

3.5.1.4 Impacts to riparian vegetation

A Riverine Protection Permit is required under the Water Act 2000 (Qld) for works that involve the destruction of vegetation, excavation, or placement of fill in a watercourse, lake or spring. For this Project, a Riverine Protection Permit has been obtained for a minor section on the left bank of Borgan Creek, where limited disturbance is anticipated. This permit has been incorporated into the Project’s broader environmental management framework to ensure compliance with statutory requirements and to manage potential impacts on riparian and aquatic ecosystems through appropriate controls, such as sediment and erosion management and vegetation buffers.

To minimise soil erosion and maintain water quality during construction, the design of access tracks will incorporate site-appropriate erosion and sediment control measures. This may include the installation of cross-slope drainage structures such as ‘whoa boys’ or ‘spur drains’, which are effective in diverting surface runoff and reducing track erosion, particularly on sloped terrain. The decision to implement these measures will be informed by local topography, soil characteristics, rainfall patterns, and the duration of use for each track.

3.5.1.5 Impacts to fauna

All wildlife will be handled in accordance with the Code of Practice—Care of sick, Injured or Orphaned Protected Animals in Queensland (DES, 2020). Whilst there are no changes to the management and mitigation measures to reflect the handling of fauna in accordance with the Code of Practice, the relevant management plans have been updated to include this requirement.

3.5.1.6 Impacts to suitable habitat

Cleared vegetation will typically either be utilised as fauna habitat in retained vegetation, where appropriate (e.g. hollows, root balls, fallen logs), or mulched and used in erosion and sediment controls, which will be at the direction of the approving Certified Professional in Erosion and Sediment Control.

The habitat mapping for threatened flora and fauna species has generally been categorised as follows:

- Known habitat – which is habitat within which the species has been identified.
- Potential habitat – which is habitat that is suitable for the species, but within which the species has not be identified.

Due to the separation of habitat types, there are species (such as *Floydia praealta*) where the Exploratory Works impacts 'potential habitat' but does not impact 'known habitat' and therefore there are no impacts to individuals.

The salvage of timber or other native flora species from within the Project footprint for use off-site use (e.g., for community or other uses) is not currently proposed.

3.5.2 Air quality

Summary of comments
Number of submissions referencing theme: 31

Several public comments expressed concern about health and environmental risks from dust generated during construction, including potential air quality degradation affecting nearby residents, sensitive habitats, and waterways. Comments also noted a lack of clear mitigation measures in the Preliminary Documentation to address dust suppression and ongoing air quality management.

The following public comments are representative of this theme:

- "*We are concerned about dust generation from the works and the impact this could have on the health of local residents and the nearby natural ecosystems.*
- *"What measures are being taken to reduce dust pollution, especially during dry periods and heavy vehicle movements?"*
- *"The documents don't clearly explain how air quality will be monitored or maintained at acceptable levels."*

Response to comments

Queensland Hydro acknowledges the concerns raised about potential dust generation and air quality impacts during the Exploratory Works. Noting that the RFI for the Preliminary Documentation did not require Queensland Hydro to assess air quality impacts in the public. An air quality impact assessment was prepared to support the ERA16 application for the Exploratory Works (EMM, 2024), which assessed impacts of the Exploratory Works to the public. Noting that the modelling undertaken predicts that emissions from the Exploratory Works would not exceed applicable air quality objectives such as those outlined in Environmental Protection (Air) Policy 2019 at all sensitive receptors. Sensitive receptors included residential dwellings, along with national parks.

The assessment was informed by dust monitoring currently undertaken along key transport corridors to site, along with air quality monitoring onsite. The management of dust and air quality will be addressed through a suite of measures outlined in the CEMP, developed in accordance with best practice environmental guidelines. Queensland Hydro is also looking to improve the existing road network through maintenance activities and treatments of the existing road verge along Bella Creek Road and Yielo Road which will also mitigate dust and air quality impacts.

Dust control measures will be implemented across all work areas to minimise emissions during vegetation clearing, earthworks, and vehicle movement. These include the use of water carts or surface wetting agents for dust suppression during dry periods, speed restrictions on unsealed roads, progressive rehabilitation of disturbed areas, covering of stockpiles and loads, and designated haul routes to reduce disturbance to surrounding vegetation and sensitive receptors.

The CEMP also requires regular site inspections and adaptive dust management, particularly during high-risk conditions (e.g. dry weather, strong winds, or increased traffic). Areas near waterways, including Yabba Creek, will have additional erosion and sediment controls in place to prevent the mobilisation of dust and sediment into aquatic ecosystems.

While continuous air quality monitoring is not proposed due to the temporary and relatively small-scale nature of the Exploratory Works, the environmental management system requires monitoring of visible dust, community complaints, and site conditions to trigger corrective actions if necessary. Queensland Hydro remains committed to minimising off-site dust impacts and protecting both human health and nearby ecosystems through proactive and responsive site management.

In regard to dust impacts to TEC (which apply to all vegetation), a minimum distance of 15 m for Subtropical rainforest TEC and 25 m for Eucalypt woodland and open forest TEC has been chosen to estimate dust impacts as there is limited data to suggest that dust impact extend beyond 15 m and 25 m (refer to Section 5.3.2.3 of the Preliminary Documentation for a detailed discussion of the depth of edge influence). Whilst dust may infiltrate beyond the nominated distances, the literature review undertaken during the development of Section 5.3.2 of the Preliminary Documentation, which informed the indirect impact assessment, suggested that indirect impacts associated with dust beyond the nominated distances is minimal and is unlikely to materially impact flora species and fauna habitats.

3.5.3 Noise

Summary of comments

Number of submissions referencing theme: 23

The public comments raised concerns about noise impacts on MNES habitat and sought further information about the noise and vibration assessment. Some comments on habitat degradation included concerns about noise impact management and further mitigation measures.

The following public comments are representative examples of this theme:

- *"The construction and operation of the Borumba Pumped Hydro Project will result in longterm noise and vibration disturbances, affecting both human settlements and local wildlife:*
  - "*Increased noise pollution – Drilling, excavation, and construction activities will introduce continuous high-decibel noise levels, impacting nearby communities and wildlife corridors…*
  - *"Potential long-term vibration damage – Underground tunnelling and blasting could cause structural damage to homes, businesses, and natural formations, affecting geological stability…*
  - *"Effects on wildlife – Many species, particularly nocturnal and migratory wildlife such as greater gliders and native bird populations, rely on low-noise environments. Noise pollution can disrupt breeding cycles and migration patterns, leading to species decline..."*
- *"In the PHES there are 132 references to studies done on the impact of noise pollution, but no details for the noise and vibration assessment relative to the potential environmental impact. Noise pollution from exploratory works including drilling, blasting and heavy machinery, poses a very significant threat to local wildlife, especially to sensitive species like platypus, by disrupting feeding, breeding and natural behaviours. Transparent reporting of noise and vibration impacts is not just a regulatory obligation but it is a critical step in safeguarding the region's environmental and social future."*

Response to comments

3.5.3.1 Noise and vibration assessment

Section 5.3.3 of the Preliminary Documentation concludes that the Exploratory Works activities are likely to result in a temporary increase in noise and vibration, which could impact sensitive MNES and their habitat. While these impacts will be limited to discrete areas in the Project area and will be temporary in nature, Section 7.3 of the Preliminary Documentation and the FFMP also provide measures to be implemented to mitigate these emissions.

The Preliminary Documentation and the CEMP both include discussions and assessments of noise emissions during the Exploratory Works. A summary of what was assessed, as contained in the Preliminary Documentation and CEMP, is provided below:

- Noise and vibration assessment (Section 5.3.3 of the Preliminary Documentation) describes:
  - Blasting, drilling, earthworks, and heavy-vehicle traffic are the primary noise (and vibration) sources. Some activities (e.g. tunnelling) may run 24 hours a day, but equipment choice and shift scheduling are designed to limit disturbance.
  - Tunnelling activities near the ground surface will be temporary and be for a limited period, after which the depth of the tunnelling will exceed 100 m and is not expected to result in vibration and noise emissions at the surface that will impact sensitive MNES species.
  - Specific thresholds are guided by Queensland's Environmental Protection (Noise) Policy 2019 and interim construction noise guidelines. The contractor must monitor noise at the start of "high-risk" activities (such as blasting) to ensure levels remain within acceptable limits.
  - Detailed vibration modelling indicates peak vibrations are expected to be under the goal of 5 mm/s at distances of 450 m from the tunnel alignment (assuming a higher explosive charge than what is actually likely to be used).
- Noise mitigation:
  - A conservative 200 m buffer will be applied, particularly around blasting and night-time geotechnical drilling, and noise-suppression devices applied to on-site machinery.

- Appendix E, Table E-2 of the CEMP (Appendix F of the Preliminary Documentation) mandates site personnel training in noise-minimisation practices, vehicle maintenance (to reduce engine noise), and the use of temporary acoustic barriers, if warranted, at locations such as the Kingaham Creek bypass.
- Triggers for corrective action are also defined in Appendix E, Table E-2 of the CEMP and include:
  - received complaints
  - exceeding noise or vibration requirements outlined in the Queensland *Environmental Protection Act 1994*, Interim Construction Noise Guidelines or relevant licence conditions
  - monitoring indicating that management measures are not fully effective.

Queensland Hydro have undertaken a noise impact study for the Exploratory Works, which identified that noise and vibration impact are predicted to comply with the relevant noise and vibration criteria for daytime periods at all sensitive receptors (as per the Environmental Protection (Noise) Policy). Without mitigation, the Kingaham Creek Bypass construction is predicted to exceed the night time noise criterion at one residential receptor; further control measures will be identified and implemented to ensure compliance with all relevant regulatory requirements for this activity.

3.5.3.2 Noise impacts on MNES habitat

Although noise is not classified as a primary threatening process for MNES, Section 5.3.3 of the Preliminary Documentation notes that certain fauna (e.g., koala and black-breasted button-quail) may temporarily avoid or alter their foraging/breeding behaviours near high noise, while in some cases individuals may abandon breeding places. Consequently, Table 11 in section 6.1.10 of the FFMP (Appendix J to the CEMP) prescribes pre-clearance surveys and the scheduling of major noise events (like blasting) outside critical breeding periods whenever practical, noting that the impacts associated with noise will be temporary and will not result in permanent loss of habitat to fauna species.

3.5.3.3 Noise impact management for fauna

Management and mitigation measures detailed in Table 11 in Section 6.1.10 of the FFMP include:

- Undertaking works outside of breeding periods for species identified at risk, where possible.
- Where it is not possible to undertake works outside of breeding periods for species identified at risk:
  - minimising noise and vibration during night hours
  - conducting pre-clearance surveys to identify breeding species
  - using the smallest machinery required to safely complete the work.
- No blasting or high intensity vibratory works to be undertaken within 200 m of known active breeding sites during breeding seasons for identified threatened species unless otherwise approved by an experienced ecologist.
- A breeding site potentially impacted by noise or vibration will be inspected by the suitably qualified FSC during the works to confirm they are not having an adverse impact on the breeding place.
- If within the footprint, the suitably qualified FSC will monitor the breeding place until the individuals have moved out of the area of their own accord or the breeding site is relocated in accordance with permit conditions, or as otherwise directed by the suitably qualified FSC.
- Fauna species other than MNES (e.g. MSES such as platypus, and non-threatened species) will be considered under state level approvals and permits (e.g. the Queensland *Nature Conservation Act 1994* requirements).

The construction manager and environmental manager are responsible for managing noise and vibration impacts during the Exploratory Works.

3.5.4 Weeds and pests

Summary of comments

Number of submissions referencing theme: 28

Public comments expressed concern that the Exploratory Works may facilitate the spread of weeds and pest species if impact-management measures are inadequate. Specific issues raised included the risk of fire ant incursions, proliferation of other invasive fauna, spread of terrestrial weeds through vegetation clearing and spoil redistribution, edge effects that could favour weed establishment along new disturbance boundaries, and the potential expansion of aquatic weeds within affected waterways.

The following public comments are representative examples of this theme:

- *"The potential risk of the Exploratory Works Project activities spreading invasive weeds into habitat around the footprint and into previously unaffected areas is considered low as weeds are currently widespread in and surrounding the Project area in varying densities. In this regard, the Project is unlikely to introduce new weeds to the Project area and is unlikely to further the spread of weeds into areas which currently are host to only low density weeds." We disagree with this conclusion. Qld Hydro has allowed Giant Rats tail to spread and dominate on the lower area used for grazing. There is high risk that Giant Rats Tail will be spread up into the forested areas with the increased tracks, vehicles and drills and invade the surrounding national parks."*
- *"The potential risk of the Exploratory Works activities spreading invasive weeds into habitat around the footprint and into previously unaffected areas is considered low as weeds are currently widespread in and surrounding the Project area in varying densities. In this regard, the Project is unlikely to introduce new weeds to the Project area and is unlikely to further the spread of weeds into areas which currently are host to only low density weeds." We disagree with this conclusion. Qld Hydro has allowed Giant Rats tail to spread and dominate on the lower area used for grazing. There is high risk that Giant Rats Tail will be spread up into the forested areas with the increased tracks, vehicles and drills and invade the surrounding national parks."*

Response to comments

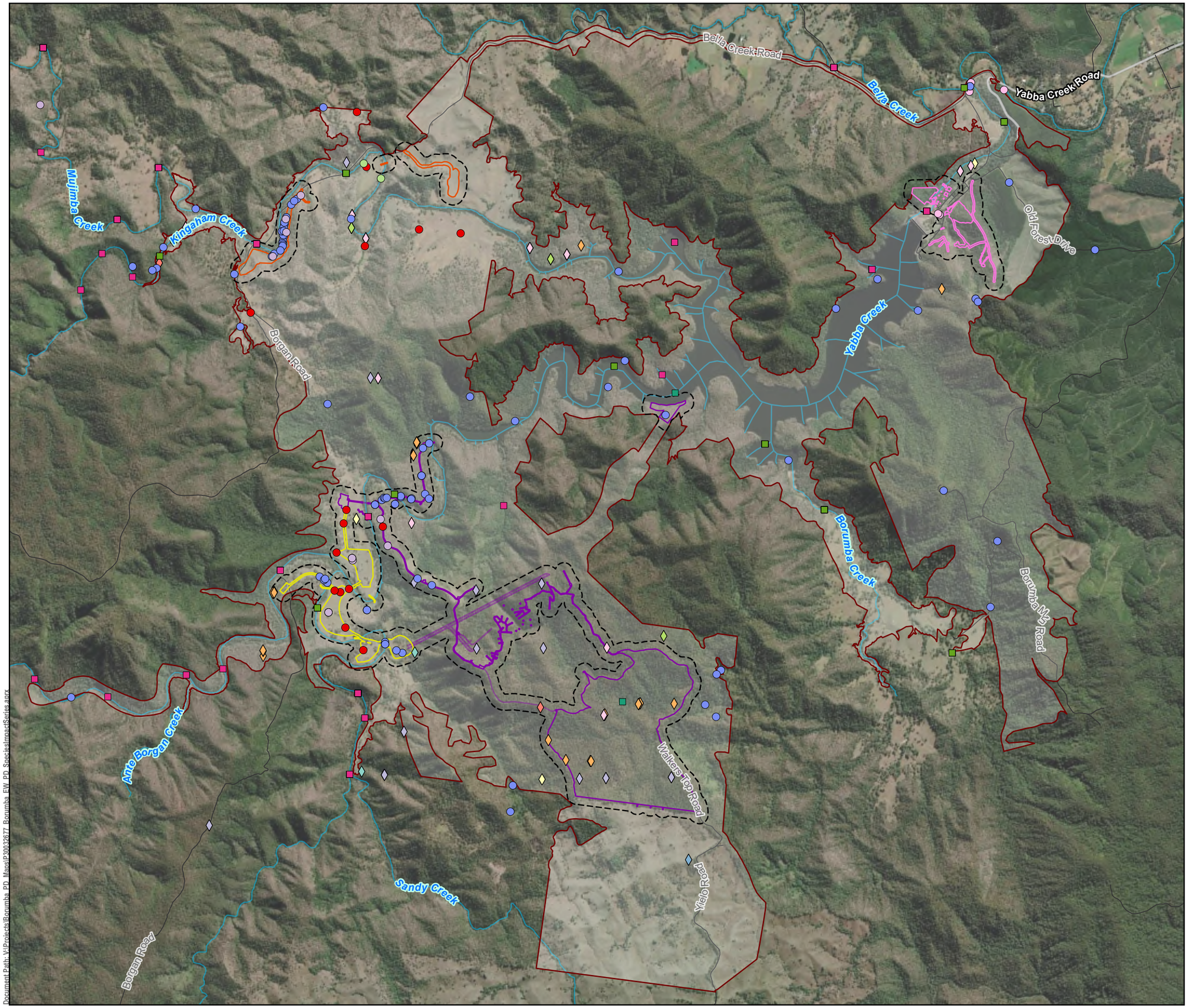
A Biosecurity Management Framework has been developed for the Project and will be available online. The Biosecurity Management Framework details the overarching risks and mitigation measures to minimise the potential introduction and spread of weeds and pest species, including fire ants. Area specific biosecurity management plans that are subordinate to the Biosecurity Management Framework will be developed for the Project.

Noting that Queensland Hydro and the relevant subcontractors have in place biosecurity management plans for current works being undertaken for the Project,

Weeds are present within all areas of the Exploratory Works Survey area in varying densities. They are generally more common in cleared areas, along access tracks, and the edges of vegetation compared to areas that have a canopy dominated by native species. Giant rat's tail grass is established in the area and prevalent in the cleared areas and pastures used for cattle grazing and along access tracks, which are scattered throughout the Exploratory Works Survey area. The Biosecurity Management Framework has incorporated weed control measures, particularly along access tracks.

Figure 15 shows the observed locations of restricted invasive plants and pest animals listed under the *Biosecurity Act 2014* and weeds of national significance (WoNS) to assist with understanding the distribution of weeds within the Exploratory Works Survey area. It should be noted that the distribution of weed and pest species shown on Figure 15 is not exhaustive and the locations shown are indicative only.

Myrtle rust is widespread in all areas of the Borumba PHES Project Survey area and was observed on the majority of native guava and scrub turpentine individuals identified in surveys. Both species are particularly susceptible to myrtle rust. Mapping the distribution of myrtle rust was not undertaken as the mapping would show myrtle rust in all areas of the Survey area. The inclusion of a 30 m buffer area around non-impacted threatened plants will assist in minimising direct transmission of myrtle rust to any uninfected individuals.



Queensland Hydro

GDA2020 MGA Zone 56

0 0.5 1 Kilometres

1:45,000 (when printed @ A3)

LEGEND

- Local Roads
- State Controlled Roads
- Watercourses

Exploratory Works Project

Project Area by Work Area

- Area 1 - Borumba Dam
- Area 2 - Kingaham Creek
- Area 3 - Walkers Top
- Area 3 - Walkers Top (Underground)
- Area 4 - Borgan

Survey Areas

- Exploratory Works Survey Area
- Borumba PHES Survey Area

Restricted Invasive Plants and Pest Animals

Pest Aquatic Species

- Mosquitofish
- Swordtail
- Tilapia
- Guppy
- Platy

Pest Animals

- Cattle
- Dog
- Deer
- Cat
- European brown hare
- Cane toad
- Pig
- Red fox

Category 3 Restricted Invasive Plants

- Cat's claw creeper
- Rat's tail grass
- Chinese celtis

Category 3 Restricted Invasive Plants and WoNS

- Lantana
- Prickly pear

Data Sources:

1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
2. Site Layout Items @ SMEC, 2025
3. Species records @ Umwelt and Attexo, 2024
4. World Imagery Basemap @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Exploratory Works Project
Preliminary Documentation

LOCATION OF RESTRICTED INVASIVE PLANTS, PEST ANIMALS AND WEEDS OF NATIONAL SIGNIFICANCE (WONS)

PROJECT #:	30032677
CREATED BY:	CW
LAST MODIFIED:	NC17428, 19/09/2025
REVISION:	A

FIGURE
15

Document Path: V:\Projects\Borumba_PD_Maps\P30032677_Borumba_EW_PD_SpeciesImpactSeries.aprx

3.5.5 Water quality

Summary of comments

Number of submissions referencing theme: 11

Public comments raised concerns about the potential for water contamination from the Exploratory Works. This included risks from sediment runoff and chemical spills that pose a direct threat to aquatic ecosystems. Specific concerns were highlighted regarding contamination and leachate from potential acid generating materials and heavy metals, the disturbance of existing contamination sources, potential PFAS (per- and polyfluoroalkyl substances) contamination, nitrates from explosives, spills and accidental releases. A comment raised the issue of the Project's reliance on Lake Borumba's dilution capacity, which was described as a flawed approach to mitigate contamination.

Comments also focused on the potential for erosion and sedimentation impacts on water quality. The comments noted that dispersive soils are likely to be present in the Exploratory Works areas and that a contour overlay on figures is required to properly assess erosion risks and drainage lines. It was identified that sodic and dispersive soils require specific treatments and that the proposed ESCP may be insufficient, requiring further development to include gully erosion control measures. The potential for sheet wash and gully erosion to move up-slope and expose dispersive sub-soil was also a concern.

There were comments on the inadequacy of water quality monitoring and the impacts of bed level stream crossings. Comments highlighted that proposed testing protocols were lacking and that a lengthy turnaround time for test results was unacceptable as it leaves the Project vulnerable to rainfall events before remedial action can be taken. The comments also included concerns about the upgrades of six bridges across Yabba Creek, several of which are not suitable for heavy transport. These bridge upgrades are of particular concern as this stretch of the creek has high ecological value and provides habitat for threatened aquatic species.

Public comments also raised concerns about the potential for alteration of natural water flows in general.

The following public comments are representative examples of this theme:

- *"Concerns about water quality degradation due to sediment runoff and potential chemical spills pose a direct threat to aquatic ecosystems, impacting fishing and boating conditions in Lake Borumba and surrounding waterways."*
- *"Exploration activities could potentially introduce sediments or pollutants into the water, temporarily affecting the quality for recreational users, particularly for activities like swimming and fishing."*
- *"The Project could impact surface water quality through contamination and increasing erosion and sedimentation. This is alarming with 7 specific areas of concern highlighted in this section. It is arguable that these are unacceptable risks for any stage of the project as they will cause irreparable damage to the current and future ecosystem."*
- *"I have major concerns about this project due to the impact it will have on the project area but also the area downstream. These impacts are in terms of water quality and changes in timing and quantity of flow and how this will then flow on to impact on threatened aquatic species of the Mary river."*

Response to comments

3.5.5.1 Potential contamination of water

Surface water could become contaminated from accidental spillage, leakage or general release of contaminants from equipment and Exploratory Works activities. The water quality risk assessment included as Appendix G of the Preliminary Documentation has been updated in response to submissions and changes in the Project design. It presents the residual risk of potential water quality impacts and MNES values after applying management and mitigation measures.

The risk of potential water contamination from spoil generated during the Exploratory Works is discussed in Section 3.2.3 of this report. The potential for PFAS (per- and polyfluoroalkyl substances) contamination is not discussed in the Preliminary Documentation because it was not identified in the contaminated land assessment and is not planned to be used in the Exploratory Works. The use, storage, transport and management of hazardous

chemicals and materials will be done be in accordance with relevant legislative environmental and health and safety requirements.

The CEMP (Appendix F of the Preliminary Documentation) and supporting plans describe how Queensland Hydro will manage potential impacts to water quality from Exploratory Works activities.

3.5.5.2 Erosion and sedimentation impacts

The PESCP (Appendix G of the CEMP) outlines the methodology to be adopted for the assessment and implementation of erosion and sediment control measures in accordance with the principles of the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control guideline (IECA, 2008). It contains mitigation and management measures to minimise the risk of erosion and sediment from the exposure of dispersive soils. Queensland Hydro will engage suitably qualified and experienced contractors to undertake the works. The Water Quality Risk Assessment included with the Preliminary Documentation has also been updated to more comprehensively assess risks to water quality including erosion and sedimentation and appropriate control measure.

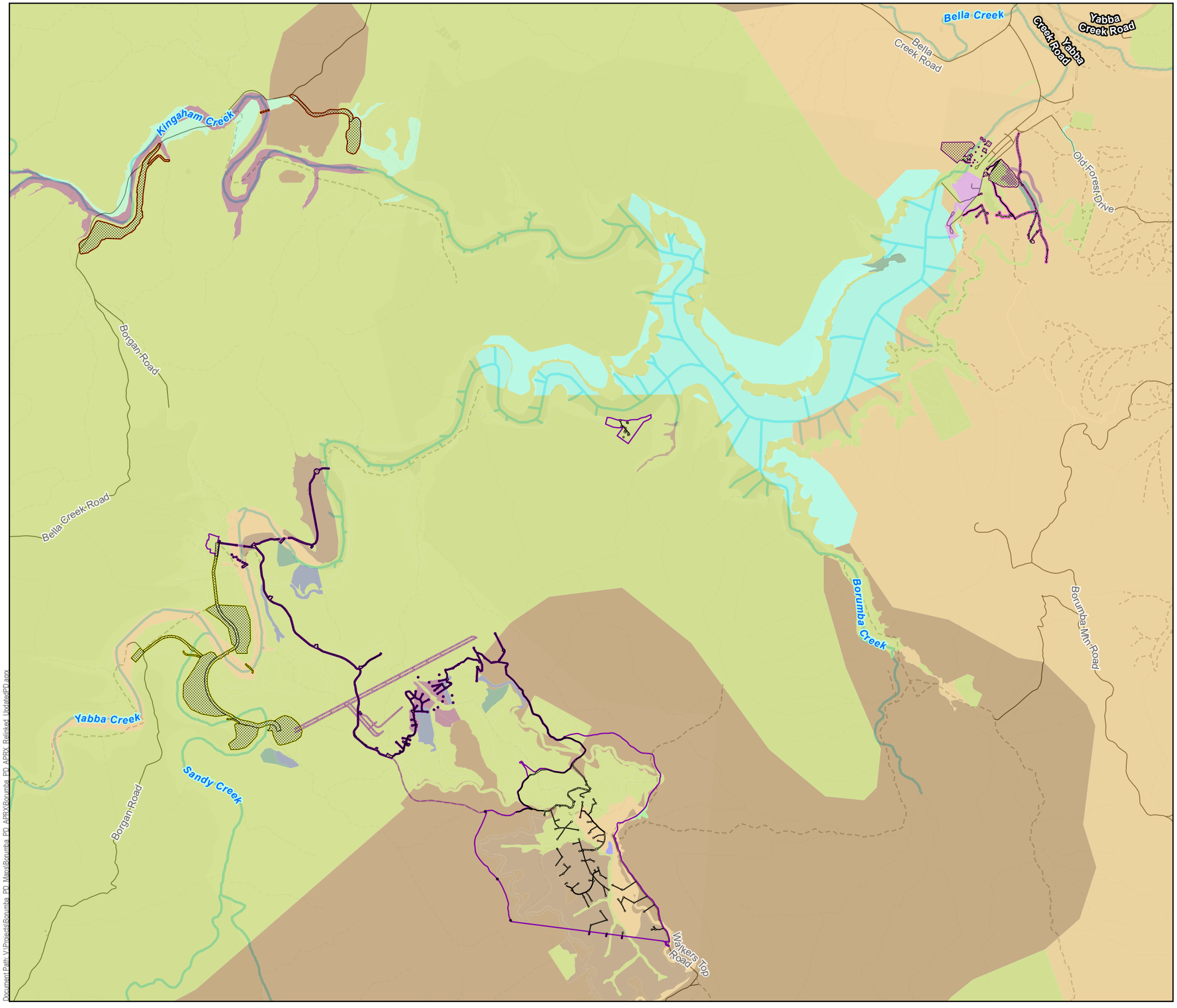
Controlling erosion and sedimentation at the source, that is, in the Project work areas, is a primary objective. This commitment to source control addresses community concerns regarding unacceptable reliance on dilution. While the Preliminary Documentation acknowledges the natural dilution capacity of Lake Borumba, this is considered a beneficial secondary factor rather than a primary mitigation strategy. Focusing on controls in the Project work areas reduces the risk of poor quality or contaminated runoff from reaching the Yabba Creek and Mary River systems. Site-specific ESCPs will be developed and implemented for Project work areas including for the spoil disposal areas.

Managing the risk of erosion during construction and the presence of dispersive soils is also required. This will be accomplished through the implementation of an ESCP that follows the IECA guidelines. In addition, progressive, site-specific ESCPs will be created for each work site catchment as needed. Sediment control standards will be in accordance with the IECA Best Practice Guidelines (2008), which include Type 1 sediment controls for the management and treatment of dispersive soils. Sediment basins have been identified for a number of work areas, including the portal pad and staging area, to manage water from Exploratory Works activities.

Soil sampling and mapping in accordance with relevant soil survey guidelines and procedures (including top and sub soils) is in progress for the Borumba PHES Survey area. Survey findings to date have confirmed the presence of dispersive soils in some areas of the Project footprint and particular attention to soil erosion control measures will be applied in these soils. A preliminary map showing the location of soil map units is presented in Figure 16. The outcomes of any future soil sampling will be used to inform the construction soil management strategies and erosion and sediment control measures for the Exploratory Works.

The Preliminary Documentation recognises the steep and erosion-prone nature of the terrain in the Project area and the associated risk of landslips, particularly where subsurface clay layers are present. To manage this risk, the design and construction of access tracks for the Exploratory Works incorporate specific measures aimed at maintaining natural surface drainage patterns and minimising soil disturbance. Access tracks have been aligned along ridgelines and stable landforms, wherever possible, to avoid steep, slip-prone slopes. Drainage infrastructure such as cross drains and catch drains will be installed to safely manage surface runoff without concentrating flows. The CEMP (Appendix F of the Preliminary Documentation) requires that all tracks be constructed and maintained with erosion and sediment control measures that are designed for the highly dispersive soils and intense rainfall events typical of the region. Areas identified as having a higher landslip risk will be subject to geotechnical review before construction, and any necessary design modifications, such as additional drainage, surface stabilisation, or slope reinforcement, will be implemented to prevent slope failure. By adopting these precautionary approaches during planning, construction, and rehabilitation, the Project is actively working to prevent new landslips and protect water quality in the surrounding catchment.

To minimise soil erosion and maintain water quality during construction, the design of access tracks will incorporate site-appropriate erosion and sediment control measures. This may include the installation of cross-slope drainage structures such as ‘whoa boys’ or ‘spur drains’, which are effective in diverting surface runoff and reducing track erosion, particularly on sloped terrain. The decision to implement these measures will be informed by local topography, soil characteristics, rainfall patterns, and the duration of use for each track.



Queensland Hydro

GDA2020 MGA Zone 56

0 0.6 1.1 km

1:35,000 (when printed @ A3)

LEGEND

- Watercourses
- State Controlled Roads
- Local Roads
- Tracks

Exploratory Works Project

- Project Footprint

Project Area by Work Area

- Area 1 - Borumba Dam
- Area 2 - Kingaham Creek
- Area 3 - Walkers Top
- Area 3 - Walkers Top (Underground)
- Area 4 - Borgan

Australian Soil Classification

- Anthroposols
- Arenosols
- Chromosols
- Dermosols
- Kandosols
- Kurosols
- Rudosols
- Sodosols
- Tenosols
- Vertosols

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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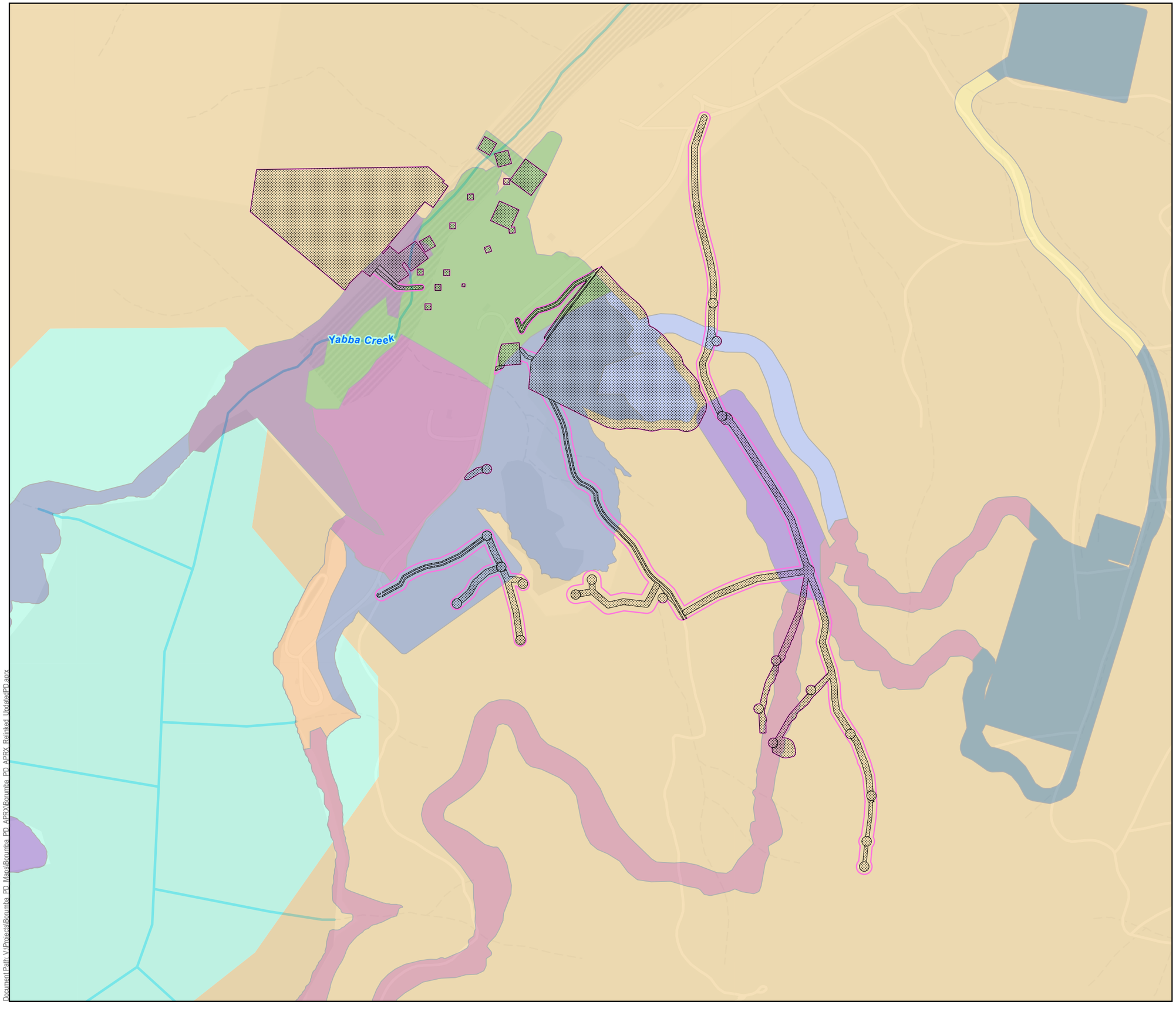
Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING OVERVIEW

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE 16

Document Path: V:\Projects\Borumba_PD_Mans\Borumba_PD_APRX\Borumba_PD_APRX_Relinked_Updated\PD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

N

0 0.1 0.2 km

1:6,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 1 - Borumba Dam

Mapped Soil Units

Anthroposols

1.1.1.6

6.1.1.6

Dermosols

2.1.1.2

2.4.1.2/2.3.1.2

6.3.1.2

6.4.1.2

6.6.1.2/6.5.1.2/6.3.1.2

Vertosols

2.1.1.1

Rudosols

6.9.2.2/6.4.2.2

Kurosols

6.9.4.1

Australian Soil Classification (State Soil Mapping)

Chromosol

Hydrosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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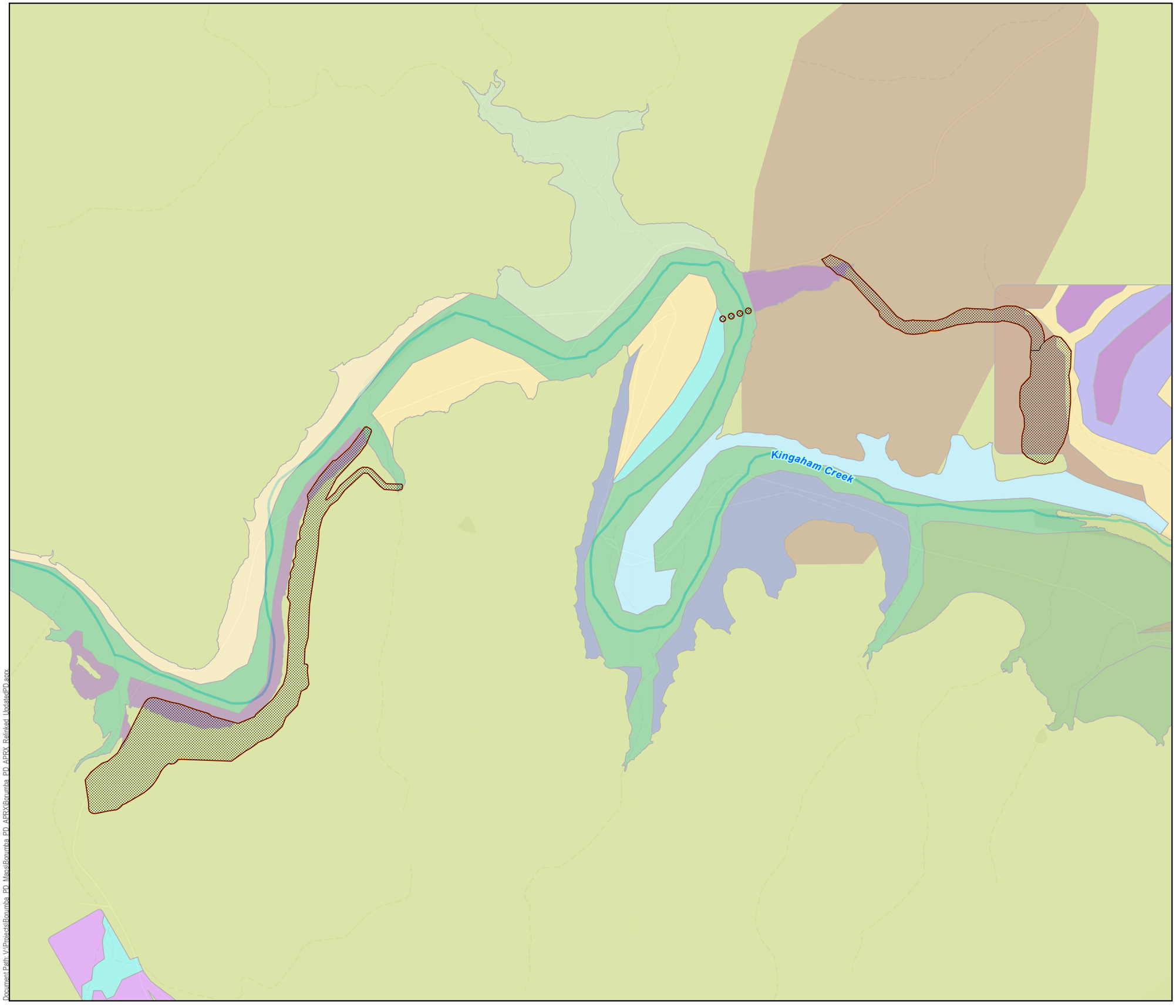
Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING AREA 1 (BORUMBA DAM)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE 16

Document Path: V:\Projects\Borumba PD_Maps\Borumba PD_APRX\Borumba PD_APRX_Relinked_Updated\PD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

0 0.1 0.3 km

1:10,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 2 - Kingaham Creek

Mapped Soil Units

Dermosols

- 1.1.1.2
- 2.1.1.2
- 5.3.1.2
- 5.9.1.2
- 6.1.1.2
- 6.3.1.2
- 6.4.1.2
- 6.5.1.2
- 6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2
- 6.9.1.2

Vertosols

- 6.4.1.1/6.3.1.1
- 2.0.1.1
- 2.1.1.1
- 6.4.1.1

Rudosols

- 1.1.2.2/1.0.2.2

Australian Soil Classification (State Soil Mapping)

- Dermosol
- Sodosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING
AREA 2 (KINGAHAM CREEK)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE
16

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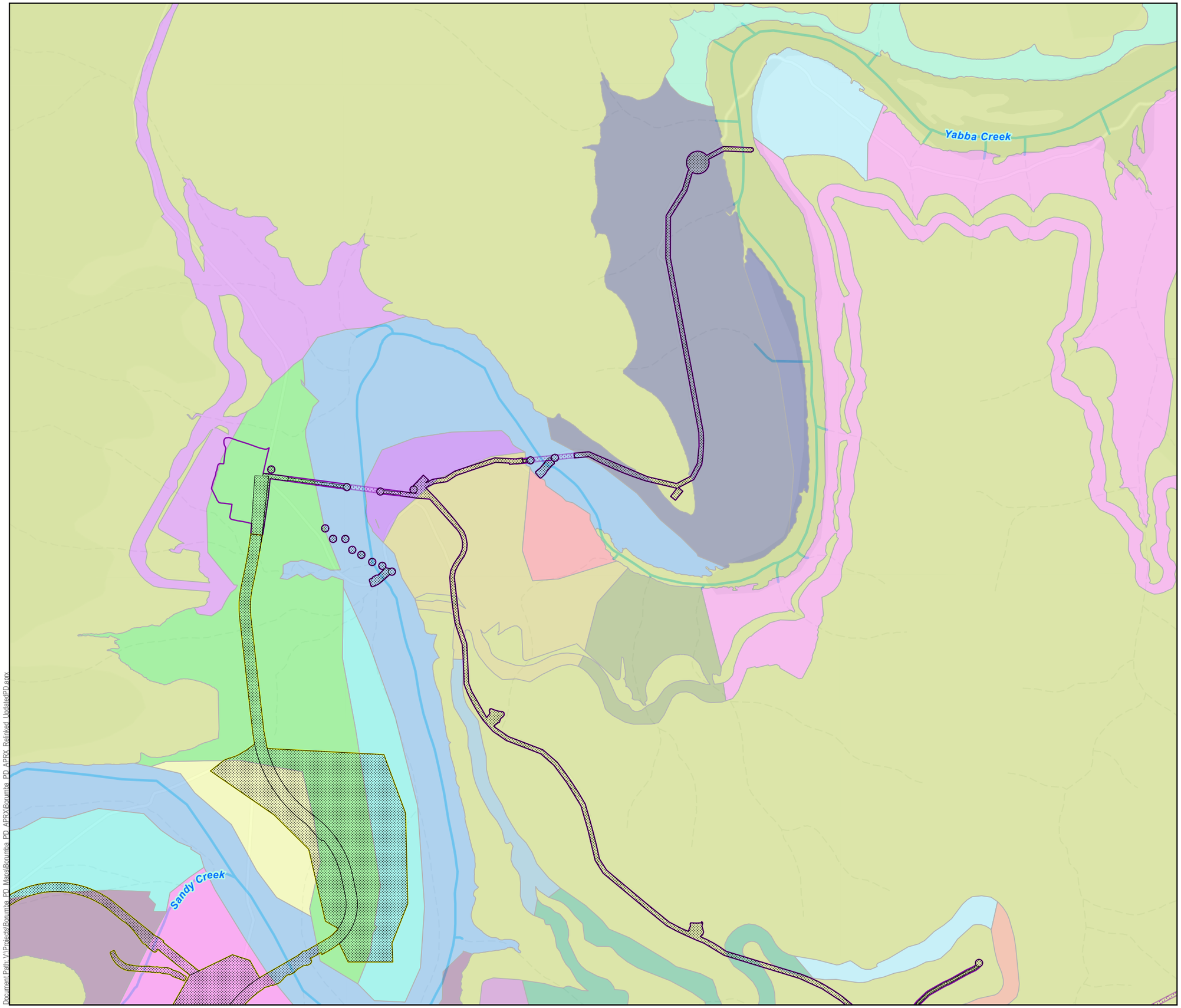

Queensland Hydro

GDA2020 MGA Zone 56

0 0.1 0.2 km

1:8,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 3 - Walkers Top

Area 3 - Walkers Top (Underground)

Area 4 - Borgan

Mapped Soil Units

Chromosols

1.1.3.3/1.1.2.2/1.0.3.3/1.0.2.2

Dermosols

1.0.1.2

1.1.1.2

1.2.1.2

2.1.1.2/1.1.2.2/1.0.2.2

2.4.1.2/2.3.1.2/2.1.1.2

4.5.1.2

6.3.1.2

6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2

6.9.1.2

6.9.1.2/6.4.1.2/6.3.1.2

6.9.1.2/6.4.1.2/6.3.1.2/6.0.1.2

6.9.1.2/6.5.1.2

6.9.1.2/6.5.1.2/6.4.1.2/6.3.1.2

6.9.1.2/6.6.1.2/6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2

Sodosols

2.1.3.2

2.3.3.2/2.3.1.2

Kurosols

6.9.3.1

Kandosols

4.3.4.1/4.3.2.2

6.4.4.1/6.4.2.3

Australian Soil Classification (State Soil Mapping)

Dermosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING AREA 3 (WALKERS TOP)

PROJECT #:	30032677/30032772
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LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE 16

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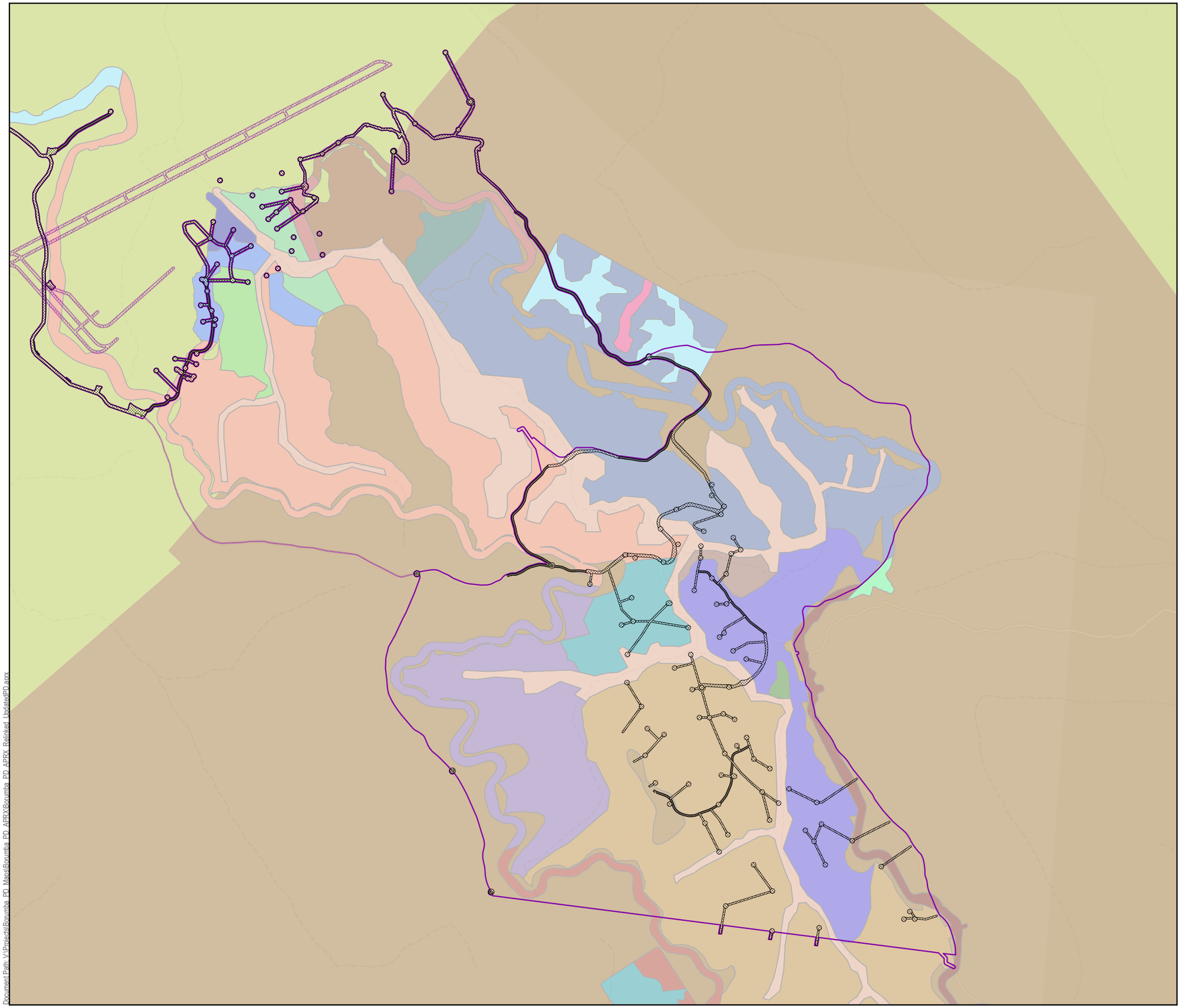

Queensland Hydro

GDA2020 MGA Zone 56

0 0.1 0.3 km

1:12,000 (when printed @ A3)

LEGEND

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 3 - Walkers Top

Area 3 - Walkers Top (Underground)

Mapped Soil Units

Arenosols

4.5.2.1

Chromosols

4.3.3.3

4.9.3.3

Dermosols

4.3.1.2

4.4.1.2

6.0.1.2

6.0.1.2/4.0.2.2/2.3.3.1/1.1.1.2

6.4.1.2

6.5.1.2

6.9.1.2

6.9.1.2/6.5.1.2/6.4.1.2/6.3.1.2

Tenosols

4.3.2.3

Sodosols

4.4.3.2/4.3.3.2

4.4.3.3/4.4.3.2

4.5.3.2/4.4.3.2/4.3.3.2

Rudosols

6.4.2.2

6.5.2.2

6.9.2.2

Kurosols

6.5.3.1

Kandosols

6.4.4.1

6.4.4.1/6.4.1.2

Australian Soil Classification (State Soil Mapping)

Dermosol

Sodosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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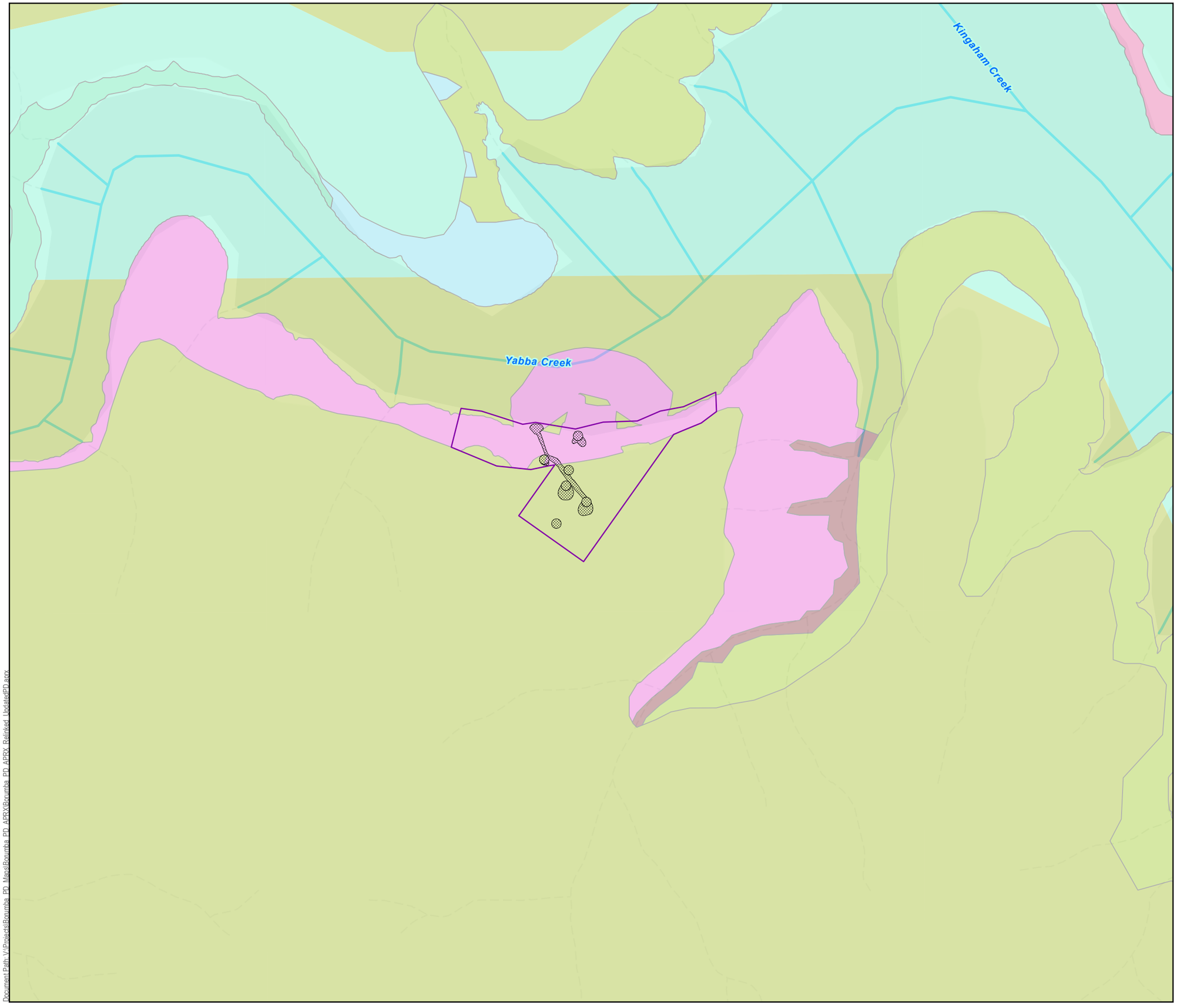
Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING
AREA 3 (WALKERS TOP)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE
16

Document Path: V:\Projects\Borumba_PD_Maps\Borumba_PD_APRX\Borumba_PD_APRX_Relinked_UpdatedPD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

0 0.1 0.2 km

1:6,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 3 - Walkers Top

Mapped Soil Units

Dermosols

- 6.5.1.2/6.4.1.2/6.3.1.2
- 6.9.1.2
- 6.9.1.2/6.4.1.2/6.3.1.2/6.0.1.2
- 6.9.1.2/6.5.1.2/6.3.1.2
- 6.9.1.2/6.6.1.2/6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2

Sodosols

- 6.0.3.2

Australian Soil Classification (State Soil Mapping)

- Dermosol
- Hydrosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
4. Australian Soil Classification © State of Queensland (Department of Resources) 2023
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Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING
AREA 3 (WALKERS TOP)

PROJECT #:	30032677/30032772
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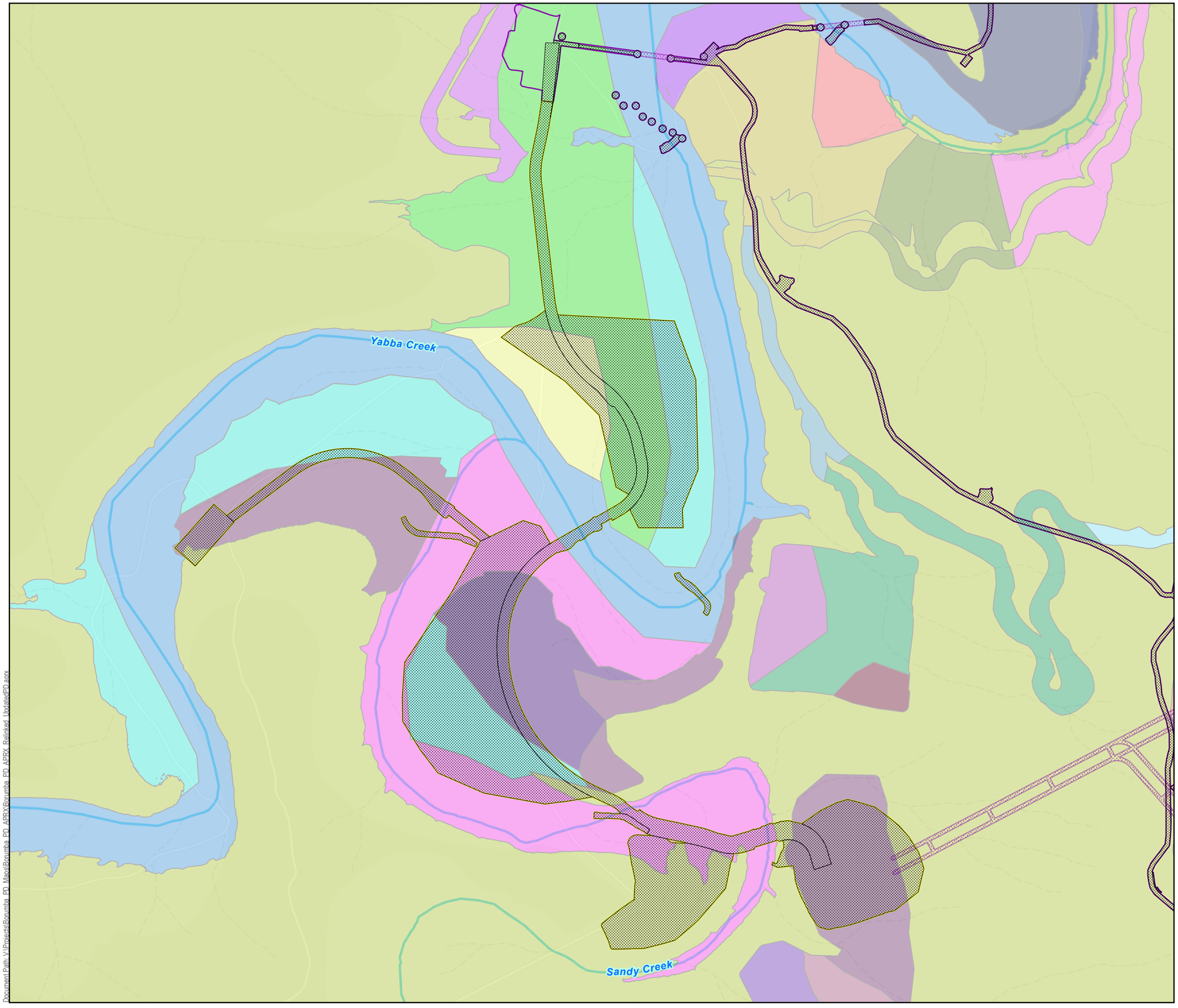
LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE
16

Document Path: V:\Projects\Roxmba_PD_Maps\Roxmba_PD_APRX\Roxmba_PD_APRX_Relinked_Update\PD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

0 0.1 0.2 km

1:8,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

Project Footprint

Project Area by Work Area

Area 3 - Walkers Top

Area 3 - Walkers Top (Underground)

Area 4 - Borgan

Mapped Soil Units

Chromosols

1.1.3.3/1.1.2.2/1.0.3.3/1.0.2.2

Dermosols

1.0.1.2

1.1.1.2

1.2.1.2

2.1.1.2/1.1.2.2/1.0.2.2

2.4.1.2/2.3.1.2/2.1.1.2

4.5.1.2

4.9.1.2

6.3.1.2

6.3.1.2/2.1.1.2

6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2

6.9.1.2

6.9.1.2/6.4.1.2/6.3.1.2

6.9.1.2/6.5.1.2

6.9.1.2/6.5.1.2/6.4.1.2/6.3.1.2

6.9.1.2/6.6.1.2/6.5.1.2/6.4.1.2/6.3.1.2/6.1.1.2

Sodosols

2.1.3.2

2.3.3.2/2.3.1.2

Kurosols

6.9.4.1

6.9.3.1

Kandosols

4.3.4.1/4.3.2.2

6.3.4.1

6.4.4.1/6.4.2.3

Australian Soil Classification (State Soil Mapping)

Dermosol

Data Sources:

1. Site Layout Items @ SMEC/ GHD / AFRY, 2022-2023
2. Watercourses © State of Queensland (Department of Natural Resources, Mines and Energy) 2022
3. Mapped Soil Units Aurecon 2024
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Exploratory Works Project
Preliminary Documentation

PRELIMINARY SOIL MAPPING AREA 4 (BORGAN)

PROJECT #:	30032677/30032772
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LAST MODIFIED:	NC17428, 3/10/2025
REVISION:	A

FIGURE 16

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3.5.5.3 Water quality monitoring

The Water Management Plan (Appendix K of the Preliminary documentation) provides for ongoing monitoring of groundwater and surface water quality in accordance with the Monitoring and Sampling Manual: Environmental Protection (Water) Policy (DES, 2018) for the duration of the Exploratory Works. Monthly water quality sampling is also being undertaken for the Main Works EIS, with sites relevant to the Exploratory Works.

Section 3.1.2 of the Water Management Plan identifies that a surface water and sediment quality monitoring program has been implemented for the Project. This program involves monthly water quality sampling at up to 30 sites, including areas upstream, within, and downstream of Lake Borumba. The monitored parameters include physicochemical properties (pH, electrical conductivity, dissolved oxygen, turbidity, etc.), nutrients, and metals. The plan also specifies that hydrocarbons, oil and grease, and herbicides are analysed on a less frequent, semi-annual basis.

Section 3.1.2 of the Water Management Plan also details monthly monitoring for groundwater. This includes sampling at 22 monitoring bores constructed as part of a hydrogeological fieldwork program in 2023, as well as more frequent telemetry monitoring of electrical conductivity and water levels.

Section 6.5 of the Water Management Plan has been updated to confirm that monitoring results will be reported in accordance with the CEMP.

3.5.5.4 Bed level stream crossings

There are temporary bed level and bridge crossings of Yabba Creek and Sandy Creek in Area 1 (Borumba Dam; bed level crossing only) and Area 4 (Borgan) that are part of the Exploratory Works. There are also six bridges that are referred to in the submissions that are not part of the Exploratory Works Project.

For the Exploratory Works, waterway crossing designs have been refined from gravel bed level crossings to concrete bed level and/or piped culvert crossings to reduce potential water quality impacts in response to public comments. The Water Quality Risk Assessment included with the Preliminary Documentation (Appendix G) has also been updated to identify erosion and sediment controls at these crossings.

Site-specific ESCPs will be developed and implemented for all crossing locations consistent with the standards and requirements in the PESCP, which is an appendix to the CEMP (Appendix F of the Preliminary Documentation). Works at and surrounding all crossing locations will be subject to robust erosion and sediment control measures (e.g. silt curtains, stabilising disturbed banks, monitoring) to minimise impacts on water quality, particularly during high-flow or storm-season conditions.

If unexpected delays push waterway crossings into the storm season, the CEMP calls for adaptive management. This includes adjusting work sequences and deploying additional stormwater controls to safeguard downstream water quality.

A brief description of the proposed crossings for the Exploratory Works are provided below.

At Area 1 (Borumba Dam), a single temporary bed level crossing of Yabba Creek, about 250 m downstream of the existing dam wall, will nominally be in place for two to six months (covering its establishment and decommissioning). The purpose of the bed level crossing is primarily to provide access to geotechnical investigation sites on the opposite bank. When work is complete, any placed rocks (approximately 10–20 m^3) will be removed and the crossing site restored to its pre-existing condition. Noting that this section of Yabba Creek has been augmented (instream and on the banks) as a result of remediation works on the existing dam wall in 2024/25, with Queensland Hydro using the same access points and tracks. This crossing will be used on an ‘as needed’ basis during the two-to-six-month window. A more detailed project schedule will be developed prior to the commencement of the Exploratory Works.

At Area 4 (Borgan), up to six temporary bed level crossings in Yabba Creek and Sandy Creek will be upgraded to support the Exploratory Works. Temporary crossings will include the use of temporary culverts and/or concrete bed level crossings. The temporary bed level crossings will be in place for the duration of bridge construction, after which the temporary culverts will be removed, and concrete bed level crossings will be installed. These temporary crossings will also be subject to the accepted development requirements or development approval for waterway barrier works under the Queensland Government’s *Fisheries Act 1994* and *Planning Act 2016*. A more detailed project schedule including timing for upgrading and installing temporary bed level crossings will be developed prior to the commencement of the works.

3.5.5.5 Alteration of flows

The proposed action does not include any significant changes to the hydrology of the area that would alter the flow regimes of the creeks or overland flow, with measure undertake to ensure these flows are maintained. This includes the used of culverts and drainage systems to maintain flows, along with siting infrastructure outside of watercourses and drainage lines.

Flow assessments were undertaken for the approved waterway barrier works approval (2409-42380 SDA received 12 November 2024) and bridge designs to mitigate any potential impacts to creek flows.

Potential changes to watercourses and the hydrology of the catchment are associated with the Main Works phase of the Borumba PHES Project, with these changes to be assessed through the EIS process.

3.5.6 Flooding

Summary of comments

Number of submissions referencing theme: 15

Public comments that expressed concerns about flooding noted the potential impacts that could occur (i.e., inundation of the upper reservoir) should the Main Works proceed. For instance, several submissions included the following text, or words to the same effect, *"We have serious concerns about the consequences of this project, particularly the threat it poses to the flora and fauna that will be devastated by drilling, clearing, and subsequent flooding".*

In addition, several comments spoke to concerns about an increased flood exposure to downstream communities, including references to concerns associated with any lower dam wall redesign(s). Of the remaining submissions that noted concerns about flooding, the specific comments were related to:

- flood level design standards of project components (i.e., civil compound, explosive store)
- changes to the water cycle that could occur due to vegetation clearing, which could in turn result in an increased flood risk in the area.

Further examples of matters raised on the topic include:

- "*Alteration of natural water cycles—The removal of vegetation reduces the ability of soils to retain moisture, leading to increased runoff and flooding in some areas…"*
- *"The clearing of extensive forest areas for new roads and infrastructure will also involve widespread flooding"*

Submissions referencing the inundation of the spoil areas have been addressed in Section 3.2.4 of this report.

Response to comments

As the scope of the Exploratory Works does not include inundating areas, nor changes to the lower dam wall, a response to submissions on this issue is not provided in this report. An assessment of the impacts associated with the Main Works will be undertaken as part of the EIS process for that project.

Flood level design standards were considered in the siting and design of Exploratory Works components, including the civil compound and explosive store. For example, the explosive store and spoil disposal areas are situated above the 1:100 year flood area, meaning they are not on land that is expected to be inundated by a flood that has a 1% chance of occurring in any given year. Further, the exploratory tunnel infrastructure is also predominantly situated above the 1:10,000 year flood area, with small areas of the spoil pad that are within the 1:10,000 flood area to be built up to provide immunity for a flood of this size.

It is considered highly unlikely that clearing vegetation for the Exploratory Works Project would cause a change to the water cycle that would result in an increased flood risk to the area. Research from Australia and overseas has demonstrated that hydrological changes (i.e., changes to stream flow and/or runoff) have been observed when the amount of vegetation removed exceeds 20% of the vegetation in a catchment (J. M. Bosch, 1982) (J. M. Bosch, 1982). However, observed impacts tended to become significant when removed vegetation was in the range of 30-50% vegetation removal from the entire catchment (Brown, 2005); (Scott, 1997) (Brown, 2005) (Scott, 1997). As a conservative calculation, the total disturbance area for the Exploratory Works (90.1 ha including previously disturbed grass paddocks) will be less than 1% of the total Lake Borumba catchment area (46,500 ha, which includes existing disturbed areas) . While there may be small changes to the local hydrology and overland flow paths as a result of the infrastructure and proposed works, it is considered highly unlikely that this will result in any changes to the water cycle that would lead to an increased flood risk to the area.

It is also important to note that the proposed clearing will be discrete in nature, and as outlined in Section 6.1 of the Preliminary Documentation, Queensland Hydro is committed to avoiding and minimising impacts wherever possible. This is evidenced by the mitigation measures embedded in the CEMP and supporting management plans, including commitments to progressively rehabilitate disturbed areas.

3.5.7 Fire

Summary of comments
Number of submissions referencing theme: 18

Public comments included concerns about the increased risk of fire and potential changes to the fire regime as a result of the Exploratory Works.

The following public comments are representative examples of this theme:

- *"Increased bushfire risk—scientific studies have linked widespread land clearing to an increase in bushfires due to higher ground temperatures, drier soils, and the introduction of more flammable invasive plant species (Jones & Smith, 2021)."*
- *"Research has shown that the impacts of fire and logging on hollow dependent arboreal marsupials significantly reduces the abundance of the Greater Glider through the loss of hollow bearing trees and forest canopy. McLean, CM, Kavanagh, RP, Penman, T & Bradstock, R 2018".*

Response to comments

The Project is unlikely to directly result in the permanent alteration to bushfire regimes. However, while there is likely to be a temporary increase in the risk of fire during the Exploratory Works, this risk will be limited to certain activities and areas, only during the construction period. The Exploratory Works will not have a material change to the future bushfire regimes of the area and there is also an opportunity for Queensland Hydro to actively manage the fire risk onsite, through the establishment of new firebreaks and maintenance of fuels loads.

Hollow dependent arboreal mammals are unlikely to be impacted by altered bushfire regimes, as the Project is unlikely to change the bushfire regime.

Queensland Hydro is unlikely to purchase their own firefighting equipment to put out fires created during the course of the Project. In a bushfire event, all works will comply with standard emergency procedures and the Bushfire Management Plan and Site Emergency Plan. Queensland Hydro intends to engage a suitably qualified and equipped emergency response team for the Project who can provide a first response to emergency scenarios such as bushfire and structural fire. The Project Emergency Response Team will provide first response only and will handover to emergency response agencies upon their arrival to site.

3.5.8 Facilitated impacts

Summary of comments
Number of submissions referencing theme: 13

Public comments raised concerns about the scope and assessment of facilitated impacts in the Preliminary Documentation.

Comments suggested that the Main Works and Powerlink's Transmission Connections project are facilitated impacts of the Exploratory Works. The comments suggest that these aspects should have been captured and assessed as part of the Exploratory Works Preliminary Documentation as facilitated impacts.

Facilitated impacts identified in the comments largely include impacts on MNES, as well as pressure on local housing availability and road infrastructure. Otherwise comments expressed concern that the Exploratory Works may enable or accelerate related projects without appropriate environmental or social impact assessment or safeguards.

The following public comments are representative examples of this theme:

- *"The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage Exploratory Works and Main Works project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing facilitated impacts."*
- *"As it is facilitated by the exploratory works, the proponent must be required to assess the direct, indirect and cumulative impacts to MNES from the upgrade of existing and construction of new access roads for the project."*
- *"Facilitated impacts: Increased strain on local housing and roads."*

Response to comments

The EPBC Act Significant Impact Guidelines (Department of the Environment, 2013) define facilitated impacts as "[the] result from further actions (including actions by third parties) which are made possible or facilitated by the action".

The Exploratory Works (the 'action' that is the subject of this assessment) comprise geological investigations, supporting infrastructure, and activities needed to inform the development of the separate and related Main Works.

Importantly, the geotechnical investigations that are the focus of the Exploratory Works do not make the Main Work or Powerlink's Transmission Connections projects possible. It is noted that the Exploratory Works themselves are temporary in nature and limited in scale, and do not authorise or commit Queensland Hydro to the construction or operation of the Main Works. While the Exploratory Works will inform the Main Works, other factors not related to the Exploratory Works will determine whether the Main Works go ahead.

Further, while Powerlink's Transmission Connections project is strategically related to the broader Borumba PHES Project, this component will not be made possible by the Exploratory Works, and therefore it is not a facilitated impact. Of note, transmission infrastructure would be a facilitated impact of the Main Works, with those components subject to separate approval processes under the EPBC Act and State legislation. Potential impacts (including facilitated impacts) on MNES will be assessed under the relevant EPBC Act processes for those projects.

As outlined in section 5.4 of the Preliminary Documentation, facilitated impacts of the Exploratory Works include construction of temporary accommodation camps and upgrades to local roads. These activities have been designed to avoid impacts to MNES where possible through the use of already cleared land and the existing road verge.

Further information about the potential social impacts associated with construction traffic is provided in Section 3.8.1 of this report. The social impacts of the Main Works will be addressed as part of the Borumba PHES Project EIS process.

In summary, the assessment has considered facilitated impacts in accordance with the EPBC Act and has addressed those reasonably foreseeable and directly enabled or facilitated by the Exploratory Works.

3.5.9 Cumulative impacts

Summary of comments
Number of submissions referencing theme: 8

Public comments raised concerns about the scope and assessment of cumulative impacts in the Preliminary Documentation.

Comments stated that although the broader Borumba PHES Project is promoted as being powered entirely by renewable energy, the associated infrastructure needed to support it, including large-scale wind and solar farms, transmission lines, and associated road upgrades, will result in significant habitat loss, ecosystem fragmentation, further pressure on threatened species, and along with visual amenity impacts. This alongside the cumulative impacts of Powerlink's Transmission Connections project, is viewed as being largely underestimated or unaccounted for in the Preliminary Documentation.

The following public comments are representative examples of this theme:

- *"The scope of developments that are considered for cumulative impacts are thus limited to a) proposals assessed under the EPBC Act, and b) other renewable energy projects. No justification is provided for this very limited approach. There are other developments in the region that may be highly relevant in assessing cumulative impacts from the Exploratory Works."*
- *"The cumulative effects of this project combined with other regional developments, such as local road upgrades, will compound the negative environmental impact. Together, these projects will exacerbate habitat loss, increase fragmentation, and threaten already endangered species."*
- *"As the proposed project is projected as running entirely from electricity generated from renewable sources the cumulative impacts are immense - from the Wambo Wind Farm to the west of Kingaroy which advertises the fact that the power generated there will travel down to the proposed Borumba PHES. Then we have the solar farms at Woolooga and the surrounding areas, along with Forest Wind Farm to the east of Gympie 226 wind turbines proposed for the state forests, with the power generated from it also going to the Woolooga substation"*
- *"Visual amenity is another major concern, as the construction of new infrastructure—such as the expanded dam wall and upper reservoir—could alter the picturesque landscape, undermining the scenic value that defines the region."*

Response to comments

As outlined in Section 5.5 of the Preliminary Documentation, cumulative impacts consider planned and approved developments. In accordance with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) guidelines, the assessment of cumulative impacts for assessment under the EPBC Act is typically limited to publicly available information on other developments that have prepared an impact assessment on MNES relevant to our Project.

Queensland Hydro reviewed the following sources of databases to identify local and regional developments relevant to the Exploratory Works:

- EPBC Public Portal
- Coordinated projects under the SDPWO Act
- State Assessment and Referral Agency database
- Projects planned under the EP Act
- Somerset and Gympie Regional Council development application databases.

With the exception of the Borumba PHES Project Main Works, no local developments for which information was available to inform a cumulative impact were identified.

The cumulative impacts of approved projects, including the Woolooga Solar Farm and the Munna Creek Solar Farm, were assessed accordingly and discussed in Section 5.5 of the of the Preliminary Documentation. It is also noted that power for the Exploratory Works will primarily be through diesel generators and not the existing power network (Section 2.7 of the Preliminary Documentation).

The assessment concludes that the potential cumulative impacts of the Exploratory Works on MNES, including the koala and grey-headed flying-fox, are expected not to be significant at either the local or regional scale, due to the limited spatial extent, short duration, and low impact nature of the proposed works.

While some public comments refer to broader infrastructure such as the Main Works and the Transmission Connections project, these future developments are subject to their own environmental impact assessments and approval processes under applicable Commonwealth and Queensland legislation, including detailed consideration of potential cumulative impacts of approved actions at that stage.

The Main Works Project has been referred to the Commonwealth Minister (EPBC 2023/09646), however, preparation of the EIS is still in progress, and the action has not been approved. The EIS will require a landscape and visual impact assessment. The Transmission Connection Project has also been referred to the Commonwealth Minister as the 'Borumba to Halys Transmission Connection Project' (EPBC 2025/10128).

3.6 Mitigation and management measures

3.6.1 Vegetation management

Summary of comments
Number of submissions referencing theme: 2

Public comments recommended strengthening the Project's vegetation management measures. They asked that cleared timber and debris be used onsite to create fauna habitat features, that the management plan include specific notification and handling requirements for Macadamia species, and that avoidance and minimisation of native vegetation loss remain the primary objective. Comments also sought a commitment to staged, progressive clearing tied to prompt rehabilitation of each work area.

The following public comments are representative examples:

- *Will timber worth logging be logged along all access tracks / proposed cleared areas?*
- *Where will cleared vegetation stockpiles will be located? The CEMP states that all timber will be stored in the spoil dump area, but realistically will Qld Hydro transport timber fallen from Walkers Top down to Borgan (Area 4) – this is a massive round-trip over difficult terrain. It is highly likely the timber will remain on-site where it is cleared, particularly if from Walkers Top.*
- *What is the volume of cleared material?*
- *Will flora worth saving / transplanting / seed saving be done?*

Response to comments

3.6.1.1 Vegetation clearing

All vegetation will be progressively cleared, with every effort made to minimise the extent of clearing in line with the avoid, minimise, mitigate hierarchy. As detailed in the FFMP (Appendix J of the CEMP), the clearing approach includes pre-clearance surveys by a suitably qualified ecologist, clearing in a staged manner under the supervision of a fauna spotter-catcher, and retention of habitat features such as hollow-bearing trees, stags, logs and ground debris, where safe and practicable. Vegetation clearing has been restricted to defined work areas, and micro-siting within those areas will be employed where possible to avoid impacts to threatened flora, mature trees, and sensitive habitat features. This approach ensures that clearing is targeted, ecologically informed, and implemented with appropriate environmental safeguards to reduce the residual impact on flora and fauna values.

Considering the nature of vegetation to be cleared and the relatively small extent of clearing commercial timber will not be harvested as part of Exploratory Works.

3.6.1.2 Seed collection

The FFMP for the Exploratory Works does not specifically propose a seed saving or seed collection program for native vegetation. However, it includes actions to gather and store seeds (if available) for the scrub turpentine (*Rhodamnia rubescens*) to secure genetic diversity for future populations.

3.6.1.3 Transporting cleared vegetation

Queensland Hydro acknowledges the concern regarding the practicality of transporting cleared vegetation from areas such as Area 3 (Walkers Top) to the designated areas. The CEMP states that spoil and material generated from activities such as geotechnical investigations (i.e. test pits, borehole drilling), exploratory tunnelling, and vegetation clearing will be transported and stockpiled in designated areas. The CEMP (Appendix F of the Preliminary Documentation) also provides for adaptive management and requires that stockpiling and the management of stockpiles is subject to environmental assessment and approval by Queensland Hydro, in accordance with the mitigation hierarchy and relevant plans (e.g. FFMP, Spoil and Water Management Plan).

In locations such as Area 3 (Walkers Top), if the transport of cleared vegetation to designated areas is demonstrated to be logistically or environmentally impractical, vegetation may be temporarily stockpiled on-site in a manner that avoids environmental harm, does not obstruct access or drainage lines, and remains consistent with the CEMP objectives. These decisions will be made on a case-by-case basis with appropriate environmental oversight.

3.6.1.4 Managing cleared vegetation

As outlined in the CEMP, all cleared vegetation including timber is proposed to be temporarily stockpiled in designated areas to facilitate appropriate reuse, management, or disposal.

Any cleared vegetation that is to be reused will be either utilised as fauna habitat where appropriate (e.g. hollows, felled timber, and root balls), or mulched and used in erosion and sediment controls – the decision will be at the direction of Queensland Hydro (as defined in the CEMP) or, in the case of mulch for ESCP, the CPESC.

Cleared vegetation will not be left unmanaged or abandoned within the Project area. Queensland Hydro remains committed to minimising environmental impacts and managing cleared vegetation responsibly, in line with Project commitments and regulatory obligations.

3.6.1.5 Macadamia species management and notification

Section 6.1.7 of the FFMP has been updated to include a provision that any Macadamia species identified during the course of the works will be reported to The Macadamia Conservation Trust and allow the Trust to map the individual(s), and in the case of clearing, take cuttings for propagation and relocation of that genotype as a mitigation action.

3.6.2 Invasive species and disease

Summary of comments
Number of submissions referencing theme: 16

Public comments questioned whether the Exploratory Works' proposed mitigation package is robust enough to prevent the spread of invasive species and disease. Respondents called for a fully developed Biosecurity Management Plan, specific measures to manage fire ant risk, a comprehensive feral animal control programme, clear protocols addressing chytrid fungus and other aquatic pathogens, and a commitment to ongoing monitoring with adaptive management to ensure these safeguards remain effective over the life of the Project.

The following public comments are representative examples:

- *The biosecurity management plan hasn't been included in the supporting documents, so cannot be reviewed. There are a number of biosecurity risks to the environment that have been identified including myrtle rust, chytrid fungus, bunya pine dieback associated with phytophthora species, and more recently, fire ants.*
- *As a consequence of minimal weed threat at present, higher levels of vigilance are required as fragmentation will allow easier pathways for new 'transformer' weed incursions to occur. To minimise the incursion of these weeds, greater attention is required to the threat posed by edge effects.*

Response to comments

A Biosecurity Management Framework has been developed for the Project and will be available on Queensland Hydro's website (refer to section 3.5.4 of this report for additional information regarding the Biosecurity Management Framework). The framework details how the Exploratory Works will address impacts of weeds, pests and pathogens, and includes the following:

- biosecurity matter assessment and mapping
- risk analysis
- management zones, which reflect the current level of infestations and the sensitivity of areas to incursion
- site specific weed control measures
- feral animal control measures
- pathogen control measures
- considerations for fire ants.

Noting that Queensland Hydro and the relevant subcontractors have in place biosecurity management plans for current works being undertaken for the Project,

Queensland Hydro is installing automatic washdown facilities at the two main entrances to the project site to help mitigate the biosecurity risk, with mobile washdown currently used onsite and to be used in other areas where applicable. For example, other stakeholders have specific requirements for their land such as the Conondale Resources Reserve.

It is unlikely that there would be any weed washdown procedures for any vehicles responding to wildfire or other emergencies due to the priority given to emergency response and human safety.

Queensland Hydro will take all reasonable and practical measures to minimise the biosecurity risks associated with the spread of invasive plants, pests and pathogens over the Exploratory Works from site establishment to decommissioning as part of their general biosecurity obligation under the Queensland *Biosecurity Act 2014*. This will include the management of giant rat's tail grasses, fire ants, and Phytopthora. Giant rat's tail has been observed in all work areas and is wide-spread throughout the Exploratory Works Survey area, particularly in paddocks and along existing access tracks.

3.6.3 Fire

Summary of comments
Number of submissions referencing theme: 10

Public comments called for explicit strategies to reduce fuel loads before and during construction, careful edge and corridor design to limit fire spread, stringent controls on potential ignition sources, and a clear early warning and rapid-response framework. They also emphasised the need for thorough contractor and workforce training to ensure all personnel remain prepared to prevent, detect and suppress bushfires throughout the life of the Project.

The following public comments are representative examples:

- *The risk assessment underestimates that more vehicles and human activity is likely to create a higher fire risk to areas that were previously inaccessible. Increased fire risk is a consequence of creating further fragmentation.*
- *Recommendation:*
  - *Prepare and implement a Fire Management Plan which considers the protection the Glider species and its habitat (including its range).*
- *How will they control the volume and reduce the fire hazard? Has potential ash contamination on Borumba water supply been considered if a bushfire occurs?*

Response to comments

As part of the historical grazing activities, the site has been frequently burned, with fires generally occurring in the winter months. Information from community members indicates there was also a major bushfire in 2015/2016. Queensland Hydro manages fire risk in accordance with routine management practices such as the maintenance of existing fire breaks and back burning activities. Whilst it is acknowledged that there is likely to be a temporary increase in the risk of fire from the Exploratory Works, this risk will be limited to certain activities and areas.

Strict controls have been developed to adequately manage the risk of work activities starting a bushfire, including limiting what work activities can be undertaken during high risk periods (for example, limiting works that have the potential to cause a spark). A Project Bushfire Management Plan will be in place during Exploratory Works that details the prevention, preparedness, response and recovery standards for bushfire management arrangements for the Project.

The FFMP (Appendix J of the CEMP) includes fire mitigation measures that specifically support the protection of threatened species and their habitat. These measures include:

- Management of fuel loads through weed control, slashing, and low-intensity burns to reduce fire risk in sensitive areas. The strategy explicitly aims to avoid fire encroaching into adjacent threatened species habitat.
- Maintaining access tracks, fence lines, and cleared overhead powerline easements as firebreaks to prevent fire spread into adjacent native vegetation and MNES habitat.
- Risk assessments for hot works that consider fire hazard ratings and local conditions to avoid accidental ignition.
- Implementation of the Bushfire Management Plan and Site Emergency Plan, which includes response measures tailored to limit environmental damage and protect high-value conservation areas during an uncontrolled fire.

These controls aim to prevent ignition, reduce fire intensity, and protect threatened species habitat from bushfire-related impacts.

Queensland Hydro have engaged a bushfire consultant to develop a Project Fire Management Manual, which details the specific fuel management activities to be undertaken to minimise vegetation fuel sources on the Project site, and the establishment and maintenance of firebreaks and fire trails. Vegetation management activities have already commenced, with a number of hazard reduction burns completed in 2024 and 2025.

Queensland Hydro intend to engage a suitably qualified and equipped emergency response team for the Project who can provide a first response to emergency scenarios such as bushfire and structural fire. The Project Emergency Response Team will provide first response only and will handover to emergency response agencies upon their arrival to site. Queensland Hydro will explore opportunities to coordinate a fire management strategy with the Queensland Parks and Wildlife Service (QPWS) and HQ Plantations to ensure a consistent approach to fire containment and management for the benefit of threatened species and their habitat.

Queensland Hydro acknowledges the fire risk associated with vegetation stockpiling and has committed to a range of management measures, as outlined in the CEMP, to reduce this risk from high to medium. Vegetation clearing will be minimised through careful planning and micro-siting, with cleared material either reused on site or progressively removed to prevent excessive stockpiling. Where cleared vegetation is temporarily stored, it will be located away from flammable assets and uncleared native vegetation and managed in accordance with fire preparedness protocols, including firebreaks and site-specific response procedures.

Due to the implementation of controls to manage bushfire risk, the risk of ash from a bushfire associated with the Project contaminating the water quality of Lake Borumba is considered low.

3.6.4 Tree hollow replacement

Summary of comments
Number of submissions referencing theme: 2

Public comments considered the proposed hollow replacement strategy inadequate for species that depend on tree hollows. They emphasised that retaining existing hollow-bearing trees should be the foremost objective, with on-site “stag translocation” of felled trunks used where retention is impossible. Where neither option is feasible, comments suggested that suitably designed artificial cavities should be installed at appropriate densities. Comments requested strict scheduling to avoid disturbing active nests or den sites, pre- and post-clearing occupancy checks, and a long-term program to maintain, inspect and replace installed hollows so that functional nesting habitat is sustained throughout the Project’s life.

The following public comment is a representative example:

- *The treatment of hollows (replacement and removal) is not clear throughout the document. In some sections there is the statement that salvaged hollows will be prioritised to the Offset sites as opposed to re-installation adjoining the impact site where the actual animals that are using them will remain after translocation. The proposed installation of nest boxes prior to the felling of hollow bearing trees and over 100 hollows lost, rests on the assumption that the translocated animals will take them up, an assumption that is not based in solid science given the early stage of knowledge collectively known on this topic.*

Response to comments

3.6.4.1 Approach to managing impacts on hollow bearing trees

Queensland Hydro has committed to a precautionary and impact avoidance approach to vegetation clearing during the Exploratory Works, with a strong emphasis on protecting habitat trees, particularly those containing hollows used by threatened fauna species such as the yellow-bellied glider, greater glider, and glossy black-cockatoo. As detailed in the FFMP, clearing will be staged and informed by pre-clearance surveys, with all potential habitat trees (including hollow-bearing trees) identified, assessed, and recorded by a suitably qualified ecologist. Where hollow-bearing trees are identified, they will be retained wherever practicable, and micro-siting of infrastructure such as tracks, pads, or drill locations will be employed to avoid or minimise direct impacts.

This commitment to micro-siting during construction allows flexibility to adjust works locations in real time to avoid ecologically sensitive features, including mature trees, threatened flora, and fauna habitat structures. In cases where clearing of a hollow-bearing tree cannot be avoided, the tree will be felled under the supervision of a fauna spotter-catcher, and suitable hollows will be salvaged for reuse. These mitigation measures are part of a broader adaptive management framework designed to reduce residual impacts on fauna and support the conservation of habitat features throughout the works.

3.6.4.2 Tree hollow replacement strategy

As detailed in the tree hollow replacement strategy (Appendix D of the FFMP), hollows will be salvaged from trees once the tree is felled, and the hollow will be retained for attachment to a host tree; however, this will only be done where the hollows are suitable for reattachment to host trees (i.e. they are structurally able to be attached – some hollow bearing limbs are too friable and will not withstand reattachment to a host tree).

The FFMP and OAMP (Appendix I of the Preliminary Documentation) have been updated to clarify that larger salvaged hollows (entrance diameter >10 cm) will be prioritised at the offset site as a way to improve habitat quality at the offset site in accordance with the requirements of the OAMP. Hollows are prioritised for installation at the offset site because doing so directly supports the long-term ecological function and habitat quality of the offset area, which is intended to compensate for residual impacts associated with the Exploratory Works.

Any additional salvaged hollows not used at the offset site including smaller salvaged hollows (entrance diameter <10 cm) will be installed in contiguous habitat adjacent to the Exploratory Works footprint as a way to maintain the extent of natural hollows to supplement the nest boxes.

As detailed in the tree hollow replacement strategy, there is evidence that greater gliders are using nest boxes. Emerging research found that the time for a nest box to be used by a greater glider was rapid, at an average of

34 days after time of installation, with camera monitoring over the course of a year revealing 100% colonisation across seasons regardless of nest box design (Ana Gracanin, 2025). (Ana Gracanin, 2025)

All nest boxes will be installed in accordance with best practices to maximise the potential for uptake by target species. For example, some nest boxes will be installed ‘rear-facing’ and will not be mounted in tree species that are subject to decorticating and/or shedding large strips of bark, which may obscure and/or block the nest box entrance over time. Section D-3-1 of the tree hollow replacement strategy has been updated to include these details.

The time between felling a hollow and securing the hollow to a host tree, particularly within the offset site, is likely to be lengthy. Therefore, any animal found within a hollow will be released as soon as practical in accordance with the FFMP and will not be held in captivity until such time as the hollow is secured to a host tree. If threatened fauna is located within a hollow, if the animal can be safely removed, the FSC will remove the animal in a safe and ethical manner and keep it in a crate in a cool, quiet location until dusk, when it will be released into suitable habitat. In this regard, there is limited potential to place an individual fauna species back in the hollow from which it was found.

3.6.4.3 Number of hollows

It is noted that public comments referred to "100 hollows" being lost. This appears to be an approximation or inferred estimate of hollows lost, rather than a calculated or verified number from the Preliminary Documentation or the supporting management plans. The number of hollows in the Exploratory Works footprint has been updated in Section 5.1.2 of the Preliminary Documentation to reflect changes to the Project design as well as to correct an error in the transcribed numbers, and is estimated to be 136. The final number of hollows will be determined following pre-clearance surveys, as outlined in the FFMP, with the aim to replace these on a 1:1 ratio.

3.6.5 Naturally occurring asbestos

Summary of comments
Number of submissions referencing theme: 3

The concerns raised in the public comments that referenced asbestos were focused on the following issues:

- presence of historical or legacy asbestos in the Project area
- health and safety risks for construction workers, local residents and wildlife
- lack of assessment and risk management of asbestos risks
- the need for recommendations for rigorous asbestos management measures.

The following public comment is a representative example:

- "*The project should not go ahead based on the presence of so much Mount Mia Serpentinite (DCs) (being highly likely that there will be naturally occurring asbestos) in a number of locations in the Project area for the proposed Exploratory Works. Impacts of disturbing asbestos must be assessed on human health and the health of wildlife including MNES*."

Response to comments

3.6.5.1 Asbestos in the Project area

Naturally Occurring Asbestos (NOA) is predominantly found in ultramafic and mafic rocks, with its formation interpreted to result from hydrothermal and metamorphic alteration processes.

Sampling and analysis for NOA is ongoing, and so far, a total of 183 samples have been screened, with 24 flagged as potentially positive. Confirmatory analysis that was subsequently completed for 15 of the potentially positive samples, indicated that 11 were confirmed to contain NOA. All 11 samples that were confirmed to contain NOA were collected from the Mount Mia Serpentinite lithology. Some of the potential occurrences were identified within samples of dolerite and metabasite and these will be subjected to further testing. Tremolite was the most commonly identified asbestos mineral, with one co-occurrence of chrysotile (all from the serpentinite unit). Mineralogical associations point to a strong correlation between NOA occurrence and the Mount Mia Serpentinite rock unit.

Based on our conceptual geological model, the majority of the Exploratory Works areas are not located in areas underlain by the Mount Mia Serpentinite. Exploratory works activities relating to the Kingaham Creek Bypass, some geotechnical investigation sites, small sections of access tracks, and parts of the temporary water infrastructure, are however, located within this rock unit and will be managed accordingly (refer to Section 3.6.5.2 below). No NOA has been confirmed within the rest of the Exploratory Works footprint with most of these areas located in different geological units.

3.6.5.2 Assessment and management of asbestos risks

Areas where NOA is detected or is likely to occur will be avoided or appropriate management measures will be applied. An NOA management plan will be developed by the relevant contractors (I.e. person with management or control of a workplace), with the plan outlining:

- the identification of NOA
- decisions, and reasons for decisions, about the management of NOA at the workplace (e.g. safe work procedures and control measures)
- procedures for detailing incidents or emergencies involving NOA at the workplace
- workers carrying out work involving NOA (e.g. consultation, responsibilities, information and training).

Queensland Hydro has in place a Fibrous Mineral Management Plan (FMMP) to support current onsite activities and is developing an overarching strategy to guide future works.

The FMMP's purpose is to identify, assess, and control fibrous mineral exposure risks. The plan notes the association of NOA with Mount Mia Serpentinite with these areas mapped as high risk and where measures need to be undertaken due to the high likelihood of NOA. The FFMP also outlines. includes procedures for working in

these high risk areas, notification processes, the safe handling and disposal of asbestos-contaminated waste, monitoring and managing incidents involving NOA. NOA is also a hazardous contaminant under the *Environmental Protection Act 1994*, Schedule 4 and will therefore be manage in accordance with legislative requirements.

Appendix B of the CEMP contains an indicative unexpected finds procedure that must be followed where contamination or NOA (or suspected contamination) is unexpectedly excavated or otherwise discovered. It has been prepared in accordance with consideration of the Managing Contaminated Land Guide[5]. Details of potentially contaminated areas and management recommendations are outlined in the Spoil Management Plan (Appendix H of the CEMP) and the Waste Management Plan (Appendix I of the CEMP).

The Spoil Management Plan has been prepared to guide the management of spoil during the Exploratory Works. There will be detailed site investigations before bulk excavation to understand the properties of the material to be disturbed and a NOA management plan or similar will be prepared for locations where NOA is found. The spoil areas are also of sufficient size to allow for material to be segregated for contamination testing before being placed in the stockpiles.

3.6.5.3 Health and safety risks

The Fibrous Minerals Management Plan outlines Queensland Hydro's proactive approach to identifying, assessing, and controlling potential exposure risks to NOA. This plan's objective is to ensure that the risk of exposure for personnel and the public is reduced to an acceptable level through detailed control measures. It establishes a continuous risk assessment methodology, including testing soils and rock for asbestos-containing materials, and provides specific training and instruction for workers on how to safely manage NOA.

The plan also addresses potential impacts to the local environment and its inhabitants. It details a range of controls and procedures designed to prevent the mobilisation of contaminants. These measures include using wet methods to suppress dust during digging and wet coring methods for drilling to minimise the release of potential fibres. Additionally, the plan establishes designated "clean" and "dirty" zones at work sites to prevent the transfer of any contaminated materials, ensuring the protection of the broader surrounding area. The potential receptors, which include local flora and fauna, are considered within this management framework.

[5] Queensland Government, 2025,Managing Contaminated Land guide, https://www.qld.gov.au/environment/management/environmental/contaminated-land.

3.7 Offsets

3.7.1 Offset sites

Summary of comments

Number of submissions referencing theme: 24

Public comments raised concerns about the selection of sites and their proximity and similarity (i.e. not truly "like-for-like") to the impact area, the absence of aquatic offsets alongside the terrestrial package, and the perceived exclusion of culturally significant values. Comments also pointed to delayed implementation schedules, insufficient detail on long-term funding and management arrangements, and the view that some highly localised or unique species and ecological features are effectively "non-offsettable."

The following public comments are representative examples of this theme:

- *The comments on MNES in particular the critically endangered species, the endangered species, the vulnerable species, their habitats, their breeding places, their foraging areas, the migratory birds flight paths, so many of these things cannot be offset, cannot be replaced simply by the designation of one area for another.*
- *Although the Offset Area Management Plan is quite detailed, it has a fundamental flaw in that nowhere is there a cost estimate of the management actions over time. Being involved with restoration of areas for over 20 years on my own property, the costs, labour and chemical use of what is being proposed must be estimated and budgeted for and included in the Offset Area Management Plan. This will highlight that there is insufficient data on weed mapping, type, extent and location in the offset areas to adequately cost what is proposed here.*
- *The Documentation states that in the Exploratory Works Survey area there are two threatened ecological communities, nine threatened flora and twelve threatened fauna. It is noted that mitigation measures and offsets are being proposed. If the offsets include the planting of new vegetation, how are they of any help to the animals that will be killed or displaced? Are the offset areas connected to the Borumba vegetation so that the animals can in future move into these areas as they reach sufficient maturity. Is there any effort to trap and relocate numbers of the displaced animals so that the remaining areas of original vegetation can support the various populations? Even if this was to be done, are there any appropriate areas that such animals could be relocated to? Are they of sufficient maturity and not already fully populated with wildlife, so as to provide a home for additional animals?*

Response to comments

3.7.1.1 Offset justification and targeted species

In accordance with the EPBC Act, MNES significant impact guidelines and the associated offset policy, offsets have only been proposed for MNES that are assessed as likely to be significantly impacted by the Exploratory Works. Offsets are not proposed for threatened species which are present, or anticipated to be present, that were assessed as unlikely to be significantly impacted by the Project. This includes aquatic species such the Australian lungfish, Mary River cod, Mary River turtle and white-throated snapping turtle, and migratory species.

The use of traps (e.g. cage traps, Elliot traps, or pitfall traps) to capture and relocate fauna from the Project footprint is not proposed. Any fauna that is required to be relocated will be moved via manual handling in accordance with relevant Codes (including the Code of Practice—Care of sick, Injured or Orphaned Protected Animals in Queensland), noting that Queensland Hydro's preference is for fauna to naturally disperse in response to mitigation measures such as sequential clearing. The placement of relocated fauna will depend on the location of suitable habitat (for each species), with a preference for areas directly adjacent the footprint where safe to do so. This approach will mitigate issues such as the anticipated carrying capacity of recipient sites, as these areas will likely form the home range of the species being relocated, along with stress, disease, and injury to or mortality of the individuals.

There is no planned relocation of fauna into the offset areas, with the intent of the OAMP for species to recolonise the areas from adjacent habitat within and outside of the offset. Though the OAMP does allow for the relocation of hollows from the impact area into the offset areas. However, noting that one offset site abuts the Exploratory Works footprint and this area may be part of the home range of a species, not just the Exploratory Works footprint. Further sequential clearing will be undertaken in these areas which may direct a range of fauna into this area.

The OAMP (Appendix I of the Preliminary Documentation) states that offset areas will be secured in perpetuity, formally restricting land use and livestock and enacting active restoration measures so that habitat availability increases over time. Since these areas connect to broader conservation landscapes, wildlife can gradually redistribute into regions that have the capacity to support them, rather than being confined to a single patch. As the OAMP explains, improved connectivity also alleviates overpopulation in any single location.

3.7.1.2 Management, legal security, and monitoring framework

While the OAMP proposes to track habitat improvements over a 20-year period, it also explains that the offset areas will be secured in perpetuity under legal mechanisms. Any ongoing obligations to manage and protect those areas remain in effect beyond 20 years; the stated timeframe is simply the window in which the OAMP's performance targets are expected to be achieved or exceeded. If progress lags, the plan explicitly notes that management would continue until completion criteria are met, even if that extends beyond 20 years.

The OAMP sets out an adaptive management framework designed to respond to factors such as extreme weather, pest infestations, or other unexpected disturbances. This includes annual compliance reports, five-yearly monitoring and review intervals, and specific triggers for re-examining or updating management actions. While formal detailed reviews are every five years, the plan also requires annual checks and periodic on-ground monitoring, so any unforeseen event (e.g., a major fire or outbreak) can be addressed without waiting for the next five-year milestone.

Although the OAMP stipulates comprehensive monitoring and review at five-year intervals, there is also annual reporting to DCCEEW. The document states that corrective actions must be deployed in response to any issues uncovered in these regular checks. This is intended to ensure management remains responsive and does not allow problems (e.g., high weed loads or pest incursions) to persist until the next five-year mark.

3.7.2 Offset Area Management Plan

Summary of comments

Number of submissions referencing theme: 24

The public comments sought clearer commitments on the cost of the offsets, assurance that target habitat quality benchmarks would be achieved and maintained, clear and realistic implementation timeframes, and a transparent monitoring framework with adaptive triggers. Comments also emphasised the need for decisive weed control measures and requested a full life-cycle cost analysis to demonstrate that adequate resources will be available for long-term offset stewardship.

The following public comments are representative examples of this theme:

- *"Under the proposed OAMP, the proponent has stated they anticipate that the ecological benefit (future habitat quality score) of the provided offsets will be realised after 20 years of active management, monitoring and adaptive management, and as such their obligation to actively manage the proposed offset areas including any required corrective actions will cease after 20 years."*
- *"Due to the physical challenges associated with restoring the affected ecological communities, we do not agree with the proponents' claim that the ecological benefits the offsets must provide will be fully achieved within 20 years."*
- *"As it's highly unlikely the ecological benefits the offsets must provide can be achieved within 20 years, we strongly recommend that the proponent is required to actively manage the proposed offset areas for a minimum of 50 years in order to ensure the offsets provide the required ecological benefits."*

Response to comments

3.7.2.1 Overall objectives, management, monitoring, and costs

The OAMP (Appendix I of the Preliminary Documentation) focuses on the ecological objectives, required management actions, and monitoring protocols for the proposed offsets, but it does not include a specific budget or cost breakdown for its implementation. Instead, the OAMP emphasises Queensland Hydro's commitment to implementing weed control, revegetation, pest management, and habitat restoration over a 20-year management period.

Queensland Hydro agree that natural regeneration (where appropriate) is more cost and labour efficient than revegetation projects. Natural regeneration also often grows quicker and is more resilient. A large portion of the Exploratory Works offset is based on natural regeneration and only revegetation is applied where there is little seedbank and chance of natural regeneration occurring.

Revegetation activities will be overseen by a restoration ecologist who will develop a revegetation and restoration plan and use nearby good quality remnant vegetation as a benchmark for species composition and structure.

One of the benefits of the proposed offset is the indirect protection of other MNES species and many non-threatened native species including rock wallabies, along with the respective habitats and vegetation communities. Restoration works will improve habitat quality for all native fauna and flora in the area and adjacent areas.

Costs are not required to be presented in an OAMP. Government agencies review and approve the proposed management actions, monitoring and performance outcomes and it is up to Queensland Hydro to ensure adequate funds are available to deliver the OAMP and achieve those performance outcomes.

Queensland Hydro is in the process of finalising costs associated with implementing the OAMP actions for the duration of the 20-year timeframe. Cost estimates had been developed during preparation of the OAMP, but Queensland Hydro are now refining these by engaging with local contractors, restoration ecologists and other suitably qualified persons. It is recognised a large financial investment is needed to implement environmental offsets. As part of this process information gaps will be identified and additional information will be gathered to ensure costings are as accurate as possible. Costs will also be regularly reviewed as the offset applies adaptive management principles and requirements may change over time. It is also acknowledged that costs are expected to increase over time for elements such as materials and labour.

Queensland Hydro is responsible for ensuring that funding sufficient to enable all management actions detailed in the OAMP is available to implement the plan and any corrective actions that are required to meet the performance

outcomes for the 20-year duration. Budgets are likely to be allocated in five-year blocks as things can change over 20 years and due to adaptive management needs of the offset it isn't possible to have a fixed cost for 20 years.

Queensland Hydro agrees that lessons and realistic costings from implementing the Exploratory Works OAMP will inform the offset strategy being developed for the Main Works.

Queensland Hydro also agrees that natural regeneration (where appropriate) is more cost and labour efficient than revegetation projects. A large portion of the exploratory works offset is based on natural regeneration and revegetation is only proposed where there is little seedbank and chance of natural regeneration occurring.

3.7.2.2 Weed and pest control and management

As part of the habitat quality assessment weeds, pests and disease have been assessed and where applicable the risk quantified. As part of the OAMP a baseline assessment will be undertaken in Year 1 to comprehensively map out the extent of this threat and for this information to guide the success of future management measures and actions.

The OAMP acknowledges that extensive weed management will be required (including regular monitoring, physical removal, and chemical treatment) and that baseline weed surveys and ongoing mapping are integral to this. Although the OAMP highlights several significant weeds (including Lantana, coral berry, and other species of concern) and control approaches, it also clarifies that new or emerging weed threats (e.g., cats claw creeper, Madeira vine, and ochna) would be actively managed under a broader weed control program. Specifically, the OAMP requires each offset area to adopt comprehensive surveillance and early intervention strategies, guided by adaptive management. These strategies extend to any emergent weed species observed during routine monitoring, with Appendix A and Table 27 (Offset Area Weed Control Methods) of the OAMP emphasising that weed management and hygiene measures are not limited to a predefined weed list but are to be applied as new threats appear.

If monitoring shows weed cover is not reducing to the level predicted within the offset areas, or new weeds of concern are recorded, then additional weed control will be implemented, and weed control methods will be reviewed. Weed control effort is greatest in the first two years and then a minimum of annually in years 3, 4 and 5. Queensland Hydro expects weed control will be done at least annually for the full 20 years, and the level of effort will have to ensure the performance outcomes are being met. Table 25 of the OAMP states weed monitoring will occur annually for the first five years and then go to every five years. It is recognised more frequent monitoring is required in those first five years when weed control effort will be more intensive and bigger gains made.

To support weed management a more detailed Weed Management Plan (WMP) will be prepared after the weed baseline survey is completed in Year 1. As outlined in Section 6.1.1 of the OAMP, the WMP will set priority areas, target species and control methods to be used. The WMP will be reviewed annually to ensure it is adequately responding to results of monitoring and adaptive to site conditions. The WMP can also provide guidance on weed control effort needed. Weed management will be implemented by suitably qualified persons.

Based on all of the above requirements Queensland Hydro believe weed management is adequately addressed. Flexibility in how weed control is done and level of effort required is going to vary year to year. The OAMP applies an adaptive management approach and can be flexible to address issues as they arise.

The OAMP recognises that abrupt removal of lantana can negatively affect ground-dwelling fauna and open forests to colonisation by higher-risk weeds or pasture grasses. Consequently, the plan adopts a staged removal approach. Table 26 of the OAMP states that weed control is to be phased, accompanied by supplemental planting or natural regeneration to provide alternative understory cover, which is especially important for black-breasted button-quail (*Turnix melanogaster*) and long-nosed potoroo (*Potorous tridactylus tridactylus*). The goal is to maintain protective ground cover during the transition to native vegetation, thereby avoiding sudden habitat loss or invasion by other noxious weeds.

Although the OAMP discusses ground shooting, traps, and baiting options, the plan also notes that feral pest management must be both adaptive and coordinated among specialists. Section 6.1 of the OAMP specifically identifies pig control, indicating that the precise method will be selected in consultation with "suitably qualified and experienced contractors", with an emphasis on strategies that ensure long-term effectiveness and minimise reinvasion. Under the adaptive management framework, if large-scale pen-trapping or sodium nitrite baiting proves more effective for the terrain, these methods can and will be integrated. Shooting is only one element of an overall program, not its singular approach, and would be done where possible with other landholders and in accordance with best practice methods.

The OAMP (Section 6.3, Table 3) underscores the importance of minimising clearing of Lowland Rainforest TEC. For the Exploratory Works, the design avoids large intact patches of rainforest whenever feasible. To maintain or improve habitat quality in the offset sites, the OAMP stipulates management measures (weed control, pest animal control, fire exclusion, and rehabilitation in cleared or regrowth areas) are required to maintain or improve rainforest structure, aiming to protect critical understorey functions and support key species. While the OAMP acknowledges that rainforest recovery is neither quick nor trivial, it also details permanent legal security measures for offset sites to ensure habitat maintenance well beyond the nominal 20-year improvement window.

3.7.2.3 Habitat quality, creation, and restoration

The final habitat quality score in the OAMP for each species and community is based on what can be achieved over a 20-year timeframe of active management, monitoring and implementing corrective actions where needed (Section 5 of the OAMP). This means that if the weed management effort is not reducing weeds to the extent required, a corrective action of additional weed control or reviewing and changing weed control methods will be implemented.

The OAMP recognises that portions of Offset Areas A and B have historically been subject to fire, grazing, and localised logging, which has impacted the diversity and age structure of the vegetation. Consequently, the OAMP sets out a program to bring back “high quality” native flora in regrowth and non-remnant areas. By using species of local provenance that reflect the nearby remnant vegetation, it specifically encourages reintroducing vegetation from remnant reference sites (such as the forest northeast of Borgan Pocket) that demonstrate the original composition and structure. This approach involves systematic weed removal, staged planting, and ongoing monitoring of survival and growth rates. Collectively, these measures aim to restore offset areas to a functional, self-sustaining state, reflecting the composition of intact vegetation communities.

Revegetation will occur in Offset Area B within the regrowth and non-remnant/cleared area where native regeneration is less likely to be successful. In the remnant vegetation areas activities such as weed control, fire management, and pest animal control will allow for the quality to improve over time by reducing weed control and pest animal presence.

The Commonwealth EPBC Act Environmental Offsets Policy sets the 20-year offset area management timeframe. The final score takes into consideration what the current condition is like now, the specific attributes identified to improve (e.g. canopy cover, coarse woody debris, flora species diversity, reduction of non-native plants, reduction of pest animals etc.) for each species, and the level of change that is predicted to occur over a 20-year timeframe.

For most species it is proposed there will be a one-point habitat quality increase over 20 years for both Offset Area A and Offset Area B, while a two-point increase is proposed for the Lowland Rainforest TEC and koala dispersal habitat. This is due to the current poor condition of vegetation and greater ability for gains to be achieved. A detailed breakdown, per species, of the habitat quality gains predicted for each Modified Habitat Quality Assessment (MHQA) site is provided in Appendix C of the OAMP. Queensland Hydro is working with ecologists including restoration ecologists to ensure the management actions and level of effort applied is effective and appropriate for the habitat quality gains to be achieved.

3.7.2.4 Monitoring

Monitoring is designed to assess if the habitat quality changes are happening as planned in response to the relevant management measures being implemented as part of the OAMP, and if not, corrective actions will be implemented. Monitoring includes assessing vegetation community changes and tracking the attributes targeted for improvement. The habitat quality monitoring is proposed every five years, which is to allow adequate time for these changes to occur. For example, canopy cover, shrub cover, coarse woody debris are unlikely to change substantially in one year. However, weed monitoring is proposed more frequently, being annually for the first five years (refer to Table 25 of the OAMP). Monitoring methods are outlined in Section 8.2 and corrective actions are summarised in Section 12 of OAMP.

Monitoring also includes targeted surveys to ensure that offset areas are being used by the species for which the offset areas are proposed. For example, drone surveys and detector dogs will be used to monitor the distribution and abundance of koalas and gliders in the offset area over time.

3.8 Economic and social matters

3.8.1 Access and construction traffic

Summary of comments
Number of submissions referencing theme: 8

Public comments raised concerns about construction traffic safety and management. Comments focused particularly on the suitability of Yabba Creek Road and Bella Creek Road for the projected volume of construction traffic.

The following public comments are representative examples of this theme:

- *"Access to the Exploratory Works is primarily reliant on Bella Creek Road, which is accessed from Yabba Creek Road. An estimate of site vehicle movements demonstrates a significant number of light and heavy vehicles forecasted to be using these roads. Despite the significant vehicle movements, only minor upgrades have been proposed for Bella Creek Road, with no detail on what these upgrades entail having been provided in the documentation. No road upgrades are proposed for Yabba Creek Road. The increase in vehicle movements with no consummate proposed upgrades may result in damage to the road network, putting other road users at risk of hazards and unsafe driving conditions."*
- *"Traffic on Bella Creek Road and Yabba Creek Road must be managed proactively, and impacts must be identified and mitigated to ensure the safety of students, staff, other community members and road users. The release of further documentation and detail of traffic matters (such as the abovementioned documents) is essential for this to occur."*

Response to comments

As described in Section 1.4.1.2 of the Preliminary Documentation, upgrades to local government roads used to access the Project (i.e. Bella Creek Road, Borgan Road, Yielo Road and Sunday Creek Road) are excluded from the controlled action. Section 2.5 of the Preliminary Documentation describes the extent of road and access tracks (new or upgraded) required to accommodate the Project's construction traffic.

To facilitate construction traffic for the Project, Preliminary upgrades to Bella Creek Road that not part of the controlled action were completed by Gympie Regional Council during October 2024 and upgrades to Yielo Road are proposed to begin in January 2026. These upgrades to roads excluded from the controlled action, and associated traffic impacts, will be regulated by State legislation.

As described in the Preliminary Documentation, a traffic impact assessment was prepared to identify the likely impacts the Project poses to the local road network, and the required road and access track upgrades. The traffic impact assessment is publicly available on Queensland Hydro's website.

A Road Use Management Plan is also available on Queensland Hydro's website and will be implemented prior to the commencement of the Exploratory Works (as per Section 4.1.2 of the Preliminary Documentation). This plan includes measures to manage increased vehicle movements, maintain appropriate road safety, and minimise disruption to the local community. The traffic impact assessment and Road Use Management Plan were developed in consultation with local and state road authorities.

A Social Assessment and Management Plan (SAMP) has been finalised in consultation with stakeholders and will be implemented throughout the Exploratory Works. The SAMP will ensure Queensland Hydro and its stakeholders are managing social impacts effectively, including those associated with traffic and access. The SAMP will be publicly available online[6].

[6] https://qldhydro.com.au/projects/borumba/

3.8.2 Cultural heritage

Summary of comments
Number of submissions referencing theme: 3

Public comments around this theme focus on the discovery of cultural heritage and engagement with traditional owners in the area. The following public comments are a representative example of this theme:

- *"Also there is a discovery of a culturally significant site that has raised environmental and cultural concerns."*
- *"This submission on Exploratory Works Draft Preliminary Documentation draws attention to Kabi Kabi's exclusion from participation in the environmental studies conducted by Queensland Hydro for the EIS for Borumba, studies which form the basis for the Preliminary Documentation. [redacted] has a specific and particular concern about Queensland Hydro's failure to consult Kabi Kabi people in relation to proposals for environmental offsets and the related Offset Area Management Plan (OAMP) which are now included in the Preliminary Documentation."*
- *"The EPBC Act rests on the premise that it is feasible and appropriate to treat matters related to the bio-physical environment separate to those related to Aboriginal culture and cultural heritage…[redacted] asserts that this premise is faulty and destructive of Aboriginal peoples, country and culture."*

Response to comments

Kabi Kabi Peoples are the holders of important rights and interests in the area where the Project is proposed. Queensland Hydro recognises Kabi Kabi Peoples' enduring culture and connection to Country.

The assessment reflected in the Preliminary Documentation and this Report has addressed potential impacts to MNES, being matters regulated by the EPBC Act, in accordance with the requirements of the Act. Queensland Hydro acknowledges that Kabi Kabi People adopt a more holistic approach that does not separate matters such as environment, people, culture and cultural heritage. Additionally, Queensland Hydro is engaging with the Kabi Kabi Peoples' Aboriginal Corporation Board (the KKPAC Board) about exploratory works offsets.

Aboriginal cultural heritage in Queensland is regulated under separate legislation, specifically the *Aboriginal Cultural Heritage Act 2003* (Qld). Queensland Hydro has entered into an 'other agreement' under section 23 of the *Aboriginal Cultural Heritage Act 2003* with the relevant Aboriginal Party for the area, the Kabi Kabi First Nations Traditional Owners Native Title Claim Group, who are represented by KKPAC. The agreement governs how Queensland Hydro and Kabi Kabi identify and manage impacts to Aboriginal cultural heritage during the Exploratory Works. Any discovery and management of culturally heritage is a confidential matter between Queensland Hydro and Kabi Kabi.

Looking forward, the KKPAC Board and Queensland Hydro have agreed on an approach to Kabi Kabi Peoples' participation in the main works EIS which considers a range of matters beyond those requiring assessment under the EPBC Act. Queensland Hydro considers that, drawing on thousands of years of knowledge and experience, Kabi Kabi can make a valuable contribution to the EIS. The KKPAC Board has clearly communicated to Queensland that it seeks to protect and advance the interests of the Kabi Kabi Peoples and Kabi Kabi Country. The KKPAC Board is committed to a thorough due diligence process so that they can be appropriately informed, and ensure that the broader Kabi Kabi community is informed and able to provide feedback, before they will make any decision to consent or otherwise in relation to the main works.

3.8.3 Community consultation

Summary of comments
Number of submissions referencing theme: 13

Public comments addressed the nature and extent of community consultation undertaken for the Project, including the inclusion of the relevant Aboriginal Party.

The following public comments are representative examples of this theme:

- *"Leading up to the draft, every interaction and engagement with Queensland Hydro has been the result of myself raising concerns. There was no consultation as to how this project would effect my family, business and our assets."*
- *"Stakeholder consultation has been extensive and effective but I still think that the people of the area do not understand the sheer scale of the work and the preliminary work. This is a continuing need. Probably my comment on consultation is general. The effort being made on consultation is good but needs to be extended so that it gets to more people. Free BBQ's, Bus trips, Stalls in Imbil market, an Imbil newspaper?- anything to get people some idea of the scale."*
- *"The consultation with the aboriginal title holders is outlined but there is nothing about the result of that consultation. While summaries of the other consultations are given we are not told anything much and not provided with any agreement or much at all about the agreement reached, the degree of consultation or the results so it is impossible to evaluate the effectiveness of that consultation."*

Response to comments

Queensland Hydro recognises that effective communication and engagement is critical to ensuring successful project delivery and positive outcomes for local people and communities. The Project's Community and Stakeholder Engagement Plan (CSEP) outlines the communication and engagement approach and activities for the Project. It provides a framework for ensuring that key stakeholders and communities are involved and engaged throughout the works. The CSEP will be publicly available online[7].

The CSEP presents the communication and stakeholder engagement activity for Exploratory Works. Engagement Actions Plans will be developed by Queensland Hydro's stakeholder engagement team to deliver specific campaigns aligned to the activities or programs in the schedule.

Since 2022, Queensland Hydro has provided stakeholders with two-way engagement and communications opportunities to provide feedback through channels including phone, email, meetings, briefings, workshops, community events and information sessions. Engagement activities reflect internationally recognised standards, with consultation and engagement activities planned and delivered in line with the IAP2 Public Participation Spectrum. A summary of stakeholder consultation activities is included in Section 10.3 of the Preliminary Documentation. Records of key themes raised during engagement are provided in Table 109 of the Preliminary Documentation.

The key themes and issues discussed in engagement with KKPAC, the relevant Aboriginal Party, is provided in Section 10.3.4 of the Preliminary Documentation. Further details about Queensland Hydro's engagement with KKPAC about the Project is provided in Section 3.8.2 of this report.

[7] https://qldhydro.com.au/projects/borumba/

3.8.4 Local employment and economic benefits

Summary of comments
Number of submissions referencing theme: 3

Public comments queried the associated job creation and economic benefits of the Exploratory Works or were otherwise generally supportive of the Project with regard to these issues.

The following public comments are representative examples of this theme:

- *"Employment Queensland Hydro promotes employment as a draw card for the locals of the area however they also identify that there are "low rates of labour force participation. This accords with the older age profile of the two LGAs." … How will the PHES benefit the town and its residents with employment opportunities if we are too old and are not of an appropriate employment pool as identified and reported several times by Queensland Hydro?"*
- *"I am concerned about the employment drain on businesses in the entire area when workers will leave already established jobs for well-paid work on the project. I have experienced this drain in 3 mining communities where I have lived. In a central Queensland coal mining town, even the school principal left the school and went to a higher paying job, driving trucks. How can this drain be minimised?"*
- *"I believe it's a hugely positive thing for the area, electricity supply going forward and will be of massive value to a huge range of small business's. The staff involved that I have had contact with to date have been a pleasure to work with. Good luck with the next stages of the project."*
- *"We are a local small scale accommodation provider in a neighbouring town. We have only been operating for the last two years and projects like these are hugely valuable to us and others alike. Food, accommodation and fuel are just a few small pieces of the puzzle."*

Response to comments

The Exploratory Works will generate employment and supplier opportunities. The Preliminary Documentation also acknowledges that while there is potential for some degree of unskilled labour to be employed by the Exploratory Works, the volume of local residents benefiting from additional employment is likely to be small. However, the value of employment to each of these residents may be significant, including through access to incomes, improved self-esteem, improved sense of identity, improved opportunities for social interaction and personal development.

As described in Section 10 of the Preliminary Documentation, the broader social and economic benefits of the Exploratory Works include:

- improvements to road access
- patronage of local businesses
- provision of environmental data that may not otherwise be collected to regulatory agencies
- works associated with the delivery of offsets.

Queensland Hydro has developed a Jobs, Skills and Industry Participation Framework aimed at maximising local benefits across the project phases. Key documents under development include:

- Policies: Queensland Hydro Diversity and Inclusion Policy, Queensland Hydro Procurement Policy and First Nations Participation Policy.
- Plans: Queensland Hydro Jobs, Skills and Industry Participation (JSIP) Plan and Borumba Pumped Hydro Project AIP Plan.

The JSIP Plan is built upon five pillars:

- local industry and workforce participation
- workforce development
- diversity, equity and inclusion
- future talent and capacity development
- collaboration and industry partnerships.

Additionally, principal contractors for Exploratory Works will be contractually required to prepare, and submit to Queensland Hydro, quantitative and qualitative reports that demonstrate performance against a range of workforce composition measures including:

- proportion of the total workforce that are residents of the Project Area, Regional Area, and elsewhere in Queensland
- proportion of the total workforce who identify as Indigenous Persons and are residents of the Project Area, Regional Area, and elsewhere in Queensland
- proportion of the total workforce who identify as female
- proportion of the total workforce comprising of young people under the age of 25
- proportion of the total workforce comprising apprentices and trainees
- proportion of the total workforce participating in workforce training.

An overarching SAMP has been finalised in consultation with stakeholders and will be implemented throughout the Exploratory Works and will be publicly available online[8]. The SAMP will ensure Queensland Hydro and its stakeholders are managing social impacts effectively, including workforce management, and local business and industry procurement. The SAMP includes measures to manage the increase in competition for local workers that could exacerbate existing constraints and drain on local businesses. The measures include:

- identify and participate in local employment and workforce development working groups
- working with stakeholders, including Industry Skills and Jobs Advisors, Regional Jobs Committees, and education and training providers to identify skills gaps and tap into development opportunities such as skilling of young people with transferable and transitional skills to enable employment in the renewable energy sector.

[8] https://qldhydro.com.au/projects/borumba/

3.8.5 Recreation and tourism

Summary of comments
Number of submissions referencing theme: 9

Public comments raised concerns around potential interference of the Exploratory Works on recreation and tourism, including from impacts on scenic amenity and interrupting access to and use of Lake Borumba's recreational areas. The following public comments are representative examples of this theme:

- *"The region is known for its pristine landscapes, attracting visitors for bushwalking, camping, and nature-based tourism. Large-scale industrialization could deter visitors, leading to economic downturns in tourism-dependent businesses."*
- *"Lake Borumba's primary function is providing water resources to the Mary Valley agricultural area. However, the lake is also utilised for tourism and recreational purposes, including fishing and boating, powered water sports (water skiing, jet skiing and tubing), non powered water sports (rowing, canoeing, kayaking), dirt biking, horse riding, birdwatching, picnicking, sightseeing, and camping."*
- *"The project will cause lengthy interruption to tourism in the area, perceptually if not initially directly. If tourists and visitors are unsure of access or quality of access to the Dam they will not make the journey. The Mary Valley has only just reconstituted itself after the Traveston Dam debacle and Covid lockdowns both of these 'events' almost crippled us. Recreational availability to both visitors and residents is beneficial for economic, physical and mental wellbeing."*

Response to comments

Section 10 of the Preliminary Documentation acknowledges the existing recreational and tourism uses in and around Lake Borumba, including boating, camping, and nature-based tourism.

The Exploratory Works does not involve permanent infrastructure or any operational changes to Lake Borumba or its recreational use. The Exploratory Works are not expected to restrict public access to the lake, the day-use area, boat ramp, general parking areas, or the Lake Borumba Caravan and Campground, which will remain operational. Importantly, most of the Exploratory Works will occur within Queensland Hydro-owned land, where there is no existing public access or recreational use, and the land is well displaced from Lake Borumba's recreational areas. Similarly, works within the Conondale Resources Reserve will not impact public facilities, as there are no established trails or recreational infrastructure in the proposed work areas.

Queensland Hydro however acknowledges that there will likely be some disruptions along the main arterial routes used by recreational; users of the area, along with disruptions to the local amenity as a result of geotechnical works planned for the area around Borumba Dam wall.

An overarching SAMP has been finalised in consultation with stakeholders and will be implemented throughout the Exploratory Works and will be publicly available online[9]. The SAMP will ensure Queensland Hydro and its stakeholders are managing social impacts effectively, including health and community well-being associated with access to local amenities and tourism values. In particular, the SAMP includes measures to manage the Project's impacts on the local character, community and tourism values including:

- Engage with tourism operators and key businesses to monitor visitor appeal and character and to maintain positive relationships.
- Schedule exploratory works activities occurring closer to Borumba Dam around non-peak visitor periods as much as possible to minimise disruption.
- Deliver a community benefits program to support regional initiatives that enhance tourism and community amenity.

[9] https://qldhydro.com.au/projects/borumba/

3.8.6 Greenhouse gas and energy audit

Summary of comments
Number of submissions referencing theme: 3

The comments that referenced the greenhouse gas and energy audit theme were very brief, but direct in nature, and focused on three matters:

- *"The "Borumba Pumped Hydro project" has failed to account for the full lifecycle emissions associated with the project."*
- *"The Project has failed to provide a greenhouse audit that can clearly articulate how the project will result in a net loss of emissions."*
- *"The Project has not published an energy audit to demonstrate it is of benefit to the community."*

Collectively, these comments appear to suggest that members of the community feel that the information in the Preliminary Documentation was insufficient to properly understand the impact the Project will have on Australia's carbon reduction targets nor on the electricity grid as neither a greenhouse gas, nor energy input, assessment was prepared in support of the Exploratory Works. One of the comments indicated they would like to understand whether the Exploratory Works and/or the Borumba PHES Project will have a net benefit with respect to emissions.

Response to comments

The Preliminary Documentation has been prepared in accordance with the RFI issued by DCCEEW and for the purpose of gaining approval under the EPBC Act to undertake the Exploratory Works. The RFI did not require a greenhouse gas (GHG) assessment of the Exploratory Works.

It is noted that the Borumba PHES Project Terms of Reference for the Environmental Impact Statement prepared for the Main Works requires a comprehensive GHG assessment be prepared for that Project. This assessment is to be prepared in accordance with the requirements of the *National Greenhouse and Energy Reporting Act 2007* (Cth) and its subordinate legislation, including methodology, emissions factors, and calculations used to estimate the Main Works Project's GHG emissions.

In accordance with the GHG audit requirements, the energy inputs required to construct the Main Works Project will be calculated. The results of this assessment will be published for public consultation as part of the EIS process for the Main Works.

3.9 Environmental record

Summary of comments
Number of submissions referencing theme: 4

Public comments regarding the statement of environmental record of the persons proposing take the action raised concerns regarding the relationship of Queensland Hydro's employees with the Snowy Hydro 2.0 Project.

The following public comment is a representative example of this theme:

- *"…senior Queensland Hydro staff who are responsible for the Borumba project's design, execution and environmental management, (including the CEO mentioned in the preliminary documentation), formerly held similar senior positions on the Snowy 2.0 project, either as employees of Snowy Hydro, or major contractors such as Clough/WeBuild and SMEC. Snowy 2.0 has a well-documented history of environmental breaches and non-compliances on similar issues that are of concern to the [redacted] regarding the Borumba project i.e.: water quality, sediment and erosion control, development and successful implementation of detailed management plans required as conditions of project approval".*

Response to comments

As described in Section 12 of the Preliminary Documentation, Queensland Hydro is the proponent proposing to take the action.

Under the EPBC Act, if the relevant 'person' (i.e. the proponent of an action, approval holder or transferee of an approval) is a company, the Minister may also consider the environmental history of the executive officers of the company.

Neither Queensland Hydro nor its parent company have committed offences under Commonwealth and/or State law for the protection of the environment or the conservation and sustainable use of natural resources. Similarly, no member of the Queensland Hydro Board or Executive Leadership Team has committed an environmental offence.

4. Conclusion

This report provides Queensland Hydro's response to public comments received on the Preliminary Documentation for the Exploratory Works.

Queensland Hydro has carefully considered all public comments received on the Preliminary Documentation. In response to public comments, Queensland Hydro has refined the Project and updated the Preliminary Documentation and associated figures, technical reports and management plans.

The following sections of the Preliminary Documentation have been updated:

- Preliminary Documentation report:
  - Section 1 – Overview
  - Section 2 – Project description
  - Section 5 – Impact assessment
  - Section 6 – Mitigation and management
  - Section 7 – Significant impact assessment
  - Section 8 – Proposed offsets
  - Section 9 – Habitat quality assessment
  - Section 10 – Economic and social matters
  - Section 12 – Environmental record of the person proposing to take the action
- Appendix F – Construction Environmental Management Plan
  - Appendix J – Flora and fauna management plan
  - Appendix K – Water management plan
- Appendix G – Water quality risk assessment
- Appendix H – Risk assessment for impacts to threatened species
- Appendix I – Offset Area Management Plan
- Appendix J – Significant impact assessments of MNES with potential to occur.

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Appendix A – Public comments register

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
1	I am against the creation of this expensive project that produces to power. We are paying more and more for our electricity because the government refuses to build the most cost effective and reliable solution. Use our huge reserves of coal and gas! Build new power stations instead of chasing a ridiculous climate goal. We are going to send ourselves broke in the name of political optics. In short, abandon this pumped hydro project and build natural fuel generators (coal and gas)	3.1
2	General comment - One of the basic tenets of the Community Benefits Program is to create 'enduring community legacies' for the Mary Valley. The Mary Valley Rail Trail extension from Imbil to Amamoor is a compelling project that will certainly fulfill this goal. In terms of health and wellbeing, social interaction, and an economic driver via nature-based tourism, a MVRT connecting Brooloo, Imbil, Kandanga, and Amamoor will significantly benefit residents and visitors in the Mary Valley. I urge Qld Hydro to champion this project.	3.8.5
2	I am a member of the Imbil Focus Group. I have also attended a number of other community engagement sessions that Qld Hydro have conducted (community information sessions, Community Connect). It is my opinion that the views and concers expressed by some attendees at these sessions is fairly expressed in this section of the document.	3.8.3
3	This would have to be one of the most ridiculous projects ever put forward by the previous labor government, it is up there with the desalination plants that are mothballed. It will be costly and will not bring down the cost of electricity. Why doesn't the government stop wasting time and money on this white elephant project and do something for the homeless- spend the money on affordable housing	3.1
4	Total waste of time and money. Pumped hydro as a renewable energy option is totally reliant on government subsidy from taxpayers funds. If a project like this is financially or commercially viable, no government funding of any kind would be needed. Don't do this project, it is unnecessary at any time.	3.1
5	The Borumba Dam Project will be a big improvement to the south east of Queensland power supply. This needs to go ahead for the future of Queensland. Will also provide many jobs for the local and surrounding areas for many years to come. Most of all renewable energy is a big step in the right direction for the future of all Australians.	3.1
6	The Borumba Dam Project will be a big improvement to the south east of Queensland power supply. This needs to go ahead for the future of Queensland. Will also provide many jobs for the local and surrounding areas for many years to come. Most of all renewable energy is a big step in the right direction for the future of all Australians.	3.1
7	I am writing to express significant concerns about the proposed Borumba Pumped Hydro project near Imbil, Queensland. Beyond the project's escalating costs and delays, several systemic issues raise doubts about its viability and potential impact. Competing Infrastructure Demands and Labor Constraints Queensland is currently undertaking an unprecedented infrastructure expansion leading up to the 2032 Brisbane Olympic and Paralympic Games. The state government has committed to a $107 billion infrastructure investment over the next four years, encompassing a wide range of projects from transportation to renewable energy. Additionally, there is an estimated $200 billion in government procurement opportunities projected between now and 2032. This surge in infrastructure projects is placing immense pressure on the construction industry, leading to significant labor shortages and escalating costs. The Brisbane 2032 Games alone require substantial investments in new venues and upgrades, with the venue infrastructure program budgeted at $7.1 billion. This massive undertaking coincides with other critical projects, such as the Sunshine Coast Rail Line and the Coomera Connector, all vying for the same pool of skilled labor and resources. The convergence of these projects has led to a highly competitive labor market. Reports indicate that the government is effectively 'bidding against its own projects' to secure the necessary workforce, resulting in a labor war that drives up wages and project costs. This competition not only inflates budgets but also poses risks to project timelines and quality. Implications of Reduced Capacity In response to the Borumba project's cost escalation from an initial $14.2 billion to $18.4 billion the government is considering downsizing the project's capacity by at least 25% to align the budget closer to $14 billion. Originally designed to dispatch 2,000 megawatts (MW) of stored energy for up to 24 hours, sufficient to power up to two million Queensland homes, a 25% reduction would decrease capacity to 1,500 MW. This downsizing would proportionally reduce the number of homes powered to approximately 1.5 million. However, such a reduction raises concerns about the project's overall viability. The economies of scale inherent in large-scale infrastructure projects mean that decreasing capacity does not linearly reduce costs. Fixed costs associated with construction, environmental mitigation, and regulatory compliance remain substantial, potentially leading to a higher cost per megawatt of capacity. This scenario could render the project less cost-effective and undermine its intended role in stabilizing Queensland's energy grid. Recommendation Given these challenges, I strongly urge a comprehensive reassessment of the Borumba Pumped Hydro project. It is imperative to consider whether proceeding with this project amidst a congested infrastructure pipeline, constrained labor market, and potential capacity reductions is prudent. Exploring alternative renewable energy solutions with more predictable costs and timelines may offer more sustainable benefits to Queensland's energy future.	3.1
8	The impact the dam will have on Imbil town, the drilling of a new hole won't happen because the drill is stuck in the Snowy drill hole. What a waste money that still is... Stop making up these made-up jobs wasting our tax money again. There is abundance of wildlife that is going to destroyed forever. Farmland that is wasted for solar. By the way, under those solar panels out there it's an extra 4 degrees hotter! and you talk about the planet getting hotter, OMG! No sheep wish to be near the solar to hot also the radiation exposure. Animals are not stupid presumably that's how you're treating us. Not to mention wind turbines that break down, use loads of oil to lubricate the large ball bearings! We already have transmission lines in place, allot people think there's more to this a land grab? as a resident of Imbil, where is the new Doctors we were promised?	3.1
9	There is a significant amount of natural bushland which will be impacted by this Project. Owners of cattle properties are not interested in having their land carved up for easements or having heavy equipment stirring up their herds. The native flora and fauna will never come back from this butchering of this beautiful peaceful environment setting. Shame on the previous government for attempting to do this.	3.5, 3.5, 3.6
10	No comment	No response required
11	I oppose the proposed Borumba Pumped Hydro Exploratory Works because it will destroy habitat of many critically endangered species and fragment their habitat.	3.5, 3.5, 3.6
12	I oppose the proposed Borumba Pumped Hydro Exploratory Works because the ecological affects on widespread flora, fauna, waterways and local community the stress and damage on local roads and bridges the psychological, emotional and physical stress on local people and community	3.5, 3.5, 3.6
13	I oppose the proposed Borumba Pumped Hydro Exploratory Works because It is a financial liability for generations to come in every aspect!!! Environment, Sustainability, Ecologically, locally & tourist wise we will be destroyed!!! The government are not looking at a green alternative with this proposal from qh!!! The idea of telling locals, hoping for a sweetener suggesting they'll do drs, beautification, blah blah is a hoax & no evidence of government grant has yet shown us that it is mearly blackmail "if" you got your way!!! Deception is the reflection of this government!,, One Nation or independent representatives is our way forward. This 2 party " UNPREFFERED SYSTEM" needs to g9 too so we can legitimately bring Australia back for Australian's .	3.1
14	I oppose the proposed Borumba Pumped Hydro Exploratory Works because As the cost is outrageous	3.5, 3.5, 3.6
15	I oppose the proposed Borumba Pumped Hydro Exploratory Works because I believe it is environmental validism. Humans have been causing environmental damage for eons. It's time to take a stand and be strong enough, caring enough to ensure there are homes for our dwindling wildlife. Dwindling because of land clearing and other devastating impacts. Please reconsider and never attempt this again.	3.5, 3.5, 3.6
16	This is a complete disaster for the environment. We need more bushland not less. Imbil IS ABOUT TO BE DESTROYED. All about the money for qld hydro. I say no to this project.	3.5, 3.5, 3.6
17	I oppose the proposed Borumba Pumped Hydro Exploratory Works because please insert your reasons here	3.5, 3.5, 3.6
18	I oppose the proposed Borumba Pumped Hydro Exploratory Works because devastating eco and habitat destruction	3.5, 3.5, 3.6
19	I oppose the proposed Borumba Pumped Hydro Exploratory Works because you are killing endangered wildlife	3.5, 3.5, 3.6
20	I strongly object to the environmental damage that will occur as a consequence	3.5, 3.5, 3.6
21	I oppose the proposed Borumba Pumped Hydro Exploratory Works because So tired of the environment and nature areas been compromised for multitude of reasons be good or bad. It is at a point that we have to protect every last bit we have. In a country with such a bad track record for protecting what little is left, it is not only for the benefit of us, but our children to protect these areas. Time to get smarter about how we do things.	3.5, 3.5, 3.6
22	This township relies on the public to have access to the dam for fishing and various water sports and if that is lost this town will shorly die.	3.8.5
22	I believe the cost of this project will blow out and cost much more than the current cost of 18 billion dollars.I also believe Queensland hydro are not being fully transparent with The building off this project and how it will impact the community.This township relies on the public to have access to the dam for fishing and various water sports and if that is lost this town will shorly die.	3.1
23	I oppose the proposed Borumba Pumped Hydro Exploratory Works because so this land remains in tact. We need to nurture not destroy	3.5, 3.5, 3.6
24	I oppose the proposed Borumba Pumped Hydro Exploratory Works because It's a very big environmental disaster waiting to happen. Not to mention the wild life destroyed in the process. I'm also concerned as to what will happen when things go wrong? Wipe out the whole of Imbil? We visit this area regularly to enjoy this beautiful area and what it offers. As well we have relatives living in the area and are concerned about the impact it will have on them.	3.5, 3.5, 3.6
25	The impact and risk to not only the community, but also wildlife and natural environment is too great. The cost of the project far out weigh the benefits.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
26	The native animals have nowhere to go. Their habitat is being destroyed at an alarmingly rate & no-one seems to care. Destruction in the name of progress is happening all over Australia. I moved to Imbil for its beauty & tranquillity. I see Wallabies & Echidnas in my garden. Rainbow Lorikeets & King Parrots visit my back verandah. I have not seen this anywhere else. There are Turtles, Platypus, Koalas & many other amazing creatures that will lose their lives if this goes ahead. It will also change our lovely little town forever. I say no. No to Borumba Hydro.	3.5, 3.5, 3.6
27	I oppose the proposed Borumba Pumped Hydro Exploratory Works because: Borumba Pumped Hydro (SE QLD) exploratory works are a big step towards the construction of the 1500 ha Borumba Pumped Hydro scheme. We have serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders , Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site. The destructive and costly nature of pumped hydro construction is already on full display with the failed Snowy Hydro 2 project in NSW. This makes headlines regularly with broken machinery, delays in timelines, unexpected technical problems, worker safety issues and phenomenal cost blowouts. Our unique habitat and threatened wildlife are too much to gamble on for Borumba Pumped Hydro. The exploratory works should be rejected and the project should now be stopped.	3.2.1
28	I oppose the proposed Borumba Pumped Hydro Exploratory due to its impact on the environment and potential damage to the Mary River catchment.	3.5, 3.5, 3.6
29	I am writing to express my strong opposition to the proposed Borumba Pumped Hydro Exploratory Works. As an artist who visits Borumba from time to time, I cherish this area's natural beauty and do not wish to see it desecrated.	3.5, 3.5, 3.6
29	The impacts of Snowy Hydro 2 have been detrimental on numerous levels, leading me to question why anyone would consider repeating such a mistake. The energy produced will not provide the dense, reliable power that Australia needs, nor does it contribute to our energy sovereignty. Moreover, the push for renewables has already resulted in the destruction of many bushland areas that have been carved up for such projects. I believe we must prioritize the preservation of our natural landscapes over questionable energy solutions.	3.1
30	I strongly oppose the proposed Borumba Pumped Hydro Exploratory Works due to the potential for "catastrophic" flooding and the destruction of critically endangered species' habitats.The exploratory works for the Borumba Pumped Hydro scheme represent a significant step toward the construction of a 1,500-hectare project. The destructive and costly nature of pumped hydro construction is already exemplified by the failed Snowy Hydro 2 project in New South Wales, which has been plagued by frequent headlines regarding broken machinery, delays, unexpected technical problems, worker safety issues, and significant cost overruns. Given these circumstances, our unique habitat and threatened wildlife are far too valuable to gamble on the Borumba Pumped Hydro project. I strongly advocate for the rejection of the exploratory works and for the project to be halted entirely. Thank you for considering my concerns.	3.5, 3.5, 3.6
30	We have serious concerns about the impacts this project would have on threatened flora and fauna that will be devastated by drilling, clearing, and flooding. This project is vast and invasive, and there is simply no way to rehabilitate mature forests once they've been destroyed. Once construction begins, halting the momentum will be nearly impossible, and the project could continue for years. Unique and delicate ecosystems will be irrevocably damaged, and extensive forest areas will be cleared and fragmented for new roads and infrastructure—all leading to widespread flooding. These actions will likely jeopardize a variety of threatened species, including the endangered Mary River turtles and the critically endangered White-throated snapping turtles. Furthermore, threatened species confirmed to inhabit the exploratory site include Koalas, Glossy Black-cockatoos, Greater Gliders, Northern Long-nosed Potoroos, White-throated Needletails, and Yellow-bellied Gliders.	3.4, 3.5, 3.6
30	I urge the Queensland government to reject this controversial dam project in the best interests of the state's ecology and biodiversity. This proposal will not provide baseload power, and its only beneficiaries will be vested interests. We have seen enough damage to Queensland's high biodiversity due to renewable energy projects. The $14.2 billion Pumped Hydro project at Borumba Dam, located about 70 kilometers southwest of Noosa, aims to provide renewable power for approximately two million homes. However, this project would require a total of seven dams on the Mary River system, with six of those creating an "upper reservoir" 1.5 times the size of Borumba Dam. It would include one main reservoir, a primary saddle dam, and four secondary saddle dams to contain water that could potentially escape or overflow. Additionally, a new dam wall 300 meters downstream from the existing one on Yabba Creek would enlarge the original lake by 500 percent.	3.1
31	Facilitated impacts : Increased strain on local housing and roads. Cumulative impacts : Additional strain from ongoing works in the region, such as local road upgrades and other proposed projects. The $14.2 billion Pumped Hydro project at Borumba Dam, situated about 70 kilometers southwest of Noosa, is intended to provide renewable power for approximately two million homes. However, this proposal includes the construction of a total of seven dams on the Mary River system, which would require creating an "upper reservoir" one and a half times the size of Borumba Dam. Furthermore, a new dam wall 300 meters downstream from the existing one on Yabba Creek would enlarge the original lake by 500 percent.	3.5.8
31	The potential impacts associated with this project are profound and concerning, including: Direct impacts : Habitat loss from vegetation clearing and topsoil removal, along with risks of injury and mortality during clearing operations and vehicle collisions. Indirect impacts : Habitat fragmentation Edge effects Habitat degradation from air, noise, vibration, and light emissions Introduction of invasive pests, weeds, and pathogens Contamination from hazardous materials Erosion and sedimentation Deterioration of surface water quality Impacts to groundwater	3.5, 3.5, 3.6, 3.5.5
31	The exploratory project is known or likely to impact two threatened ecological communities: Lowland Rainforest of Subtropical Australia - Critically endangered Subtropical Eucalypt Floodplain Forest and Woodland - Endangered (New South Wales North Coast and South East Queensland bioregions)	3.5, 3.5, 3.6
31	Additionally, it poses a threat to nine species of flora, including: Ball nut (vulnerable) Brush sophora (Vulnerable) Coleus omissus (Endangered) Coleus torrenticola (Endangered) Macadamia nut (Vulnerable) Native guava (Critically endangered) Scrub Terpentine (Critically endangered) Small-fruited Queensland nut (Vulnerable) Three-leaved BoSTIA (Vulnerable)	3.5, 3.5, 3.6
31	The exploratory works for the Borumba Pumped Hydro scheme represent a substantial step toward a project that will have lasting, detrimental impacts on local flora and fauna. Once construction begins, halting the momentum will be challenging, and the project could extend for years, ultimately leading to irreparable damage to unique and delicate ecosystems. The clearing of extensive forest areas for new roads and infrastructure will also involve widespread flooding, putting various threatened species—including the endangered Mary River turtles and the critically endangered White-throated snapping turtles—at significant risk.	3.5, 3.5, 3.6
31	Considering the vital importance of our unique habitats and threatened wildlife, I strongly advocate for the rejection of the exploratory works and a complete halt to the Borumba Pumped Hydro project. Our ecosystems and wildlife are far too precious to risk for such an undertaking.	3.5, 3.5, 3.6
31	It also affects twelve species of fauna, such as: Australian Lungfish (Vulnerable) Black-breasted button-quail (vulnerable) Giant barred frog (Vulnerable) Glossy black-cockatoo (southeastern) (Vulnerable) Greater glider (Endangered) Grey-headed flying-fox (Vulnerable) Koala (Endangered) Long-nosed potoroo (northern) (Vulnerable) Mary River cod (Endangered) Mary River turtle (Endangered) White-throated snapping turtle (Critically endangered) Yellow-bellied glider (southern subspecies) (Vulnerable) The presence of threatened species, such as Koalas, Glossy Black-cockatoos, Greater Gliders, Northern Long-nosed Potoroos, White-throated Needletails, and Yellow-bellied Gliders, has been confirmed in the exploratory site, further emphasizing the project's potential harm.	3.4, 3.5, 3.6
31	I am writing to express my strong opposition to the proposed Borumba Pumped Hydro Energy Storage System, which will ultimately require the clearing of 1,500 hectares within a project area of approximately 5,235 hectares.	3.1
31	Past experiences with pumped hydro construction, such as the troubled Snowy Hydro 2 project in New South Wales, make it clear that these endeavors can be highly destructive and costly. This project has been consistently plagued by machinery failures, delays, safety issues, and significant cost overruns.	3.1
32	I am writing to express my strong opposition to the proposed Borumba Pumped Hydro Exploratory Works for several compelling reasons.As a visitor, who occasionally visits Borumba, I deeply appreciate the area's natural beauty and do not want to see it desecrated. We must prioritize the preservation of our natural landscapes over questionable energy solutions—it's simply not worth the risk. The exploratory works for the Borumba Pumped Hydro scheme represent a significant step toward the construction of a 1,500-hectare project. We have serious concerns about the consequences of this project, particularly the threat it poses to the flora and fauna that will be devastated by drilling, clearing, and subsequent flooding. This project is extensive and invasive, and once mature forests are destroyed, there is no way to rehabilitate them. Once construction begins, it will be difficult to halt the momentum, leading to years of development that will irrevocably damage unique and delicate ecosystems. Extensive forest areas will be cleared for new roads and infrastructure, all leading to widespread flooding. These actions could jeopardize a wide array of threatened species, including the endangered Mary River turtles and the critically endangered White-throated snapping turtles. Confirmed endangered species inhabiting the exploratory site include Koalas, Glossy Black-cockatoos, Greater Gliders, Northern Long-nosed Potoroos, White-throated Needletails, and Yellow-bellied Gliders. Given these considerations, our unique habitat and threatened wildlife are too valuable to gamble on the Borumba Pumped Hydro project. I urge that the exploratory works be rejected and that the project be halted altogether.	3.4, 3.5, 3.6
32	The destructive and costly nature of pumped hydro construction is already evident in the troubled Snowy Hydro 2 project in New South Wales, which has consistently made headlines due to mechanical failures, delays, unexpected technical problems, worker safety issues, and substantial cost overruns. The impacts of the Snowy Hydro 2 project have been detrimental in many ways, leading me to question the wisdom of repeating such a mistake. The energy produced does not offer the dense, reliable power that Australia requires, nor does it enhance our energy sovereignty. Furthermore, the push for renewable energy has already resulted in the destruction of numerous bushland areas carved up for similar projects.	3.1
33	Borumba has unique habitat and threatened wildlife are far too valuable to gamble on for the Borumba Pumped Hydro project. The exploratory works should be rejected, and the project must be halted. The exploratory project has a total footprint of 85.3 hectares and is known or likely to impact:	3.5, 3.5, 3.6
33	Two threatened ecological communities (TEC): Lowland Rainforest of Subtropical Australia TEC - Critically endangered Subtropical Eucalypt Floodplain Forest and Woodland - Endangered (New South Wales North Coast and South East Queensland bioregions)	3.5, 3.5, 3.6
33	Nine threatened flora species: Ball nut (Vulnerable) Brush Sophora (Vulnerable) Coleus omissus (Endangered) Coleus torrenticola (Endangered) Macadamia nut (Vulnerable) Native guava (Critically endangered) Scrub turpentine (Critically endagered) Small-fruited Queensland nut (Vulnerable) Three-leaved BoSitoa (Vulnerable) Thank you for considering my concerns	3.5, 3.5, 3.6
33	I am writing to express my strong opposition to the proposed Borumba Pumped Hydro Energy Storage System, which I believe will be an inefficient energy source. We already have coal and gas, which would efficiently transition to nuclear. We must learn from the mistakes of the Snowy 2 project and not proceed with this harmful proposal, which will ultimately require clearing 1,500 hectares within a project area of approximately 5,235 hectares.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
34	I oppose the proposed Borumba Pumped Hydro Exploratory Works because I don't believe a full and proper environmental impact assessment has been conducted. I am very concerned by the amount of land that is proposed for clearing and the impact this will definitely have on many animal and plant species, including a number of endangered species such as the Mary River Turtle. I chose to live in the Mary Valley because of its close proximity to large areas of forests, creeks and beautiful mountain ranges. The world is on the brink of a monumental environmental crisis due to climate change and land/habitat clearing. Australia does not have a great track record when it comes to loss of species, something we should be terribly ashamed of and should be working towards changing. A project like the proposed Borumba Pumped Hydro does not come without drastic environmental consequences. I understand that it is touted as "green" energy, but I cannot accept the reasoning behind the proposal or ignore the dire consequences it will have on a pristine and unique environment and river system. It should not proceed.	3.5, 3.5, 3.6
35	The proposed Borumba project will necessitate the clearing of 1,500 hectares within a project area of approximately 5,235 hectares. The exploratory project alone has a total footprint of 85.3 hectares and is known or likely to impact two threatened ecological communities (TECs): Lowland Rainforest of Subtropical Australia TEC (Critically Endangered) Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland bioregions (Endangered) Additionally, the project will affect nine threatened flora species. This potential environmental degradation is unacceptable and raises serious concerns about the long-term consequences for our natural ecosystems.	3.5, 3.5, 3.6
35	I oppose the proposed Borumba Pumped Hydro Exploratory Works for numerous reasons. I do not consent to wasting taxpayer money on a risky project like the Borumba Pumped Hydro Energy Storage System. We've already witnessed significant cost overruns with Snowy Hydro 2, so why take that risk again?	3.1
35	Pumped hydro requires a reliable baseload energy source, and it may take at least another 10 years to develop. I would prefer to see a transition from coal or gas to nuclear energy instead.	3.1
36	I oppose the proposed Borumba Pumped Hydro Exploratory Works because I have serious concerns about this project due to the massive cost overruns associated with it.	3.5, 3.5, 3.6
36	The potential impacts of this project are alarming, including: Direct impacts , such as vegetation clearing and topsoil removal, leading to habitat loss and risks of injury and mortality for wildlife from clearing activities and collisions with vehicles. Indirect impacts , including: Habitat fragmentation Edge effects Habitat degradation from air, noise, vibration, and light emissions Introduction of invasive pests, weeds, and pathogens Contamination from hazardous materials Erosion and sedimentation Deterioration of surface water quality Impact on groundwater resources Facilitated impacts on housing and roads , as the infrastructure may not be able to cope with increased demands. Cumulative impacts from other works being undertaken in the region to facilitate the project, such as local road upgrades, as well as other proposed projects in the area. The destruction caused by this project is unacceptable. We must take a stand to protect our environment and our communities.	3.5, 3.5, 3.6
36	We urgently need to halt this reckless transition, which is causing significant anxiety for regional communities across Queensland. I attended the recent Gympie event, and the hall was filled with very concerned individuals. It is imperative that we put an immediate stop to this project, as it is unlikely to succeed; it does not provide baseload power and there seems to be no clear endgame in sight.	3.1
37	First submission The overall position of the proposed Borumba Pumped Hydro Scheme is very similar to the Traveston Crossing Dam Project 2006/9. At that time, we stood against that proposal due to the potential impact on a variety of threatened fauna which inhabited the area. These included the Australian Lungfish, Giant Barred Frog, Mary River Cod and Mary River Turtle. These are the aquatic fauna of national importance and you have rightly also included the black-breasted button quail, the glossy black cockatoo, the greater glider, the koala, the yellow-bellied glider, the grey-headed flying-fox and the long-nosed potoroo. These creatures have lived for generations in and around Borumba Dam and its catchment. The then Federal Enviroment Minister, Peter Garrett, saw fit to stop the proposed Traveston Crossing Dam because of these animals and aquatic creatures. What has changed in the past 15 years to allow for their destruction now. Aren't their lives and continued existence just as important today as they were back in 2009? We, as a family, believe that the risk is too great and call on the Federal Government to look closely at the environmental impact of this huge project on our iconic native species and put a stop to it before enormous damage is done to our flora and fauna.	3.4, 3.5, 3.6
37	Second submission: 2.1 Controlled action When first announced, the proposed Borumba Pumped Hydro Scheme was initially costed at $14.2 billion. In recent months, it has been announced that this figure has now blown out to $18.6 billion and the time frame for completion and production of power is now around 2035. The State LNP Government has recently stated in the media that this project is too expensive and is being down sized. This EPBC Act Assessment must be paused until the project is properly defined. 10 Economic and social matters The risk and social cost to down stream communities of a Borumba Pumped Hydro dam failure has never been released to the public, even though the studies were completed by GHD in 2023. This is referenced in Appendix B Groundwater Impact Assessment: GHD (2023) Borumba Dam Feasibility Study, Flood Hydrology Assessment 27 Sept 2023. Given the proposed enlargement of the existing Borumba Dam and the construction of the Upper Reservoir, this combined system volume of up to 290 billion litres presents a catastrophic danger of flash flooding to landowners below the dam site and the communities of Imbil and beyond. What is the mitigation plan should such a failure occur? This information must be made public! 1 Overview There are too many unknowns attached to this massive proposed pumped hydro energy storage project. We call on the Commonwealth Minister for the Environment and Water to say NO to this project on the grounds that much of the Exploratory Works would be located, unavoidably in vegetated areas that provide habitat for many listed threatened species. These threatened species are protected under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act.) The potential impacts cannot be mitigated or offset, nor could the catastrophic damage be reversed. The area around Borumba Dam is a precious resource in a world of diminishing habitat for our flora and fauna and must be preserved at all cost!	3.1
37	Third submission: [Redacted]. Having lived here for almost three decades, we have been able to witness the daily lives of a vast range of Australian native fauna. We have seen platypus in 'our' creek and koalas and wallabies traversing our property. Our list of bird species is extensive and a Birdlife Australia count recorded 76 different bird varieties living on, or passing through our farm. Coonoongibber Creek is home to the Giant Barred Frog, a vulnerable native species, and, especially after the recent rain event, we are hearing their loud calls each evening at dusk. They rely on a clean and flowing environment and we are concerned that any man made development affecting the water flow and riparian areas will bring about their demise. Coonoongibber Creek flows into Yabba Creek which, in turn, flows into the Mary River and to the sea at River Head. This extensive system must be allowed to flow free and unimpeded to provide habitat for the Giant Barred Frog and the other important vulnerable and endangered species which live in this river system. We believe that the proposed Borumba Pumped Hydro Preliminary documentation does not demonstrate an ability to guarantee the safety and continued prosperity of all the Australian Native Species which inhabit this extensive waterway system. We call on the Federal Environment Minister to thoroughly investigate the credentials of this enormous proposed project and say 'NO' before an environmental disaster is perpetrated on the people of Queensland.	3.5, 3.5, 3.6
38	This is a major project, yet the public has not been adequately consulted or informed.	3.8.3
38	I am extremely concerned about the Platypus populations that are plentiful in the area. They will be severely impacted if this destructive project goes ahead.	3.5, 3.5, 3.6
38	The exploratory works for Borumba Pumped Hydro in Southeast Queensland are a significant step toward constructing a 1,500-hectare hydro scheme. We have serious concerns about the threatened flora and fauna that will be decimated by drilling, land clearing, and subsequent flooding. This project is vast and invasive, and once these mature forests are destroyed, there's no feasible way to rehabilitate them. Once construction begins, it will be difficult to halt its momentum, resulting in years of development that will devastate unique and delicate ecosystems. Forests will be cleared and fragmented to make way for new roads and infrastructure, all of which will eventually be flooded.	3.5, 3.5, 3.6
38	This destruction could critically endanger a variety of threatened species, including the endangered Mary River Turtle and the critically endangered White-Throated Snapping Turtle. Additionally, threatened species such as Koalas, Glossy Black-Cockatoos, Greater Gliders, Long-Nosed Potoroos, White-Throated Needletails, and Yellow-Bellied Gliders are confirmed to inhabit the exploratory site. Our unique habitats and threatened wildlife are too precious to gamble with for the sake of Borumba Pumped Hydro.	3.4, 3.5, 3.6
38	I oppose the proposed Borumba Pumped Hydro Exploratory Works. We have already seen the destructive and costly nature of pumped hydro construction with the failing Snowy Hydro 2 project in NSW, which frequently makes headlines due to broken machinery, delays, unexpected technical problems, worker safety issues, and significant cost overruns.The exploratory works should be rejected, and the project must be halted now. Taxpayer money should instead be spent on reliable baseload power as we transition to nuclear energy. We must stop the destruction of our irreplaceable environment.	3.1
39	Several known high-risk ecological architect weed species likely to dominate management concerns in the area are not given enough attention (principally cats claw creeper, madeira vine, ochna and hamil guinea grass). Several new and emerging weed threats in the local area are likely to become important over the next decade - particularly triumfetta rhomboidea (likely) and callisis repens (possible in some areas). Lantana removal has to be managed carefully at the margins of forested patches- removal that is too rapid destroys useful habitat for several MNES species (eg black breasted button quail and potoroos) before replacement understory structure is in place, and often opens up patches for invasion from much higher risk weeds such as hamil guinea grass. Suggested feral pig control measures are not the current best practice for that sort of country - a large pen-trapping program should be implemented in conjunction with sodium nitrite baiting, before attempting mop-up control with well managed professional ground shooting/hunting. Prior shooting/hunting disrupts the social structure of the sounder groups, consequently disrupting attempts at large scale trapping and baiting programs (the most effective control methods). It is simply not possible to replace the ecological structure and function of remaining intact patches of lowland subtropical rainforest in this region. Once lost recovery would take several lifespans of the pumped hydro project, and the temporal break in continuity for many species reliant on the habitat could see their local extinction. (Most poignant example being coxens fig-parrot). Offsets do not work. Do not destroy intact forest.	3.5, 3.5, 3.6
39	Based on 30 years' experience in managing the recovery of similar vegetation communities as the owners of what is now gazetted as [redacted] Nature Refuge. The 20 year timescale of the OMP is far too brief to ensure the security of condition improvement aimed for (score 7 to score 9), particularly for the lowland rainforest TEC. The plan needs to allow for a more flexible adaptive management responses to unforeseen events (fires, storms, unusual seasonal conditions, new weed and pest species outbreaks) and be based on vegetation community successional responses carefully observed on the ground. The likely required weed management effort seems to be greatly underestimated. The 5 year monitoring/review interval is absolutely insufficient to allow for timely and effective adaptive management. The likely cost of ongoing management effort required to achieve and maintain offset condition is very difficult to estimate in advance, and is usually grossly underestimated in this sort of country. For example, the true costs of adequate management are several times the estimate produced by the current (very outdated) state government financial offsets calculator. I could not find a fully costed predicted budget in the documentation to judge whether this is the case for this OMP. Therefore, learnings and realistic costings from implementing the exploratory works OMP must inform the OMP being developed for the main works. Managed natural regeneration (where appropriate) is much more cost and labour efficient than block replanting projects, but requires close observation, active weed control and careful species management by thinning if necessary (eg strategic thinning of Acacia disparima regrowth).	3.7
40	We have serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded.	3.5, 3.5, 3.6

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40	These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders , Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site.	3.4, 3.5, 3.6
40	Borumba Pumped Hydro (SE QLD) exploratory works are a big step towards the construction of the 1500 ha Borumba Pumped Hydro scheme. The destructive and costly nature of pumped hydro construction is already on full display with the failed Snowy Hydro 2 project in NSW. This makes headlines regularly with broken machinery, delays in timelines, unexpected technical problems, worker safety issues and phenomenal cost blowouts. Our unique habitat and threatened wildlife are too much to gamble on for Borumba Pumped Hydro. The exploratory works should be rejected and the project should now be stopped.	3.1
41	I oppose the proposed Borumba Pumped Hydro Exploratory Works s for several compelling reasons Firstly, I believe this project represents a waste of taxpayer money and will fail to deliver the reliable power we truly need. Our energy transition should prioritize baseload power, particularly through nuclear energy.Australia's history of species loss is not something we should take lightly; we must strive to reverse this trend. While the Borumba Pumped Hydro is marketed as a "green" energy initiative, its potential environmental consequences for a pristine and unique environment and river system should not be downplayed.	3.5, 3.5, 3.6
41	Moreover, I am deeply concerned that a comprehensive environmental impact assessment has not been properly done. The extent of land clearing required for this project raises serious questions about its impact on local ecosystems. Numerous animal and plant species, including endangered ones like the Mary River Turtle, stand to be adversely affected. I have friends who chose to live in the Mary Valley for its proximity to vast forests, creeks, and stunning mountain ranges. We are facing a critical environmental crisis driven by climate change and habitat destruction.	3.5, 3.5, 3.6
42	I oppose the proposed Borumba Pumped Hydro Exploratory Works because it simply does not make any economic sense. The cost of the stored energy is too expensive when compared with other forms of electricity generation. The money proposed to be spent on this project SHOULD BE SPENT on generation infrastructure NOT storage. How can you describe this product as “green” or “clean” ? Nor is it renewable. It is also destroying an important part of what little is left of our precious natural environment. More pumped hydro continues to encourage the (high low) cyclical production and pricing of electricity turning it into a commodity instead of recognising it as essential component of every persons existence and well being in society. Instead what we need is more generating capacity to cover excess demand and encourage industry and users to switch to off peak consumption.	3.5, 3.5, 3.6
43	First submission Cumulative Impacts with Other Regional Projects The cumulative effects of this project combined with other regional developments, such as local road upgrades, will compound the negative environmental impact. Together, these projects will exacerbate habitat loss, increase fragmentation, and threaten already endangered species.	3.5.9
43	First submission Reasons for Opposing the Borumba Pumped Hydro Energy Storage System Project Destruction of Ecologically Sensitive Areas The proposed project will require the clearing of 1,500 hectares of land within a Project Area of approximately 5,235 hectares. This scale of land clearing will cause severe disruption to fragile ecosystems, including the destruction of critical habitats for threatened species.	3.5, 3.5, 3.6
43	First submission Threat to Threatened Ecological Communities The project is set to impact two critically endangered or endangered ecological communities: Lowland Rainforest of Subtropical Australia TEC (Critically Endangered) Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland bioregions (Endangered) These communities are irreplaceable and vital for maintaining regional biodiversity.	3.5, 3.5, 3.6
43	First submission Endangerment of Threatened Flora The construction of the project will negatively affect nine threatened flora species, including: Ball nut (Vulnerable) Brush sophora (Vulnerable) Coleus omissus (Endangered) Coleus torrenticola (Endangered) Macadamia nut (Vulnerable) Native guava (Critically Endangered) Scrub turpentine (Critically Endangered) Small-fruited Queensland nut (Vulnerable) Three-leaved Bo sistoa (Vulnerable) The loss of these plant species will further reduce biodiversity and disrupt local ecosystems.	3.5, 3.5, 3.6
43	First submission Severe Habitat Loss and Fragmentation The project will lead to extensive habitat loss due to vegetation clearing, which will disrupt wildlife corridors and contribute to habitat fragmentation. This will hinder species migration, reduce breeding opportunities, and further isolate already vulnerable populations.Indirect Impacts on the Environment Beyond direct habitat destruction, the project will cause numerous indirect environmental impacts: Habitat degradation from noise, vibration, and light emissions Pollution from hazardous materials, invasive pests, weeds, and pathogens Erosion and sedimentation leading to further degradation of local ecosystems Water quality issues affecting both surface water and groundwater Invasive species that may be introduced or proliferate, causing further harm to native biodiversity	3.5, 3.5, 3.6
43	First submission Long-term Environmental Damage The unmitigated consequences of this project could result in irreversible environmental degradation, including the loss of irreplaceable ecological communities, species, and ecosystem services. These impacts would be felt not only in the immediate area but throughout the wider region, potentially disrupting ecological balance and biodiversity for generations to come. This Project along with so many other proposed projects are not acceptable given the destruction of biodiversity and pristine habitat.	3.5, 3.5, 3.6
43	First submission Direct Threats to Threatened Fauna The project will directly affect the habitats of twelve threatened fauna species, including: Australian lungfish (Vulnerable) Black-breasted button-quail (Vulnerable) Giant barred frog (Vulnerable) Glossy black-cockatoo (south-eastern) (Vulnerable) Greater glider (Endangered) Grey-headed flying-fox (Vulnerable) Koala (Endangered) Long-nosed potoroo (northern) (Vulnerable) Mary River cod (Endangered) Mary River turtle (Endangered) White-throated snapping turtle (Critically Endangered) Yellow-bellied glider (southern subsp.) (Vulnerable) The proposed activities, such as vegetation clearing and potential collisions with vehicles, will result in injury and death of these species, accelerating their decline. Severe Habitat Loss and Fragmentation The project will lead to extensive habitat loss due to vegetation clearing, which will disrupt wildlife corridors and contribute to habitat fragmentation. This will hinder species migration, reduce breeding opportunities, and further isolate already vulnerable populations	3.4, 3.5, 3.6
43	Second submission I oppose the proposed Borumba Pumped Hydro Exploratory Works because Borumba Pumped Hydro (SE QLD) exploratory works are a big step towards the construction of the 1500 ha Borumba Pumped Hydro scheme. I believe there is serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders , Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site.The destructive and costly nature of pumped hydro construction is already on full display with the failed Snowy Hydro 2 project in NSW. This makes headlines regularly with broken machinery, delays in timelines, unexpected technical problems, worker safety issues and phenomenal cost blowouts. Our unique habitat and threatened wildlife are too much to gamble on for Borumba Pumped Hydro. The exploratory works should be rejected and the project should now be stopped.	3.1
44	We own land [redacted]. We are concerned about increased water flow over our property since the 2.5 meter increase height of Borumba Dam and the 20 meter height increase proposed for the Hydro project. Appendix [redacted] showing fault line from Borumba Dam onto our farm. Appendix [redacted] showing depth to regrolith are INCORRECT. Should read LQ01 (38.5) LQ02 (14.08) - I was there and witnessed the rock tests come out of the drills. [Redacted] showing 2 springs and wetland on our land in a proximity of the 2000m marker on Bella Creek Road on 6.7.2.1 at the bottom paragraph called limnocrene springs (our small dams) at higher elevations in association with ground water dependent ecosystems. By my calculations, these two small dams are 20 meters below Borumba Dams 100% full level. The base of the 2000 meter marker on Bella Creek Road would be 30 meters below 100% full level and if 20 meter extra head of water on Borumba Dam = 50 meter of head of pressure on the fault line. I refer my calculations to Borumba 100% height = 147 meters. First lower crossing below dam = 103 meters. LQ01 (38.5) = 167meters LQ02 (14.08) = 147 meters. LQ02 was moved approx. 100 meters east to higher ground because of saturated ground.	3.1
45	First submission • Cumulative impacts with other works being undertaken in the region to facilitate the Project (e.g. local road upgrades) and with other Projects proposed in the region. • Facilitated impacts to housing and roads.	3.5.8
45	First submission The unmitigated potential impacts associated with the Project include: • Direct impacts such as vegetation clearing and topsoil removal causing habitat loss, and injury and mortality from vegetation clearing and collisions with vehicles. • Indirect impacts such as: – habitat fragmentation – edge effects – habitat degradation from air, noise, vibration and light emissions – invasive pests, weeds and pathogens – contamination from hazardous materials – erosion and sedimentation – impacts to surface water quality – impacts to groundwater.	3.5, 3.5, 3.6, 3.5.5
45	First submission Two threatened ecological communities (TEC): – Lowland Rainforest of Subtropical Australia TEC, Critically endangered – Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions, Endangered	3.5, 3.5, 3.6
45	First submission • Nine threatened flora: – ball nut, Vulnerable – brush sophora, Vulnerable – Coleus omissus, Endangered – Coleus torrenticola, Endangered – macadamia nut, Vulnerable – native guava, Critically endangered – scrub turpentine, Critically endangered – small-fruited Queensland nut, Vulnerable – three-leaved Bo sistoa, Vulnerable	3.5, 3.5, 3.6
45	First submission • Twelve threatened fauna: – Australian lungfish, Vulnerable – black-breasted button-quail, Vulnerable – giant barred frog, Vulnerable – glossy black-cockatoo (south-eastern), Vulnerable – greater glider, Endangered – grey-headed flying-fox, Vulnerable – koala, Endangered – long-nosed potoroo (northern), Vulnerable – Mary River cod, Endangered – Mary River turtle, Endangered – white-throated snapping turtle, Critically endangered – yellow-bellied glider (southern subsp.), Vulnerable.	3.4, 3.5, 3.6
45	First submission This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders , Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site. The destructive and costly nature of pumped hydro construction is already on full display with the failed Snowy Hydro 2 project in NSW. This makes headlines regularly with broken machinery, delays in timelines, unexpected technical problems, worker safety issues and phenomenal cost blowouts. Our unique habitat and threatened wildlife are too much to gamble on for Borumba Pumped Hydro. The exploratory works should be rejected and the project should now be stopped.	3.4, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
45	Second submission I have serious concerns about this project due to the threatened flora and fauna that will be decimated by drilling, clearing and then flooding. This is a vast and invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles. Threatened Koalas, Glossy Black-cockatoos, Greater Gliders , Long-nosed Potoroos (Northern), White-throated Needletails and Yellow-bellied Gliders are confirmed to inhabit the exploratory site. The destructive and costly nature of pumped hydro construction is already on full display with the failed Snowy Hydro 2 project in NSW. This makes headlines regularly with broken machinery, delays in timelines, unexpected technical problems, worker safety issues and phenomenal cost blowouts. Our unique habitat and threatened wildlife are too much to gamble on for Borumba Pumped Hydro. The exploratory works should be rejected and the project should now be stopped.	3.4, 3.5, 3.6
46	I oppose the proposed Borumba Pumped Hydro Exploratory Works. Massive costs and destruction of land and water and farming land	3.1
47	I oppose the proposed Borumba Pumped Hydro exploratory works because destruction of farming land, animals. Water would be undrinkable and a total waste of money	3.1
48	I oppose the proposed Borumba Pumped Hydro exploratory works because this project will destroy the habitat of many native species and once this huge area is cleared it can never be retrieved. Pristine forests will be destroyed and once lost can never be restord. Flora and fauna which are irreplaceable will be lost forever. I therefore wish to register my opposition to this project.	3.5, 3.5, 3.6
49	First submission Their so called colmmunity engagement is farcical.	No response required
49	First submission I oppose the proposed Borumba Pumped Hydro Exploratory Works because Too much destruction of flora, fauna, habitats for critically endangered species gone forever.	3.5, 3.5, 3.6
49	First submission QLD hydro is neither transparent or to be trusted in any of their data collection. As a local resident, from what I've seen the environmental studies are a joke - 2 blokes with a bucket on a stick & a fella who's kyak spent most of it's time on the roof racks of his ute with him in his ute on his phone in the local creeks.	3.5, 3.5, 3.6
49	First submission Already too much noise, dust, loss of environment, dead animals, etc	3.5, 3.5, 3.6
49	First submission Can't offset unique endemic species eg, platypus, Mary River Cod, Mary River turtle, white snapping throat turtle, Coxons fig parrot, Australian lungfish, just to name a few.	3.5, 3.5, 3.6
49	First submission The environmental negative impacts of this project far outweighs the positive. Pumped hydro takes more power to run than it generates. Why isn't the pumped hydro at Wivenhoe Dam being used?	3.5, 3.5, 3.6
49	Second submission This is a vast & invasive project covering 15000hectares. Habitat to critically endangered & threatened species including but not limited to Mary River turtle, White throat snapping turtle, koalas, glossy black cockatoos, greater gliders, northern long nosed potaroos, whoite-throated needletails yellow bellied gliders are confirmed to inhabit the exploratory site. Unique ecosystems will be destroyed, forests cleared & fragmented for new roads, infrastructure & will be flooded. Threatened fauna & flora will be decimated by the drilling, explosives, clearing & flooding. There is NO WAY to rehabilitate or OFFSET these habitats & ecosystems There is NO WAY to mitigate, or OFFSET this destruction of unique ecosystems , fauna & flora in this footprint of the 15000heactare project. QLD hydro work vehicles, contractor vehicles / trucks are already causing increased road noise, dust & road animal kills, never mind when the exploratory drilling starts. QLD hydro you have failed to be honest & transparent in communication with local communities - I don't believe any of the proposals you put forward to mitigate/manage risk of habitat destruction in the preliminary works. Well where do I start. From the get go QLD hydro has FAILED to provide open, honest & transparent facts/communication to the local community. I have attended ALL the public community consultation meetings/sessions - what a bloody joke (just box ticking exercises). No questions that were put forward at those meetings have been answered fully or truthfully by QLD hydro staff present. Why hasn't the DAR (detailed analytical Report) that QLD hydro uses as reference in the preliminary works report been released to the public ?????? NOT fair or equitable if QLD hydro has information the public is not privy to. Not a detailed enough environmental study / report. I believe QLD hydro was directed to avoid passive language & use clear concise comments eg - must, will. QLD hydro has used the word MAY over 658 times in the document. As a resident of [redacted] travelling Bella Creek & Yabba Creek Road daily I have seen minimal staff in the field conducting field studies. I saw 2 blokes in Bella Creek with a small bucket on the end of a pole who scurried back to their vehicle when I stopped on the causeway. I have seen a bloke with a kayak on the roof of his car on his phone IN his car numerous times BUT NEVER in the creeks. My neighbours & I have NEVER seen any night time surveys done. I have personally seen, lungfish, platypus, Mary River turtles, spotted eel tail catfish, - in the local creeks. Koalas, glossy black cockatoos, red & yellow tailed cockatoos. The footprint of this project also directly affects the habitats of RAMSAR protected species QLD hydro has kept a lot of information of this project away from public scrutiny - possibility for precast factory in Gympie similar to the Snowy 2 factory in Cooma. Keiren Cusack CEO sacked by Snowy 2 now At QLD hydro. The workers camps will destroy the local environment & the asbestos rocks that have already been cut into for road widening have been shussed up or downplayed. Every time I make a complaint to QLD hydro regarding their or contractors vehicles / truck & dogs speeding & driving dangerously I get a reply of "wasn't one of ours" & never hear from them again. Well who are these drivers that are in hydro marked vehicles & large truck & dogs??? that we have never seen on Yabba creek road or Bella Creek Roads until now ???? I Don't believe anything QLD hydro says or says it will do to protect the existing environment or the community. It has all been smoke & mirrors & spin doctoring. Qld hydro behaved in the same appalling way at Pioneer Burdekin - the real facts are only just becoming public. Why hasn't the DAR been released to the public?? There have been MANY breaches of the EPBC act never acted on in Snowy 2 - I can see the same scenario happening here if the exploratory permits succeeds. Exploratory works is essentially a preliminary investigation to "explore" the subject matter before going into specific analysis. Why is QLD hydro so determined to include Main Works in these preliminary documents ??? Page 196 - articificial lighting - Why is there no mention of implementation of Dark Sky at the site. F..CK NO TO BORUMBA HYDRO	3.1
50	I oppose the proposed Borumba Pumped Hydro Exploratory Works because we need to keep our wilderness places. They are home to fauna and flora, some which may become endangered. I fear for our country with the amount of solar and wind farms. So much pristine bush and forest will be destroyed. The planet is losing so much wild areas and we should be preserving as much as we can. At least it should be held off to at least see if there can be other options available. I hope you would consider my email and thank you for reading.	3.5, 3.5, 3.6
51	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Facilitated impacts to housing and roads. • Cumulative impacts with other works being undertaken in the region to facilitate the Project (e.g. local road upgrades) and with other Projects proposed in the region >	3.5.8
51	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact The unmitigated potential impacts associated with the Project include: • Direct impacts such as vegetation clearing and topsoil removal causing habitat loss, and injury and mortality from vegetation clearing and collisions with vehicles. • Indirect impacts such as: – habitat fragmentation – edge effects – habitat degradation from air, noise, vibration and light emissions – invasive pests, weeds and pathogens – contamination from hazardous materials – erosion and sedimentation – impacts to surface water quality – impacts to groundwater.	3.5, 3.5, 3.6, 3.5.5
51	I oppose the proposed Borumba Pumped Hydro Exploratory Works because The Borumba Pumbed Hydro Energy Storage System will ultimately require 1500 ha of clearing within a Project Area that is approximately 5,235ha. Two threatened ecological communities (TEC): – Lowland Rainforest of Subtropical Australia TEC, Critically endangered – Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions, Endangered	3.5, 3.5, 3.6
51	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Nine threatened flora: – ball nut, Vulnerable – brush sophora, Vulnerable – Coleus omissus, Endangered – Coleus torrenticola, Endangered – macadamia nut, Vulnerable – native guava, Critically endangered – scrub turpentine, Critically endangered – small-fruited Queensland nut, Vulnerable – three-leaved Bo sistoa, Vulnerable	3.5, 3.5, 3.6
51	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact:Twelve threatened fauna: – Australian lungfish, Vulnerable – black-breasted button-quail, Vulnerable – giant barred frog, Vulnerable – glossy black-cockatoo (south-eastern), Vulnerable – greater glider, Endangered – grey-headed flying-fox, Vulnerable – koala, Endangered – long-nosed potoroo (northern), Vulnerable – Mary River cod, Endangered – Mary River turtle, Endangered – white-throated snapping turtle, Critically endangered – yellow-bellied glider (southern subsp.), Vulnerable.	3.4, 3.5, 3.6
52	I strongly oppose the proposed Borumba Pumped Hydro Exploratory Works because it is an invasive project by any measure and there is simply no way to rehabilitate these mature forests once they've been destroyed. Once construction commences, it will be difficult to stop the momentum and the project will carry on for years in development. Unique, delicate ecosystems will be destroyed, forest cleared and fragmented for new roads and infrastructure, and all will be flooded. These actions will likely imperil the existence of a large array of threatened species including endangered Mary River Turtles and the critically endangered White throated Snapping Turtles.	3.5, 3.5, 3.6
53	I agree with the assessment that the exploratory works are unlikely to have a significant impact on either Macadamia ternifolia or M. integrifolia, however the identification of individuals during further surveys including pre-clearance surveys would present a valuable opportunity to learn more about the extent of the species' population. The Macadamia Conservation Trust requests that any such finds are communicated to the Trust so that we can map the individual, and in the case of clearing, take cuttings for propagation and relocation of that genotype as a mitigation action.	3.5, 3.5, 3.6
54	The potential damage and harm to all fauna and flora within the impact areas and surrounding areas including all waterways The safety / noise and pollution caused by heavy vehicle and multiple vehicles moving within the area and surrounding areas	3.5, 3.5, 3.6
55	I am alarmed that three aspects of costing are not included in the current budget of $18b 1 Yabba Creek upgrade - that is already causing alarming 'near misses' with Qld Hydro vehicled due to speed and ignorance of the one way bridges 2 The High voltage lines that will take the power from Borumba is not included in the costing 3 Disruption to the town of Imbil - as absolute priority - road safety. The Town of Imbil, in it's current form can not cope with proposed 120 plus trucks - each way during the pheasability stage of the project. This will create a significan risk to safety of the residents.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
56	10. Economic and social matters 10.2 Economic benefits and employment opportunities – RFI item 8.2 Borumba Lake has an important function for tourism and recreation purposes, with [redacted] using the lake heavily in their outdoor education curriculum. While the Exploratory Works are not expected to restrict public access to the lake and its day use area and parking, the Exploratory Works around the lake will likely result in increased traffic movement in the public use areas and car parks. This may result in [redacted] being restricted or unable to use the lake during the Exploratory Works stage due to the safety risk posed to students. The impact of traffic movements within the Borumba Dam public use areas must be communicated to key stakeholders and users. Detail must be provided on where vehicle movements for the Exploratory Works will occur, and if they encroach into public use areas. Further, these traffic movements must be assessed and mitigated to ensure dam users, including [REDACTED] staff and students are not put at risk. The outcomes of any assessment as well as any control measures must be communicated to users of the dam to protect user safety.	3.8.5
56	10. Economic and social matters 10.1 Social and economic costs and/or benefits – RFI item 8.1 Per the Queensland Hydro website, a Social Assessment and Management Plan (SAMP) is currently being finalised for the Exploratory Works. The SAMP was prepared in tandem with the draft Preliminary Documentation but has not been released for public view. Despite a Social Impact Assessment referenced as informing the draft Preliminary Documentation (see Section 4.1.2), no appendices or supporting documentation assessing social impacts or for the management of social impacts are provided. The SAMP webpage states that some of the health and community wellbeing management and mitigation measures for the Exploratory Works include, but are not limited to: Traffic Impact Assessment; Road Use Management Plan; Contractor Traffic Management Plans; Driver Education Campaign; Community wellbeing and cohesion program; Promotion of community complaints, enquiries and feedback policy; and Regional Development Plan. These documents are not provided as part of the draft Preliminary Documentation despite their relevance to key identified matters (particularly traffic impacts). The lack of supporting documentation for these issues does not allow for key stakeholders to proactively manage the impacts on the use of their property. The level of detail provided in the draft Preliminary Documentation does not allow for [redacted] to fully understand and plan for the impacts they will face as a result of the Exploratory Works. Further information on social impacts and Queensland Hydro's methods to manage these impacts during the Exploratory Works is required by [redacted] to plan for their curriculum and understand how they may be operationally affected, as well as any matters that may affect student and staff wellbeing.	3.8.4
56	2. Description of the Project 2.7 Exploratory tunnels and supporting infrastructure – RFI item 2.1(b) Access to the Exploratory Works is primarily reliant on Bella Creek Road, which is accessed from Yabba Creek Road. An estimate of site vehicle movements demonstrates a significant number of light and heavy vehicles forecasted to be using these roads.Despite the significant vehicle movements, only minor upgrades have been proposed for Bella Creek Road, with no detail on what these upgrades entail having been provided in the documentation. No road upgrades are proposed for Yabba Creek Road. The increase in vehicle movements with no consummate proposed upgrades may result in damage to the road network, putting other road users at risk of hazards and unsafe driving conditions. It is understood that a Traffic Impact Assessment, Road Use Management Plan, Contractor Traffic Management Plans, and Driver Education Campaign have been completed as health and community wellbeing management and mitigation measures for the Exploratory Works, per the Social Assessment and Management Plan (SAMP) webpage (noting the SAMP was also prepared tandem with the draft Preliminary Documentation). Section 4.1.2 further asserts that a Traffic Impact Assessment and a Social Impact Assessment have been undertaken for the Exploratory Works. These documents have not been provided as part of the Preliminary Documentation, this is insufficient and leaves many key matters unaddressed and impacts generalised. It is critical that [redacted] is able to fully comprehend traffic impacts on Yabba Creek Road and Bella Creek Road as they are the sole access to their Marrapatta and Bella Junction campuses and frequently used by students and staff to move between campusus. Traffic issues are already persistent on these roads, putting the safety of students, staff and other road users in the area at risk. On various separate occasions [Redacted] has raised near miss incidents with Queensland Hydro trucks, with no response or action taken to reduce this risk. Traffic lights were proposed to manage this traffic, but no action has been taken. Incidents have been reported on 29/02/2024, 02/09/2024, 28/10/2024, 28/02/2025. Further, beyond light and heavy vehicle descriptions, no detail is provided on the nature of vehicles using these public roads, particularly vehicles that may be carrying explosives. Understanding the timing and or program of the movement of vehicles carrying explosives is critical to [redacted] for risk management purposes and ensuring the safety of students on and around the campus. Traffic on Bella Creek Road and Yabba Creek Road must be managed proactively, and impacts must be identified and mitigated to ensure the safety of students, staff, other community members and road users. The release of further documentation and detail of traffic matters (such as the abovementioned documents) is essential for this to occur.	3.8.1
56	10. Economic and social matters 10.1 Social and economic costs and/or benefits – RFI item 8.1 While traffic impacts have some commentary as social/economic issues, this is with regard to access for workers completing the Exploratory Works from the camps being via the existing road network via Imbil and Kilcoy (i.e., Bella Creek Road and Yabba Road), and the use of dedicated buses to and from the camps to potentially mitigate some of the issues. Otherwise, the impact of increased light and heavy vehicle movements is not assessed as an economic and or social issue. These vehicles, if not appropriately managed, will have significant impacts on road damage, congestion, and community safety. With both [redacted] along Yabba Creek Road and Bella Creek Road the safety of students will be heavily impacted by increased traffic movements. Increase traffic movements will have an effect on the operations of BGGS, as well as student and staff health and wellbeing, and must be assessed and mitigated appropriately by Queensland Hydro. As discussed in previous comments, a Traffic Impact Assessment is not provided as part of the draft Preliminary Documentation despite being referenced in the report (see Section 4.1.2). This is insufficient detail for [redacted] to appropriately manage impacts to their operations and plan accordingly to protect student and staff safety.	3.8.1
56	2. Description of the Project 2.7 Exploratory tunnels and supporting infrastructure – RFI item 2.1(e) The draft Preliminary Documentation does not provide a program or timing of the exploratory tunnel drill-and-blast operations. Understanding the program/timing of the explosive works is critical to [redacted] for risk management purposes and ensuring the safety of students on the campuses. Additional information on the timing and nature of these works must be provided with sufficient notice for [redacted] to plan accordingly to ensure student and staff safety as they occur.	3.2.3
57	I oppose the proposed Borumba Pumped Hydro Exploratory project because we have lost so many of our animals already and this will just add more pressure to survival. OUR ANIMALS ARE PRECIOUS TO US	3.5, 3.5, 3.6
58	• Facilitated impacts to housing and roads. • Cumulative impacts with other works being undertaken in the region to facilitate the Project (e.g. local road upgrades) and with other Projects proposed in the region	3.5.8
58	The unmitigated potential impacts associated with the Project include: • Direct impacts such as vegetation clearing and topsoil removal causing habitat loss, and injury and mortality from vegetation clearing and collisions with vehicles. • Indirect impacts such as: – habitat fragmentation – edge effects – habitat degradation from air, noise, vibration and light emissions – invasive pests, weeds and pathogens – contamination from hazardous materials – erosion and sedimentation – impacts to surface water quality – impacts to groundwater.	3.5, 3.5, 3.6, 3.5.5
58	I oppose the proposed Borumba Pumped Hydro Exploratory Works because The Borumba Pumbed Hydro Energy Storage System will ultimately require 1500 ha of clearing within a Project Area that is approximately 5,235ha.	3.5, 3.5, 3.6
58	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: Two threatened ecological communities (TEC): – Lowland Rainforest of Subtropical Australia TEC, Critically endangered – Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions, Endangered	3.5, 3.5, 3.6
58	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Nine threatened flora: – ball nut, Vulnerable – brush sophora, Vulnerable – Coleus omissus, Endangered – Coleus torrenticola, Endangered – macadamia nut, Vulnerable – native guava, Critically endangered – scrub turpentine, Critically endangered – small-fruited Queensland nut, Vulnerable – three-leaved Bo sistoa, Vulnerable	3.5, 3.5, 3.6
58	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Twelve threatened fauna: – Australian lungfish, Vulnerable – black-breasted button-quail, Vulnerable – giant barred frog, Vulnerable – glossy black-cockatoo (south-eastern), Vulnerable – greater glider, Endangered – grey-headed flying-fox, Vulnerable – koala, Endangered – long-nosed potoroo (northern), Vulnerable – Mary River cod, Endangered – Mary River turtle, Endangered – white-throated snapping turtle, Critically endangered – yellow-bellied glider (southern subsp.), Vulnerable.	3.4, 3.5, 3.6
59	I oppose the proposed Borumba Pumped Hydro Exploratory Works because Australia's beautiful native bushlands, mountains and forrests are being wiped out, for this renewable energy rubbish. It seems that Australia is hellbent on decimating what natural bushland there is left, and not thinking for one minute about the animals, birds and wonderful flore that is left for our next generations.	3.1
60	A risk assessment matrix for Roads / Transport / Safety. Specifically, around road safety, but it could fall into many of the above categories. I work with a small team [redacted] just before the Borumba Dam. Of the 10 staff members, every one has had at least one, if not multiple near misses with contractors working on the BH project. It rarely is a BH vehicle, the main offenders are in the unbranded truck and dogs contracting for the site work. The Yabba Creek road has one way bridges with poor visibility and whether the truck is loaded or unloaded, stopping suddenly is impossible. I respect the time put into the Risk Assessments already taken, but given they are all for proposed work and even with the current exploratory works stage there have been many near misses, I think QH is exposing itself to a massive risk to themselves and the community by ignoring this danger. This has been mentioned to the BH team multiple times but met with 'we are offering toolbox talks' 'its not our employee, the truck may not be even working on the project' 'that truck could be contracted to the Gympie Regional Council (who is doing some road improvements for the BH project)' 'our staff vehicles are fitted with sensors that alert us if erratic driving or heavy braking occurs' which is a great deterrent, but is, like all of the above answers are just an administrative fix. The least effective in the hierarchy of controls. Given it's a safety risk, with a high chance of happening and catastrophic result, I would expect an engineering solution to be implemented to significantly reduce the chance of occurrence. Upgrading the one way bridges to two way traffic bridges would reduce this risk greatly. 4.1.2 Mentions some other assessments have been undertaken in support of the exploratory works including a Traffic Impact Assessment with a traffic management plan to be implemented. Can you please share the Traffic Impact Assessment? I believe it would be helpful in data collection for the above query. Did QH or its 3rd party who completed the assessment have any recommendations? Will the Traffic management plan be shared when it is available? Please, go for a drive from Imbil to the Borumba dam, look at the dual wheel (truck specific) tyre lock up marks on nearly every one-way bridge leading up to their give way sign. Look at the condition of the old wooden bridges bearing massive weights, and that's even after BH has disassembled parts of equipment to be able to cross those bridges. If you're new to the area, please drive with caution and approach the one way bridges very carefully. Yes we need more energy, but please, I ask you to take action on the road and transportation issues above. There have been too many close calls and that data set is only from our small staff of 10, someone will die if this pattern continues and that's before the road is being used at its forecast capacity during the construction phase. Borumba dam is a small recreational dam used by anglers and canoers, there are multiple one way bridges on the only road into the dam (Yabba Creek Road) and although it can mostly handle the Friday afternoon fishers I don't think anyone who contributed to that road design in 1963 ever anticipated this and as a result that road and supporting infrastructure is grossly unprepared and thus a significant danger in supporting a project of this size. Please use your position of power to make a real difference to the safety of this community. Make the right decision. If the project goes ahead the locals will have sacrificed a lot for the greater good of Queensland, but please don't make one of us sacrifice our life for it.	3.8.1
60	Can you please share the Traffic Impact Assessment?	3.8.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
60	Appendix C 3-7 Temporary Water Infrastructure – My question here is around Water usage i.e. Tank Farm 1, Tank Farm 2, Walkers Top have combined 1600kl of water holding capacity, but I can't find where the estimated water consumption is. That seems like a significant capacity as a buffer, and the diesel pumps of 2-5l Per second are a reasonable size to supply the tanks, but a key component is how much of this water will be consumed from the watercourse per day? Thank you for your time to review, I understand Queensland is in an energy crisis, but I feel though I'm in a unique position close enough to the front lines of this project to provide some real and local feedback.	3.2.2
60	Please see below for my feedback on the Borumba Hydro Project draft preliminary documentation, and use it as my submission for the public comment opportunity. Appendix F - CEMP A-1 General Tasks. In regard to the Risk Assessments in the documents. The Environmental Management Plan identified some key risks. There is also a matrix for Cultural Heritage, Air quality, Noise and vibration, Bushfire, Erosion and sediment, Spoil, Waste and Flora and fauna. Whilst I agree with all the above, I think one of the most important components is missing here.	3.1
61	The Preliminary Documentation consists of a 'Main Report' of 510 pages and over 2100 pages of appendices and extensive data files. [Redacted] has been afforded 15 business days to analyse and comment on this material. Even if [redacted] had extensive and varied technical support staff at its disposal, which it does not, this period is manifestly inadequate to fully assess the Preliminary Documentation. [Redacted] has no choice but to focus on a small number of issues it considers of obvious and critical importance. In making this submission, [redacted] notes that there may be many issues arising from the Preliminary Documentation that it is unable to identify and raise in this Submission because of limitations of time and resources.	3.8.3
61	[Redacted] exclusion from environmental studies and offset proposals This submission on Exploratory Works Draft Preliminary Documentation draws attention to [redacted] exclusion from participation in the environmental studies conducted by Queensland Hydro for the EIS for Borumba, studies which form the basis for the Preliminary Documentation. [Redacted] has a specific and particular concern about Queensland Hydro's failure to consult [redacted] in relation to proposals for environmental offsets and the related Offset Area Management Plan (OAMP) which are now included in the Preliminary Documentation. [Redacted] believe that they must be included in the EIS studies and in any proposals for environmental offsets because their cultural and ecological knowledge and care of country is critical to the success of the studies and the offsets, and so to the ability of the Commonwealth to protect Matters of National Environmental Significance (MNES), as it is required to do under the EPBC Act. The need for [redacted] participation was outlined in detail in [redacted] submission on the Draft Terms of Reference (ToR) for the Borumba EIS (attached). [Redacted] position was accepted by Queensland's Office of Coordinator General (OCG), as reflected in the requirement in the Final ToR for the Borumba for Queensland Hydro to 'demonstrate engagement and consideration of the views of the [redacted] in conducting the EIS. Thus the proponent, Queensland Hydro, was well aware of the need for [redacted] participation well before it submitted the version of the Preliminary Documentation which has now been circulated for public comment.	3.8.3
61	The Exploratory Works Draft Preliminary Documentation ('Preliminary Documentation') is prepared pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (Cth) ('EPBC Act'). The EPBC Act rests on the premise that it is feasible and appropriate to treat matters related to the bio-physical environment separate to those related to Aboriginal culture and cultural heritage. In making this submission, [redacted] asserts that this premise is faulty and destructive of Aboriginal peoples, country and culture. As [redacted] pointed out in its submission on the Draft Terms of Reference for the Borumba Environmental Impact Statement (EIS)(attached), for [redacted] 'culture' is country in all its manifestations, and country is culture. It is inappropriate and unhelpful to discuss aspects of water, flora and fauna separately to matters related to culture and cultural heritage, as occurs in the Preliminary Documentation. This approach will undermine the aims of the Commonwealth in seeking to protect the environment and conserve biodiversity, because it removes [redacted] from their country and prevents them from applying their cultural and ecological knowledge in support of the Commonwealth's objectives. The problems associated with separating country and culture are immediately evident from the way the Preliminary Documentation deals with the issue of environmental offsets, discussed further below.	3.8.2
61	Cumulative impacts The assessment of cumulative impacts in the Main Report is in response to the following specific Commonwealth 'request for further information': 'The Preliminary Documentation must…provide an assessment of the direct and indirect impacts that may occur during construction and post-construction phases, including…A local and regional scale analysis of likely impacts, with reference to the Project's potential contribution to cumulative impacts in the context of development patterns in the locality and region' (Main Report, p.18). The relevant section of the Main Report, 'Potential Cumulative Impacts' (p.184) is minimal and poorly explained. The section details the impact on koala and grey-headed flying-fox habitats from the Woolooga Solar Farm development located within 45km of the Borumba Project. It refers to 'EPBC approvals permits clearing of no more than 176ha of koala habitat and 83 ha of grey-headed flying-fox habitat'. The scope of developments that are considered for cumulative impacts are thus limited to a) proposals assessed under the EPBC Act, and b) other renewable energy projects. No justification is provided for this very limited approach. There are other developments in the region that may be highly relevant in assessing cumulative impacts from the Exploratory Works.The section then concludes: '[t]herefore potential cumulative impacts of Exploratory Works on MNES including koala and grey-headed flying-fox are expected not to be significant locally or regionally' (p.184). No explanation is provided as to how this conclusion is reached and no justification is provided for it. At a minimum one would expect a proponent to 1. identify how much koala and flying-fox habitat will be destroyed by the Exploratory Works; 2. add this to the amount of this habitat permitted to be cleared at the Woolooga Project site; 3. calculate this total amount as percentage of the amount of existing habitat in the region. Conclusions could then be drawn, considering knowledge of threshold effects, about the significance, mitigation and management of cumulative impacts. There is no indication in this section that any such work has been undertaken and there is thus no basis on which to assess the cumulative impacts of the Exploratory Works.	3.5.9
61	Spoil from Access Tunnel excavation Considering that the access tunnel is the largest component of the Exploratory Works, and will form part of the final Project if it is constructed, the section on management of spoil (Main Report, p. 51) is lacking in substance and detail. The information on spoil volumes is vague, indicating an amount of 'approximately 395,000 cubic metres' 'that cannot be used onsite' and a possible further 160,000 cubic metres, which will be placed at the 'tunnel spoil disposal area'. There is an unspecified further volume which 'may' be used onsite, and some of which may be moved to another location or sold commercially (p.53).	3.2.4
61	[Redacted] is particularly concerned that [redacted] has not had any input into the studies that form the basis for, or selection and management of, environmental offsets. Offset Areas A and B and the OAMP are presented in final form, as a fait accompli (Appendix I). There has been no mechanism to incorporate [redacted's] extensive knowledge of their country into the design and conduct of the studies that identified either the areas of impact, the values subject to impact, or the potential locations for suitable offset areas. This exclusion of [redacted's] perspectives undermines the capacity of offsets to deliver the outcomes desired by the Commonwealth under the EPBC Act (and the associated Environmental Offsets Policy) to protect and mitigate impacts on MNES. [Redacted's] exclusion is reflected in the fact that the offset areas have not been investigated by [redacted] for their cultural significance or for the presence of Aboriginal cultural heritage. [Redacted] is especially concerned regarding its exclusion given that [redacted's] submission on the Draft EIS Terms of Reference for Borumba (attached, pp. 6-7) included a specific discussion of the need to take account of [redacted] interests in matters relating to environmental offsets. [Redacted] notes that The EPBC Act 'Environmental Offsets Policy' has overarching principles which are applied in determining the suitability of an offset (Appendix I, 11). One of these principles is that 'suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable' (Appendix I, 14, emphasis added). Based on the lack of [redacted] involvement, this principle of transparency has not been applied to the assessment, selection and management planning process for offsets. [Redacted] have also been excluded from any involvement in the development of the OAMP, (Preliminary Documentation, Appendix I). One aspect of land management that is dealt with extensively in the OAMP and highlights the absence of [redacted] perspectives and input is discussed in the section on 'Bushfire Management' (Appendix I, 91-92). The Bushfire Management section includes prescribed burns as a key management strategy and outlines the regulatory framework, likelihood, environmental factors to consider, procedure, and who gets consulted for controlled burns (Appendix I, 91). The section also proposes the development of: 'A more detailed Bushfire Management Plan that will set out a proposed strategy to manage hot wildfires and more proactively undertake controlled burns for fuel reduction and biodiversity will be developed. Noting that a Bushfire Management Plan is currently being developed for land managed by Queensland Hydro. The Bushfire Management Plan will support this OAMP and will be developed in year 1 inconsultation with stakeholders such as neighbouring landholders, HQ Plantations, Seqwater, Queensland Parks and Wildlife Service and Queensland Fire Department. This will be an operational level document mapping out specific fire breaks, access tracks, assessing fuel loads and fire risk, identifying vegetation patches and proposed burn regimes, firefighting equipment and emergency responses and monitoring and reviews. Low-intensity controlled burns will be utilised to help manage standing and accumulated fuel loads throughout the offset areas' (Appendix I, 91). In their consultations with Queensland Hydro and the OCG, [redacted] have consistently stated the critical need for controlled cold or low-intensity controlled burns, as a culturally appropriate environmental land management tool, and have set out the cultural and environmental factors that influence when, where and how burns should occur. Despite this, and apparent alignment with Queensland Hydro on the importance of prescribed burns, [redacted] was not consulted about the OAMP and is absent from the extensive list of stakeholders and institutions who will be consulted during the development of the Bushfire Management Plan.	3.7
61	Co-Locating of future offsets [redacted] concerns about the lack of [redacted] involvement in the assessment, selection and management planning of offset areas are compounded by the fact that the Preliminary Documentation refers to the possible 'co-locating' of future offsets required for the Main Project works under the EPBC Act (Appendix I, p.77) with the offset areas for the Exploratory Works (Appendix I, p.77). This means that the Exploratory Works offset areas could be the only offset areas proposed for the entire Borumba Project.	3.7
61	No provision for Aquatic Offsets The Draft Preliminary Documentation has no provision for offsets for aquatic species or habitats. This is surprising and concerning given that the Aquatic Ecology Technical Report, at Appendix L, identifies the existence of the Lungfish, Mary River Cod, White-Throated Snapping Turtle, Mary River Turtle and Platypus in the Study Area, all of which are aquatic species listed as threatened under the EPBC Act 1999 (Appendix L, 6). The only relevant reference is to the potential for offsets to occur in the future under the Queensland Environmental Offsets Act and Regulation (2014) which 'are likely to include watercourse vegetation and the Tusked frog' (Main Report p.453). However, any such potential has no bearing on the current proposal for offsets related to the Exploratory Works.	3.7
61	No provision for Project design changes Queensland Hydro has indicated publicly that the Borumba Project will be subject to significant redesign during 2025 because of 'Project Optimisation' studies. For example, it is possible that any Project redesign could result in changes to the location and size of the access tunnel, which is the most substantial component of the Exploratory Works. The Preliminary Documentation does not explain how any re-design will be reconciled with the current Exploratory Works Preliminary Documentation, which deals with the existing Project design. A new Project design could mean that some impacts that will no longer happen are addressed in the Preliminary Documentation, while some impacts of any new design may not be addressed in this Documentation. The conditions of any approval granted by the Commonwealth must clearly state that any changes to the project arising from the Project Optimisation work fall outside the scope of any Exploratory Works approval.	3.1
61	Water use for Exploratory Works construction The Main Report contains no information about water requirements for construction of the Exploratory Works (see section 2, Description of the Project). There is a brief half-page 'Project Water Use' section in the 'Water Management Sub-Plan', which is Appendix K to Appendix F, 'Construction Environmental Management Plan'. Importantly no information on volumes of water required is provided in the Project Water Use section. There is a brief statement that 'raw water will be sourced from the upper reaches of Lake Borumba and/or groundwater ingress during the exploratory tunnelling' (Appendix K of Appendix F, p. 13). Considering the significant scale of the Exploratory Works construction and of the access tunnel in particular, much more detail should be provided on volumes required, the capacity of the water sources mentioned to deliver these volumes, and contingency plans if the requirements exceed the capacity of these sources. Appendix B to the Main Report, Groundwater Impact Assessment (GIA), does include some modelling of estimated volumes from ingress during tunnel construction. The median, or 50th percentile, for example, is 234m3/ per day/ per km (Appendix B, p.55). The GIA also mentions plans for two groundwater bores, 'planned to be drilled about 2km north of the proposed tunnel portal area within the proposed construction laydown area to supply 140Ml/ per annum' (Appendix B, p.5). These are a contingency for construction requirements if the water sources outlined above are not adequate. Importantly the 'Project Water Use' section does not include or refer to the information in the GIA on tunnel ingress volumes or drilling of groundwater bores as a contingency for construction requirement nor, as noted above, does it include any estimates of volumes of water required for the Exploratory Works.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
62	4.1 Incorrect Carbon Accounting and Emissions Mismanagement The environmental benefits of renewable energy projects are often overstated due to flawed carbon accounting. The Borumba Pumped Hydro project, like many large-scale renewable infrastructure developments, fails to account for full lifecycle emissions: • Deforestation emissions – The clearing of thousands of hectares of native forest for the project will release significant amounts of stored carbon into the atmosphere, exacerbating climate change rather than mitigating it (Bolin & Smith, 2023). • Hydro infrastructure is not carbon-neutral – Concrete, steel, and other industrial materials required for the construction of reservoirs, tunnels, and transmission infrastructure are associated with high greenhouse gas emissions (International Energy Agency (IEA), 2023). • Heavy machinery emissions – The excavation, transportation, and construction phases require extensive use of diesel-powered machinery, further increasing the project's carbon footprint (World Resources Institute (WRI), 2023). 4.2 Integration of Wind, Solar, and Transmission Grid Expansion Pumped hydro projects are often linked to the expansion of wind and solar farms, requiring extensive transmission grid development, which contributes to environmental degradation. Key concerns include: • Land clearing for transmission corridors – Extensive clearing is needed for power lines connecting hydro, wind, and solar facilities, causing additional habitat destruction (Queensland Government, 2023). • Increased wildlife displacement – Transmission corridors fragment landscapes, making it more difficult for species to move between critical habitats (Gordon & Patel, 2022). • Maintenance costs and environmental risks – The infrastructure requires ongoing maintenance, with access roads, substations, and power lines disrupting ecosystems (U.S. Geological Survey (USGS), 2023). • Misrepresentation of environmental impacts – Proponents often describe these projects as 'low impact' while ignoring the large-scale infrastructure destruction required to integrate them into the grid (WRI, 2023). 4.3 Heat Island Effect and Regional Climate Change The clearing of forests and large-scale alteration of landscapes will contribute to localized climate change by: • Increasing land surface temperatures – Deforestation reduces shade and moisture retention, creating heat islands in cleared areas (IEA, 2023). • Disrupting natural cooling cycles – Loss of tree cover and increased artificial infrastructure contribute to rising temperatures and reduced rainfall in surrounding regions (Queensland Government, 2023). • Affecting local and regional weather patterns – Large-scale infrastructure projects can alter wind patterns, humidity levels, and even rainfall distribution (Bolin & Smith, 2023). 4.4 Cumulative Impact with Other Renewable Energy Projects The environmental assessment of the Borumba project must not be conducted in isolation but should consider the cumulative impact of multiple renewable projects in the region. Key factors include: • Overlapping environmental stress – The combined impact of deforestation, infrastructure expansion, and habitat fragmentation from multiple projects amplifies the stress on local ecosystems (Gordon & Patel, 2022). • Increased burden on wildlife corridors – With wind farms, solar farms, and transmission lines expanding across the landscape, species are facing a growing challenge in finding safe migratory routes (Queensland Government, 2023). • Diminished ecological resilience – The loss of biodiversity and natural climate regulation functions weakens ecosystems' ability to adapt to environmental changes, increasing their vulnerability to climate change impacts (USGS, 2023). Given these concerns, the cumulative impact of this project in conjunction with other renewable energy developments must be assessed holistically, rather than treated as an isolated infrastructure development.	3.8.6
62	6.4 Gaslighting and Misrepresentation of Carbon Accounting The proponents of the Borumba Pumped Hydro Project have engaged in misleading narratives regarding the project's carbon footprint and broader environmental impact. This gaslighting of carbon accounting has led to widespread misinformation, including: • Falsely portraying the project as carbon-neutral – Despite clear evidence that deforestation, concrete production, and excavation emissions significantly contribute to greenhouse gas output, the project continues to be marketed as an environmentally friendly initiative (Bolin & Smith, 2023). • Ignoring lifecycle emissions – The emissions from construction, material transport, and land clearing are being omitted from official reports, creating a distorted view of the project's true carbon cost (IEA, 2023). • Downplaying cumulative environmental harm – While individual project components may appear minimal, the combined impact of multiple energy developments, including pumped hydro, wind, and transmission lines, exacerbates climate change and biodiversity loss (WRI, 2023). This pattern of misinformation prevents informed public debate and allows policymakers to proceed with approvals under false pretenses. A transparent and scientifically robust carbon accounting framework must be enforced before any further development is considered. Given these socio-economic and community impacts, the Borumba Pumped Hydro Project should not proceed without comprehensive independent reviews and a genuine commitment to community consultation and mitigation strategies.	3.8.6
62	6. Socioeconomic and Community Impact 6.1 Impact on Local Communities The Borumba Pumped Hydro Exploratory Works will have far-reaching consequences for local communities, disrupting both residential areas and economic stability: • Displacement of residents – The acquisition of land for infrastructure, including reservoirs, roads, and transmission lines, could result in forced relocations and loss of homes (Queensland Government, 2023). • Increased industrialization of a natural region – The project will bring heavy machinery, worker camps, and long-term construction activities into a previously natural landscape, fundamentally altering its character (USGS, 2023). • Threats to local tourism and eco-tourism industries – The region is known for its pristine landscapes, attracting visitors for bushwalking, camping, and nature-based tourism. Large-scale industrialization could deter visitors, leading to economic downturns in tourism-dependent businesses (IEA, 2023).	3.8.5
62	6.3 Lack of Genuine Consultation One of the most critical concerns is the lack of transparency and community engagement throughout the planning and approval process: • Community concerns dismissed or inadequately addressed – Local residents and conservation groups have raised significant objections to the project, yet public input has been minimized or overlooked in key decision-making stages (USGS, 2023). • Insufficient transparency in environmental assessments – The environmental impact assessment (EIA) process has failed to provide clear, accessible information regarding the project's long-term social and economic effects. Many reports lack independent peer review, making them unreliable (IEA, 2023). • Failure to implement community-driven solutions – Rather than exploring less invasive energy storage alternatives, the project has prioritized a top-down approach that ignores local expertise and concerns (WRI, 2023).	3.8.3
62	1.2.3 Sensitive Water Systems The Borumba region is hydrologically sensitive, forming part of the Mary River catchment that feeds into essential water resources for both wildlife and human use (Queensland Government, 2023). The exploratory works risk contaminating local water sources through increased sediment runoff, PFAS pollution, and chemical leaching from construction materials (Williams et al., 2020).	3.7, 3.5.5
62	5.1 Non-compliance with Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) The Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) is Australia's key environmental legislation designed to protect matters of national environmental significance, including threatened species, ecosystems, and heritage sites. The Borumba Pumped Hydro Exploratory Works project violates several provisions of the EPBC Act, particularly: • Ignoring cumulative impact requirements under the Act – The environmental impact assessment (EIA) for this project has failed to account for cumulative impacts from multiple renewable energy developments in the region, including transmission infrastructure, wind, and solar farms. The legislation mandates that projects be assessed in relation to existing and foreseeable developments, yet this requirement has been neglected (Gordon & Patel, 2022).	3.5.9
62	3.2 Risk of Contamination In addition to sedimentation and hydrological disruption, there are severe contamination risks posed by the project, including: • Historical concerns over hazardous materials – Similar projects have uncovered asbestos-containing materials in excavation sites. The disturbance of soil in an area with previous mining or industrial activity may lead to the release of harmful substances (Jones & Smith, 2021). • Chemical use in construction and tunneling – Industrial projects frequently require lubricants, solvents, and blasting chemicals, many of which have been documented to leach into surrounding water systems, affecting both surface and groundwater quality (Close & Dwyer, 2022). • Heavy metals and nutrient runoff – The disturbance of deep soil layers can release naturally occurring heavy metals, which enter the food chain via contaminated water sources (Williams et al., 2020).	3.5.5
62	3.3 PFAS and Other Soil Contaminants One of the most concerning aspects of the project is the potential for PFAS contamination. PFAS (per- and polyfluoroalkyl substances) are long-lasting industrial chemicals linked to severe environmental and human health risks. • Presence from industrial processes – Past land use and industrial operations in the region raise concerns about pre-existing PFAS contamination in the soil (Queensland Government, 2023). • Leaching of toxins into groundwater – Construction and tunneling can mobilize contaminants, introducing them into underground aquifers that serve as drinking water sources for wildlife and communities (Close & Dwyer, 2022). • Bioaccumulation risks – PFAS compounds do not break down in the environment, leading to a build-up in plant, animal, and human tissues. Bioaccumulation in the food chain can result in long-term toxic effects (Williams et al., 2020). Given these significant contamination risks, proper environmental impact assessments must be conducted before any exploratory works proceed. Failure to address these risks would lead to severe, long-term consequences for water security in the region	3.5.5
62	6.2 Noise and Vibration Concerns The construction and operation of the Borumba Pumped Hydro Project will result in longterm noise and vibration disturbances, affecting both human settlements and local wildlife: • Increased noise pollution – Drilling, excavation, and construction activities will introduce continuous high-decibel noise levels, impacting nearby communities and wildlife corridors (WRI, 2023). • Potential long-term vibration damage – Underground tunneling and blasting could cause structural damage to homes, businesses, and natural formations, affecting geological stability (Gordon & Patel, 2022). • Effects on wildlife – Many species, particularly nocturnal and migratory wildlife such as greater gliders and native bird populations, rely on low-noise environments. Noise pollution can disrupt breeding cycles and migration patterns, leading to species decline (Queensland Government, 2023).	3.5.3
62	1.2.2 Old-Growth Forests and Remnant Vegetation The exploratory works threaten to destroy significant portions of old-growth eucalyptus forests, which play a crucial role in carbon sequestration and support a diverse range of flora and fauna (Jones & Smith, 2021). The clearing of these forests will result in: • Loss of habitat corridors, further isolating wildlife populations (Queensland Government, 2023). • Increased soil erosion, leading to sedimentation of nearby waterways (Williams et al., 2020). • Disruption of natural cooling effects, contributing to microclimate changes (Close & Dwyer, 2022).	3.5, 3.5, 3.6
62	2.1 Destruction of Prime Koala Habitat The project site falls within critical koala habitat, an area that is already suffering due to land clearing, fragmentation, and increased human activity. Koalas (Phascolarctos cinereus) rely on mature eucalyptus forests for food and shelter, with studies showing that koalas exhibit high site fidelity, meaning they cannot simply relocate if displaced (Queensland Government, 2023). The Borumba region provides connectivity between Noosa Biosphere Reserve and the Great Sandy National Park, two of Queensland's most ecologically significant conservation areas. This connectivity is essential for koala gene flow, which prevents inbreeding and enhances population resilience (Close & Dwyer, 2022). The exploratory works, if allowed to proceed, will sever this corridor, making it even harder for koalas to sustain viable populations. Additionally, noise, vibration, and human intrusion from exploratory drilling and land clearing will disrupt breeding cycles and force koalas into suboptimal habitats, exposing them to increased threats such as vehicle collisions, dog attacks, and stress-related diseases (Jones & Smith, 2021).	3.5, 3.5, 3.6
62	2.3 Deforestation and Habitat Loss The proposed exploratory works involve clearing thousands of hectares of remnant and secondary growth forests. The destruction of mature trees and understorey vegetation will have cascading effects on biodiversity: • Loss of carbon sequestration capacity – Mature forests store large amounts of carbon. Their destruction contributes to greenhouse gas emissions (Jones & Smith, 2021). • Altered food webs – The removal of key plant species will impact herbivorous wildlife, which in turn affects predators (Williams et al., 2020). • Disruption of ecosystem services – Forests regulate climate, maintain soil health, and protect against erosion. Once removed, these services are lost permanently (Queensland Hydro, 2024).	3.5, 3.5, 3.6

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62	5.2 Breach of State and Federal Conservation Agreements In addition to breaches under the EPBC Act, the project also contradicts state and federal conservation policies, particularly Queensland's Koala Conservation Strategy and international agreements under the Convention on Biological Diversity (CBD): • Contradiction with Queensland's conservation policies – The Queensland Koala Conservation Strategy 2020-2025 explicitly aims to prevent habitat destruction in koala priority areas. The Borumba region is a known critical habitat, and this project directly undermines the government's own conservation objectives (Queensland Government, 2023). • Violation of international commitments – Australia is a signatory to the Convention on Biological Diversity (CBD), which requires member nations to protect biodiversity and halt species decline. The large-scale clearing associated with this project contributes to biodiversity loss and contravenes Australia's commitment to international conservation objectives (USGS, 2023). • Failure to comply with national climate commitments – The project's incorrect carbon accounting and destruction of carbon-sequestering forests contradict Australia's National Greenhouse Gas Emissions Reduction targets under the Paris Agreement (IEA, 2023). Given these clear legislative and policy breaches, this submission urges the immediate cessation of approvals for this project and calls for a comprehensive review of its environmental and legal compliance before further work proceeds.	3.5, 3.5, 3.6
62	1.3.1 Large-Scale Land Clearing and Habitat Destruction Land clearing is one of the most damaging activities associated with industrial projects. The proposed works will require removing vast stretches of native vegetation, leading to: • Irreversible loss of habitat for koalas (Phascolarctos cinereus), greater gliders (Petauroides volans), and spotted-tailed quolls (Dasyurus maculatus), among other species (Queensland Government, 2023). • Fragmentation of wildlife corridors, preventing species from safely migrating between feeding and breeding grounds (Close & Dwyer, 2022). • Severe soil degradation due to the removal of tree cover and root structures, leading to increased erosion and desertification (Williams et al., 2020). • Increased bushfire risk—scientific studies have linked widespread land clearing to an increase in bushfires due to higher ground temperatures, drier soils, and the introduction of more flammable invasive plant species (Jones & Smith, 2021).	3.4, 3.5, 3.6
62	2.2 Impact on Other Endangered Species The Borumba region is home to multiple threatened and endangered species, many of which rely on undisturbed ecosystems for survival. Species affected include: • Greater gliders (Petauroides volans) – These nocturnal marsupials require oldgrowth trees with abundant hollows. Land clearing removes nesting sites and exposes them to predators (Queensland Government, 2023). • Greater bilbies (Macrotis lagotis) – A species already facing habitat loss, bilbies depend on intact undergrowth for shelter and foraging (Williams et al., 2020). • Black-throated finch (Poephila cincta) – One of Australia's most endangered birds, this species relies on open woodlands that are increasingly being destroyed for infrastructure projects (Close & Dwyer, 2022). As these species are already under severe pressure, further habitat fragmentation and destruction will push them closer to local extinction.	3.4, 3.5, 3.6
62	• Failure to protect matters of national environmental significance – The project threatens protected species such as koalas (Phascolarctos cinereus), greater gliders (Petauroides volans), and spotted-tailed quolls (Dasyurus maculatus), all of which are listed as vulnerable or endangered under the EPBC Act (Australian Government, 1999).	3.4, 3.5, 3.6
62	• Inadequate offsetting strategies – The mitigation strategies proposed do not sufficiently address biodiversity losses, particularly for species requiring intact habitat corridors. Current offsets rely on revegetation strategies that do not provide immediate habitat replacement and cannot support displaced wildlife in the short term (Queensland Government, 2023).	3.7
62	1.3.2 Water Contamination and Ecosystem Disruption One of the most alarming aspects of the Borumba Pumped Hydro Exploratory Works is its potential to severely impact water systems. The region's hydrology is particularly sensitive to disruptions, and the introduction of industrial-scale excavation, chemical use, and altered water flows will create lasting damage. Key concerns include: • Sedimentation of water bodies—Cleared land will be highly susceptible to erosion, with loose soil washing into nearby creeks and rivers, reducing water quality and suffocating aquatic species such as the Mary River cod (Maccullochella mariensis) (Queensland Government, 2023). • Chemical contamination—The use of industrial chemicals and PFAS compounds, which have been linked to serious environmental and human health risks, may leach into groundwater (Williams et al., 2020). • Alteration of natural water cycles—The removal of vegetation reduces the ability of soils to retain moisture, leading to increased runoff and flooding in some areas, while other regions experience drought-like conditions (Close & Dwyer, 2022). Given the critical role that water plays in supporting both terrestrial and aquatic ecosystems, any disruption to the natural hydrological balance will have cascading negative effects on the entire region.	3.5
62	2.4 Change of Landscape and Natural Ecosystem Disruption The topographical integrity of the Borumba region will be permanently altered due to excavation, drilling, and hydrological modifications. This includes: • Soil degradation and erosion – Without tree cover, topsoil will be eroded, reducing land fertility and increasing sedimentation in waterways (Close & Dwyer, 2022). • Altered hydrological cycles – The project will modify groundwater flows, potentially reducing water availability for downstream ecosystems (Queensland Government, 2023). • Increased flood risk – Clearing forests diminishes the landscape's ability to absorb rainfall, leading to higher instances of flash flooding (Jones & Smith, 2021). • PFAS and other chemical contamination – Industrial activities, including drilling and construction, will introduce hazardous substances such as PFAS into the soil and water systems, leading to long-term contamination (Williams et al., 2020). • Destruction of aquatic ecosystems – Increased runoff and sedimentation will impact local rivers, affecting freshwater species, including the endangered Mary River cod (Maccullochella mariensis) (Queensland Government, 2023). Given the region's ecological importance, the long-term consequences of these disruptions are irreversible and pose a significant risk to local and migratory species.	3.5
62	3. Water Security and Quality Concerns 3.1 Impact on Local Water Systems The Borumba region is an essential water source, supporting both ecological and human needs. The proposed exploratory works and subsequent project development will significantly impact these water systems by: • Polluting local waterways – Excavation and construction will result in sedimentation, introducing fine particles that suffocate aquatic habitats and reduce water clarity (Close & Dwyer, 2022). • Disrupting natural hydrological cycles – The removal of vegetation and alteration of landforms will change the way water is absorbed, stored, and released across the region, increasing the risk of drought and flooding (Queensland Government, 2023). • Compromising groundwater recharge – The loss of tree cover and deep-rooted plants will prevent rainwater from percolating into the ground, reducing long-term water availability (Williams et al., 2020).	3.5
62	While these exploratory works are framed as a minimal intervention, they represent the first stage of a project that will permanently alter the region's landscape, water systems, and biodiversity.	3.1
62	1.2.1 Rich Biodiversity and Endangered Species • Koalas (Phascolarctos cinereus) – Borumba is part of one of the last strongholds for Queensland's koalas, which are under increasing threat due to habitat destruction and fragmentation (Queensland Government, 2023). • Greater gliders (Petauroides volans) – These nocturnal marsupials depend on mature eucalyptus forests and are highly vulnerable to deforestation (Close & Dwyer, 2022). • Spotted-tailed quolls (Dasyurus maculatus) – Apex predators critical to ecosystem balance, already declining due to habitat loss (Williams et al., 2020). • Mary River cod (Maccullochella mariensis) – A rare and vulnerable freshwater fish found in the Mary River, susceptible to water quality degradation (Queensland Government, 2023). • A variety of wetland bird species, including migratory birds that rely on the intact water systems of the region (Close & Dwyer, 2022).	3.1
62	7. Alternative Solutions 7.1 Viability of Other Energy Storage Solutions The assumption that large-scale pumped hydro is the only viable energy storage solution is flawed. Several alternative storage technologies offer lower environmental impact, improved efficiency, and greater flexibility: • Battery Energy Storage Systems (BESS) – Advances in lithium-ion, flow, and solid-state batteries provide scalable energy storage without the need for massive land clearing and hydrological disruption (IEA, 2023). • Compressed Air Energy Storage (CAES) – This method utilizes underground caverns to store pressurized air, offering long-duration storage without requiring vast environmental modifications (Gordon & Patel, 2022). • Hydrogen Storage and Fuel Cells – Green hydrogen production and storage are emerging as long-term, scalable solutions for energy storage, avoiding the ecosystem destruction associated with pumped hydro (WRI, 2023). • Gravity-Based Energy Storage – Technologies that store and release energy through gravitational potential (such as pumped concrete blocks) are proving to be efficient alternatives without requiring major landscape alterations (USGS, 2023). 7.2 Distributed Energy Storage Approaches Instead of centralizing energy storage in a single large-scale hydro project, distributed storage systems provide flexibility, resilience, and reduced environmental impact: • Decentralized Microgrid Storage – Smaller, localized battery and hydrogen storage systems integrated into microgrids reduce reliance on expansive transmission infrastructure (Bolin & Smith, 2023). • Community-Based Storage Solutions – Small-scale solar and wind coupled with local battery storage provide reliable backup power without major land clearing (Queensland Government, 2023). • Pumped Hydro in Brownfield Sites – Repurposing existing industrial reservoirs, disused mines, or urban water systems eliminates the need for new dam construction and deforestation (IEA, 202). These alternative solutions provide a more sustainable path forward, balancing energy reliability with ecological preservation. The Borumba Pumped Hydro Project fails to explore these options, prioritizing a high-impact, outdated approach over modern, environmentally responsible alternatives.	3.1
63	I oppose the proposed Borumba Pumped Hydro Exploratory Works here> Our environment is the most precious part of our planet that must be protected	3.1
64	I oppose the proposed Borumba Pumped Hydro Exploratory Works because The whole renewable energy scheme including pumped hydro is hypocritical as on one hand we have government groups as well as private groups spending money on saving native species and wildlife then saying these renewable energy projects are going to save the planet. Renewable projects are nothing but fraudulent and only benefit a few major companies to the point where Australians are paying rediculously high power bills for unstable energy. Not to mention the impact not just on our environment but those living in the towns and farms. Food is obviously not priority now.	3.1
65	The survey results listing MNES has listed many conservation significant species listed as endangered or vulnerable. black-breasted button-quail (Turnix melanogaster) – listed as 'vulnerable' under the EPBC Act and the NC Act • glossy black-cockatoo (south-eastern) (Calyptorhynchus lathami l	3.1
66	I own a [REDACTED] close to Imbil. I have significant concerns regarding the use of vehicular routes impacting my business and the safety of my clients. I have hundreds of clients each week attending my business. The impact of road use will render my business an extremely higher risk than currently. I am also concerned about the financial implications of clients not feeling safe to come to our facility with our close proximity to potential heavy and dangerous road traffic.	3.8.1
67	I don't think this project should go ahead as it will impact Glossy Black Cockatoo habitat. Please stop this development	3.5, 3.5, 3.6
68	I oppose the proposed Borumba Pumped Hydro Exploratory works because this project is ruining ecosystems and our beautiful town and surrounds	3.5, 3.5, 3.6
69	I oppose the proposed Borumba Pumped Hydro Exploratory Works on a number of grounds. Firstly because of the destruction of flora and fauna during the construction and flooding of the area. Secondly because it had been shown these projects don't work well - snowy hydro 2 as an example. Thirdly the cost to the Australian taxpayer. This project should not go ahead.	3.1
70	• Facilitated impacts to housing and roads. • Cumulative impacts with other works being undertaken in the region to facilitate the Project (e.g. local road upgrades) and with other Projects proposed in the region	3.5.8
70	The unmitigated potential impacts associated with the Project include: • Direct impacts such as vegetation clearing and topsoil removal causing habitat loss, and injury and mortality from vegetation clearing and collisions with vehicles. • Indirect impacts such as: – habitat fragmentation – edge effects – habitat degradation from air, noise, vibration and light emissions – invasive pests, weeds and pathogens – contamination from hazardous materials – erosion and sedimentation – impacts to surface water quality – impacts to groundwater.	3.5, 3.5, 3.6, 3.5.5

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70	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Nine threatened flora: – ball nut, Vulnerable – brush sophora, Vulnerable – Coleus omissus, Endangered – Coleus torrenticola, Endangered – macadamia nut, Vulnerable – native guava, Critically endangered – scrub turpentine, Critically endangered – small-fruited Queensland nut, Vulnerable – three-leaved Bo sistoa, Vulnerable	3.5, 3.5, 3.6
70	The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: • Twelve threatened fauna: – Australian lungfish, Vulnerable – black-breasted button-quail, Vulnerable – giant barred frog, Vulnerable – glossy black-cockatoo (south-eastern), Vulnerable – greater glider, Endangered – grey-headed flying-fox, Vulnerable – koala, Endangered – long-nosed potoroo (northern), Vulnerable – Mary River cod, Endangered – Mary River turtle, Endangered – white-throated snapping turtle, Critically endangered – yellow-bellied glider (southern subsp.), Vulnerable.	3.4, 3.5, 3.6
70	I oppose the proposed Borumba Pumped Hydro Exploratory Works because of a multitude of reasons such as: The Exploratory project has a total footprint of 85.3 ha and are known or likely to impact: Two threatened ecological communities (TEC): – Lowland Rainforest of Subtropical Australia TEC, Critically endangered – Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions, Endangered	3.1
71	2.2.3 Project traffic "Access to the Project, will be primarily from Imbil via Bella Creek/Borgan Road. Bella Creek Road is accessed from Yabba Creek Road. The road is a Gympie Regional Council-controlled single lane gravel road. The Project's internal road network will start at the gate on Borgan Road located approximately 1.3 km from Bella Creek Road. Access to the Project will generally occur during standard working hours. Access to the Project areas will be facilitated through use of these existing roads; however, minor upgrades to Bella Creek Road and the initial section of Borgan Road will be required. These minor upgrades are being completed by Gympie Regional Council. " This is hopelessly inadequate. For the projected 225 vehicle trip/day Yabba Creek and Bella Creek are not suitable roads. It is ridiculous to think the 6 single lane bridges on Yabba Creek rd will accommodate this traffic when it is struggling to manage the current load. Bella Creek Rd is a single lane dirt road designed for local traffic. It is not suitable for a multi billion dollar nation changing piece of infrastructure to be accessed by. That this is even proposed is laughable. Who will be held accountable with the first and then the subsequent deaths on this road? It is inevitable.	3.8.1
71	5.3.4 Invasive pests, weeds, and pathogens – RFI 4.5(d)iii and iv "Clearing and construction activities have the potential to increase the abundance and facilitate dispersal of invasive pests and pathogens in habitat in the Project area." 5.3.4.1 and .2 discuss invasive weeds and pests, in particular myrtle rust and allude to the spread of GRT weed. These are dismissed as pre existing weeds and pathogens. The document reveals BMAD, KoRV, Beak and Feather disease, root rot and toxoplasma gondii as potential but unrealistic threats. "The Exploratory Works do not involve any activity that has the potential to facilitate the introduction and/or spread of any of the above pathogens/diseases and therefore the risk is considered to be low." My concern is not about any of the disease threats of historical record, rather my concern is of the current threat to biosecurity in Qld, that is FIRE ANTS. There is NO reference in this "Borumba Project draft preliminary documentation" about THE MOST SERIOUS threat to Biosecurity in QLD and indeed in Australia. As of the 17th Feb 2025, Fire ant biosecurity zones will expand. A 5 km radius at North Arm and Ninderry has been established. Changes will impact parts of Eumundi, Eerwah Vale, Cooloolabin, Bridges, Yandina, Valdora, Yandina Creek, Verrierdale and Maroochy River. This is a distance of approx 41km, from Imbil/ The biosecurity methods employed by Qld Hydro, to date, have been nothing but laughable. The non commissioned wash down station on the corner of Yabba Creek rd and Bella Creek rd is slap in the face of any one who is serious about biosecurity. Having had a private meeting with Qld Hydro on the 1/7/24 I was reassured that the wash down station, on site at The Borgon, was a "state of the art" installation. Further more I was assured when I contacted Qld Hydro on 8/9/24 of a specific breach of Biosecurity at Butler's Corner, on Yabba Creek Rd Imbil, that this was not the case, and that the vehicle involved had washed down on site. However, the photo of the wash down facility , on site, was revealed in the most recent documentation via the Stakeholder Reference Group. It is entirely inadequate, and contrary to the QLD Governments own recommendations. There has been a complete lack of transparency with regard to actually enacting the Biosecurity Act. This has been ongoing and well documented since 1/7/24. Not only has the physical act of washing down been completely inadequate, but the record keeping has not been transparent, and when a request for a copy of a washdown certificate has been made, it has not been with coming. This is in itself a breach of Biosecurity.	3.5, 3.5, 3.6
72	The short consultation period is insufficient for the community and the report isn't written in an 'accessible' form for community understanding. The local community hasn't been provided with adequate time to respond to this preliminary report. The 510 page report uses technical language not adequately deciphered for community understanding of the ecological and social impacts. $35 million would have been better allocated to public purposes, such as building a new school or replacing the failing HVAC infrastructure at the Royal Brisbane and Women's Hospital. It is noted the exploratory works specified in the report, including their significantly impacts on critically endangered species, are scheduled to begin within two months of consulting the local community.	3.8.3
72	The project has significant impacts on critically endangered sub-tropical rainforest and other undisturbed forest areas. Several vulnerable, endangered and critically endangered species of flora and fauna will incur significant impacts. Fauna to be adversely affected include: Black Breasted Button Quail; Glossy Black Cockatoo; Greater Glider; Long Nosed Potaroo; Koala; and Yellow Bellied Glider. The mitigation methodologies proposed are insufficient and simply adding small areas to national parks as offset do not address the risk of losses. The 510 page report does not address the impacts of clearing several kilometres of new dual tracks and the subsequent impact on fauna of heavy vehicle traffic. The report identifies the construction of an explosives facility and connecting track. The report is not explicit on the use of explosives in a sensitive area to blast 31,000 square metres of tunnel and the potential impact on the ground water table changes on forests.	3.4, 3.5, 3.6
72	Prior to spending to $35 million of public money on damaging exploratory work for a project estimated to cost $18.5 billion, a detailed options analysis should have been prepared comparing the costs / benefits of alternative electricity production methods, such as a far less expensive, modern coal fired power station built on a brown field site with existing transmission infrastructure in advance of zero emissions nuclear facilities. A preliminary business case is required for public examination. It isn't appropriate to claim the proposed hydro project is a 2,000MW scheme, because it can only run for a short period before requiring an alternative power source to pump water up to the higher dam. The project should document the emissions during construction. The report indicates around 105 daily heavy vehicle movements on a single lane dirt road with single lane 'fragile' bridges in a very flood prone area. Local infrastructure doesn't have sufficient capacity for this type of usage. Housing supply is very restricted in the locality. Suggesting workers should be able to travel 3 hour a day to and from the project site is not sensible. It also adds traffic and risks to the local roads. Local families should not be displaced by a very short-term workforce. The business case needs to examine the commercial return of the proposed project to the people Queensland. There are far more pressing funding requirements in areas such as health infrastructure. If a new, efficient black coal fired facility can be built on a brown field site (rather than within an area of critically endangered sub-tropical rainforest) at circa $4.5 million per MW (around half the cost) it makes superior economic and social sense. This enables the use of existing transmission infrastructure, not requiring new lines to cut / adversely impact farms and grazing properties. It also provides for reliable, baseload power rather than a temporary, short period of high cost 'battery" type supply. The cost far exceeds the anticipated cost of the Snowy 2 hydro scheme which is encountering significant delays, cost escalations and plant failures. The report does not adequately address the impacts on communities such as Imbil. There is not sufficient infrastructure to cater for a major population increase if the main project proceeds. No account is made of drought conditions in the study and potentially diverting stored water resources to power generation purposes.	3.1
72	The exploratory work, including excavation using explosives and the likely adverse impacts on critically endangered and vulnerable species, should be postponed until Hydro Queensland can produce a Treasury policy required business case including a detailed option analysis comparing other lower cost, lower risk and reliable electricity generation methods.	3.1
73	A consultation means a dialogue between parties. or "the act of exchanging information and opinions about something in order to reach a better understanding" Borumba Hydro and the Qld Gov have strategically named these events as "Community Engagements, Stakeholder engagements, Community Information sessions, Community stalls, Community connect events, and creating Stakeholder Reference Groups." At NO point in time has there been a CONSULTATION between any groups and Borumba Hydro. There has been no level ground for discussion. Conveniently, there has been a constant turn over of young staff at these events. Rarely do you meet the same employee at a second event. Mostly the staff do not have the answers to the questions, but we are reassured that someone will get back to you on that question, which they never do. Every meeting is sanitised with courtesy and a lack of answers. It has been glaringly obvious from the very first community event that Borumba Hydro was simply "ticking the boxes" for this very document. Our confidence in "due process" has been eroded by every event since Borumba Hydro was created. The establishment of the Stakeholder Reference Groups has further sapped me of any confidence in this project. These groups are completely managed by Borumba Hydro and their collective voices are silent.	3.8.3
73	"The impacts and risks associated with geotechnical works are generally well understood and the mitigation measures to minimise impacts are routinely and effectively implemented with success. In this regard, the potential for unknown or unpredictable impacts is considered low and generally associated with the exploratory tunnel. " There has been no comment in the entire 510 page document about the most serious risk to biosecurity in Australia, that is Fire Ants. Red imported fire ants are a category 1 restricted matter under the National Environmental Biosecurity Response Agreement. 5.1-5.6 with all subsections inclusive is completely ignorant of the very real risk of fire ant contamination and spread. Currently the nearest out break is at Yandina a mere 45 km away. The current biosecurity measures in place are completely inadequate to ensure there is no possible transmission of these ants to the site. The wash down station on the corner of Yabba and Bella creeks has not been commissioned and has never been used. It is completely inadequate for the management of fire ants. This web site: https://www.fireants.org.au/stop/movement-controls/cleaning-machinery provides the following information: "Checking machinery components Before cleaning, check all equipment and machinery closely to ensure no fire ants are present. If you find fire ants, report them to us by completing the online form or calling 132 ANT (13 22 68). The following table outlines different machinery and the components you should check for fire ants. Machinery/equipment type: Components to be checked: Bulldozer Rippers, Blade, Track frame, Belly plate. Excavator Track frame, Underside of slew ring, Buckets Drott Track frame, Rippers, Belly plate Grader Rippers, Mould board Motor scraper Overflow area on rear of scraper Tractor and slasher Top of slasher, Skids Backhoe Buckets, Backhoe attachment Bobcat Buckets, Belly plate, Other attachments Trucks Soil build-ups in bins, Chassis rails Wheelbarrows Wheels, Legs, Bucket, including under the rim Shovels, rakes and other handheld tools Tool head — front and back, Handles Cleaning methods and frequency You must clean down the machinery and equipment before you leave a location within the fire ant biosecurity zones. Your current clean-down actions for the control of weed seeds and other materials may already be reducing the risk of moving fire ants. Completely remove soil and other organic materials from your equipment by: • physically removing the material (e.g. scraping or blowing) • brushing down • washing down or steam cleaning • blasting with an air compressor. None of this established protocol (which is the Qld Government's own protocol) is currently being employed by Borumba Hydro. Table 31, p187, 5.1.2 "potential impact pathways" demonstrates the ignorance the authors have with regards to potential fire ant contamination.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
73	"These impacts will occur as a result of site establishment works for all Project components, and potentially as a result of vehicle movements around the Project area during site establishment, construction and for the duration of geotechnical investigations." Vegetation clearing and topsoil removal – RFI item 4.1(a-b) and 4.3(a) The very act of vegetation clearing with out employing state of the art biosecurity measures to control the potential movement of fire ants is madness. Every effort must be made to PREVENT the movement of these ants. The highest standard of Biosecurity must employed. CURRENTLY: "Gympie Region Biosecurity Plan (2018-2022) (Gympie Regional Council, 2023) acknowledges both feral cats and wild Dogs have established populations throughout the Gympie region and adjoining councils, while occasional sightings of ferrets (Mustela furo) have been recorded through Queensland. All three are recognised to potentially transmit disease to humans, livestock, and native species. These diseases are not described except for Hydatidosis and Neospora that can be spread by wild dogs however, these are not recognised threats to threatened species or ecological communities. Similarly, the Somerset Regional Council Biosecurity Plan – Invasive Plants and Animals 2020-2025 (Somerset Regional Council, 2023) and Sunshine Coast Council Local Government Area Biosecurity Plan 2017 (Sunshine Coast Council, 2023) do not describe any pathogens within the area that may impact threatened species and ecological communities. The Exploratory Works do not involve any activity which has the potential to facilitate the introduction and/or spread of Hydatidosis and Neospora and therefore the risk is considered to be low." This is not a good enough response to The Biosecurity Act. Borumba Hydro and indeed each of the Regional Councils need to be PROACTIVE in preventing the spread of Fire Ants into the site. Leaflets and brochures and Facebook posts are unacceptable forms of preventive management of a project of this scale. Demonstratable transparent evidence of the highest level of Biosecurity is demanded. 5.3.22 p193 Weeds, invasive pests and pathogens and 5.3.2.3 Depth of edge influence " the depth of edge effects experienced on site are anticipated to be influenced by the type of machinery and equipment used, " Fire ants don't care about any of this. They are THE most invasive species on earth. THE ENTIRE 510 page document needs to be reconsidered with regards to this MOST significant BIOSECURITY risk Australia has ever faced.	3.5, 3.5, 3.6
73	7.1 Threatened ecological communities 7.2 Threatened flora – RFI item 3.1 7.3 Threatened fauna – RFI item 3.1 Again there has been no mention of potential and probable Fire ant incursion and the threat it imposes on ALL ecological communities. The complete lack of recognition of this risk to already threatened flora and fauna is outrageous and plain ignorant. My expectation of a multibillion dollar project is higher than the standard of this document.	3.5, 3.5, 3.6
73	I call on the Minister (Commonwealth Minister for the Environment and Water) to say no to this project on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts can not be mitigated or offset. Further more risk of spreading fire ants has NOT been address in this document or in any of the actions of Borumba Hydro to date .	3.5, 3.5, 3.6
74	We are the driest continent so why are we fooling around with our most precious resource our water supplies. This is expensive to say the least and not good energy.. Different if it was not pumped hydropower Stop all these!	No response required
74	Potential - all the damage caused to the area will be SIGNIFICANT. Not potential. They are lying to you on potential because the animals are affected if not killed and the clearing is enormous and property owners next door lose huge value in there properties usually with overhead high voltage power lines.	3.5, 3.5, 3.6
74	These pumped hydro schemes are expensive and not in the best interests of Australians	3.1
75	• Facilitated impacts to housing and roads. • Cumulative impacts with other works being undertaken in the region to facilitate the Project (e.g. local road upgrades) and with other Projects proposed in the region.	3.5.8
75	The unmitigated potential impacts associated with the Project include: • Direct impacts such as vegetation clearing and topsoil removal causing habitat loss, and injury and mortality from vegetation clearing and collisions with vehicles. • Indirect impacts such as: – habitat fragmentation – edge effects – habitat degradation from air, noise, vibration and light emissions – invasive pests, weeds and pathogens – contamination from hazardous materials – erosion and sedimentation – impacts to surface water quality – impacts to groundwater. The destructive and expensive nature of pumped hydro projects is already evident with the issues surrounding the Snowy Hydro 2 project in New South Wales. It has been plagued by broken machinery, delays, unexpected technical issues, worker safety concerns, and enormous cost overruns. Our unique habitat and endangered wildlife are too precious to risk for the Borumba Pumped Hydro project. The exploratory work should be stopped, and the project should be abandoned.	3.5, 3.5, 3.6
75	This will likely threaten numerous endangered species, including the Mary River Turtle and the critically endangered White-throated Snapping Turtle. Other confirmed species living in the area include the threatened Koalas, Glossy Black-Cockatoos, Greater Gliders, Northern Long-nosed Potoroos, White-throated Needletails, and Yellow-bellied Gliders. There is also a further twelve threatened fauna including: - Australian lungfish, Vulnerable – black-breasted button-quail, Vulnerable – giant barred frog, Vulnerable – glossy black-cockatoo (south-eastern), Vulnerable – greater glider, Endangered – grey-headed flying-fox, Vulnerable – koala, Endangered – long-nosed potoroo (northern), Vulnerable – Mary River cod, Endangered – Mary River turtle, Endangered – white-throated snapping turtle, Critically endangered – yellow-bellied glider (southern subsp.), Vulnerable.	3.4, 3.5, 3.6
75	I oppose the proposed Borumba Pumped Hydro Exploratory Works because this is a large-scale and disruptive project that, by any standard, cannot be undone once it has caused damage. Once construction begins, halting the progress will become increasingly difficult, and the project will continue for years. Unique and fragile ecosystems will be destroyed, forests will be cleared for new roads and infrastructure, and everything will be submerged.	3.1
76	6. Cumulative Impacts Underestimated: The cumulative effect of many smaller disturbance areas, particularly concerning the tunneling and spoil dump area, seems underestimated. The combined impact may be far more significant than the assessment suggests.	3.5.9
76	4. Inadequate Data and Analysis: The omission of the SKM 2007 report referenced on page 10, coupled with the assessment's dismissal of salinity concerns despite the presence of dispersive soils with high electrical conductivity, raises serious questions about the completeness and accuracy of the analysis. I strongly urge for a review of Kandanga Creek water quality data.	3.5.5, 3.5.5
76	8. Inaccurate Runoff Descriptions: Inaccuracies in the descriptions of runoff pathways, particularly concerning the Bella Creek Road upgrade and spoil dump location, indicate a potential for broader issues with the hydrological assessment.	3.5.5, 3.2.2
76	2. Unacceptable Reliance on Dilution: The assessment relies heavily on Lake Borumba's dilution capacity to mitigate contamination. This approach is, in my view, fundamentally flawed. Dilution is not a sufficient substitute for proactive mitigation. Contamination, potentially from leachate and sediment-laden runoff, could occur at lower lake levels, causing significant harm to the aquatic ecosystem of Sandy and Yabba Creeks, an area of considerable ecological value.	3.5.5
76	9. Insufficient Testing and Response Protocols: The proposed testing protocols are lacking, both in parameter analysis and in the excessively long testing turnaround time (12-14 days). This lengthy period of vulnerability to rainfall events before remedial action is unacceptable.	3.5.5
76	This email constitutes a formal submission on the Borumba Queensland Pumped Hydro Energy Scheme (BPHES) Project, specifically addressing concerns regarding the Water Quality Risk Assessment detailed in Appendix G (hereinafter referred to as "Appendix G"). I have reviewed Appendix G and share the concerns expressed by [redacted] regarding its conclusions and proposed mitigation strategies. My submission reflects my understanding of the [redacted's] expertise and the significant issues they've raised. My key concerns, aligning with the [redacted] assessment, are summarised as follows: 1. Insufficient Mitigation for Spoil Dump Risks: Appendix G acknowledges an elevated risk of contamination from the spoil dump area, located near the confluence of Sandy and Yabba Creeks, which feed into Borumba Dam, a crucial town water supply and irrigation source. However, the proposed mitigation measures (a silt fence or coir logs) appear inadequate to prevent leachate from the 100,000 cubic meters of spoil, especially considering the potential presence of nitrates and other oxidizing materials. I believe a more robust containment strategy is essential.	3.5, 3.5, 3.6
76	7. Incomplete Vegetation Disposal Plan: The plan to place all cleared vegetation in the 8.7ha spoil dump raises concerns about capacity given the large volume of rock spoil already planned. A detailed and realistically sufficient plan for vegetation disposal is necessary.	3.5, 3.5, 3.6
76	3. Omissions of Threatened Species: Appendix G omits several threatened species from the assessment—the endangered Giant Barred Frog, potentially the Cascade Tree Frog, and the recently listed freshwater crayfish. Given their presence in the project area, a thorough analysis of their potential exposure to water quality changes is crucial.	3.3.2
76	5. Incomplete and Unrealistic Contingency Planning: The methods proposed for addressing excess water from tunneling during high rainfall events (evaporation, irrigation, trucking, tank storage) appear insufficient. This raises concerns about the potential for uncontrolled discharge of contaminated water.	3.2.2
76	I urge a comprehensive review of Appendix G to address these concerns. A revised assessment incorporating robust mitigation, full consideration of threatened species, complete and accurate data, and realistic contingency plans is essential before the BPHES project can proceed. I request a detailed response explaining how these issues will be addressed.	3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
77	The present plan for the Borumba Pumped Hydro Energy Storage (PHES) project has several readily identifiable potential "Fatal Flaws". Queensland government regulations require potential Fatal Flaws to be identified at an early stage and action taken to resolve before further progression of a project. Identified risks pointing to potential fatal flaws for Borumba PHES project include – • Estimated capital cost of $9,200 per kW indicates a prima facie highly uneconomic project. • Risks to water quality – o The whole of the proposed upper reservoir area is classified as highly dispersive sodic soil type. Large rises and falls in the upper reservoir will almost certainly result in high turbidity in the upper reservoir and consequentially in the lower reservoir. o Lake Borumba is located on a major tributary of the Mary River, so turbidity pollution will not be limited to the lower reservoir. Turbidity pollution will impact on water quality for domestic, industrial and agricultural use throughout the region and will also impact on The Great Sandy Strait Ramsar wetland, and K'gari (Fraser Island) World Heritage Area. o High turbidity causes major wear in turbine blades. • Risks of extended periods of low water availability due to drought – o During these periods rise and fall of water levels in the lower reservoir from PHES operation will increase, or PHES will be required to temporarily reduce or cease operation. o Increased rise and fall from PHES operations will result in Lake Borumba becoming inaccessible for social activities of boating and fishing, will create an ugly landscape and will have an extremely adverse impact on the ecology of the whole of the lower reservoir area. • Risks of exhausting generating capacity during extended solar and wind power droughts – o Proposed long duration pumped hydro to provide assured backup for renewables is not fit for purpose and will be totally uneconomic, if operated as proposed. o …To cope with the winter doldrums (when you face consecutive cloudy days with little or no wind) you would ideally want to have 10 days' backup… (Prof. Alan Finkel article). o Unfortunately, even ten days will not be enough based on data from this BOM publication on sequential rainfall records o At presently proposed 2GW capacity Borumba PHES could generate for 6 hours per day for 8 consecutive days (that is 8 days of very limited backup). o If Borumba PHES ran down their generating capacity of 24 hours at 2GW/hour it would take 32 hours of continuous pumping to restore that capacity. But, unless generation was shut down, and excess renewable energy generation equalled at least 2GW per hour continuously 24/7, it could take, not 32 hours, but many days or weeks to restore full storage capacity. But it does not even have to be sequential days of rain or overcast and still conditions. In a high rainfall month with many shorter periods of 2 or 3 days of sequential rain, or cloud cover, long duration capacity would be progressively and quickly run down to zero. Failure of Process The fact Queensland Hydro are committed to ~$190 million of investigative works that don't appear to substantially mitigate all the major risks identified above, indicates an ongoing failure of process. Wyaralong Dam Water Reservoir Wyaralong dam construction went ahead despite both lay and expert opinion on water quality issues that amounted to potential "Fatal Flaws". The result was a water reservoir that is restricted to use for rowing and will require huge expenditure on a treatment plant to provide water suitable for urban use. This October 2006 submission (Wyaralong Dam: issues and alternatives) to the Inquiry into Additional Water Supplies for South East Queensland outlined the Fatal Flaws in the Wyaralong Dam proposal and provided alternatives, to no avail. A clear failure of process occurred. Hells Gates Project Fatal Flaws After expenditure of $54 million on investigations and feasibility studies, the ultimate report on the feasibility of the proposed "Hells Gates Project" identified numerous "Fatal Flaws". Why were these not identified earlier? Many procedures and processes are in place, supposedly to provide checks and balances and to allow community feedback. My experience is these are not working, and there is excessive secrecy around the outcome of many of these consultations. The results are we get fiascos like Hells Gates where there were identifiable "Fatal Flaws" from the beginning. After spending $24 million, the consultants' report stated, "However, the recommended assessments and further work proposed by the report focus on detailed engineering and environmental assessments that don't appear to substantially mitigate all the major risks identified in the report." Based on that "recommendation" a further $30 million was expended before it was finally acknowledged the project had "Fatal Flaws". And those fatal flaws were always evident but previously overlooked, ignored, or not understood by those responsible for ensuring policies and procedures catch such matters at an early stage. Borumba PHES is Hells Gates and Wyaralong Dam "IN SPADES" 1. Present Borumba PHES Planning is "Fatally Flawed" from an economic viewpoint If any commercial minded entity received the Borumba PHES Initial Advice Statement (IAS) with a price tag of $14.2 billion (now increased to $18.4 billion), they would immediately understand it was prima facie uneconomic (a "Fatal Flaw"). The project could only proceed if it was possible to go back to the drawing board and come back with a revised project that was potentially economic to build and operate. Despite this, expenditure commitments of hundreds of millions of dollars have been made and many $millions per month are being expended on site investigations and planning for commencement of construction, in accordance with a fatally flawed plan. And this appears to be continuing unabated. A Successful Borumba PHES Requires A Different Approach To Planning The Queensland State Government should step in and set acceptable capital cost, and functional, aesthetic, and environmental performance parameters, and require project plan/s be developed/designed which conform to those criteria, before any further expenditure is incurred on the project. Parameters For Borumba PHES Design, Build and Operate Parameters would include, 1. Acceptable target LCOE cost to deliver electricity at an affordable price 2. Capital cost, generation capacity, and time to construct 3. Water availability and water quality in the existing Borumba Dam/Reservoir and environs 4. Avoidance of harm to the ecology of existing Borumba Dam/Reservoir and environs 1. Capital cost, generation capacity, and time to construct Firstly, there should be a stipulation that the PHES is not required to be designed for long duration storage. Design and operation should be with the intent of utilizing installed generation capacity to the maximum possible, by time-shifting excess energy generation available from renewable and other sources in periods of low demand to periods of high demand, mostly within a 24-hour cycle. Secondly, Borumba is a rare and magnificent site for development of a PHES project. As well as its excellent physical attributes for PHES development, it is situated close to the densely populated areas in Southeast Queensland, and adjacent to the existing backbone of Queensland's high voltage power transmission infrastructure. Planning should allow for the site to be exploited to the maximum possible extent to take full advantage of what Borumba PHES offers for Queensland and Queenslanders. Borumba PHES – The Good News Is, It Can Be Fixed If the government of the day has the will, the good news is, a completely revised plan for Borumba PHES has been developed that can alleviate the "Fatal Flaws" described above, and other potential fatal flaws. Such a revised plan has the potential to deliver a project that is both economic and will deliver earlier commencement of PHES operations.	3.1
78	GROUNDWATER IMPACT ASSESEMENT 6.7.2.1 Springs Springs and seepage were looked for prior to the wet season. 8.1.2 Type 2 Observation ID OBS76 Seep observed next to Yabba Rd. Likely topographical or structural spring feeding into wetland/dam. Wrong location, this dam is on Bella Creek Road. This concludes my comments. I thank you for taking the time to consider them on behalf of my family.	No response required
78	10.1.1 Social assessment The proposed Borumba Dam project has already impacted us both economically and mentally. We have sustained vehicle damage, interruption to work schedules, having to dedicate time and money to try and rectify matter. As the project moves forward into the exploratory stage, these impacts will only increase.	3.8.3
78	10.3.2 Queensland Hydro Exploratory Works engagement Leading up to the draft, every interaction and engagement with Queensland Hydro has been the result of myself raising concerns. There was no consultation as to how this project would effect my family, business and our assets.	3.8.3
78	2.5.2.3 Decommissioning Bella Creek Road will remain open for public use for the duration of the Project and will allow separation of public road users from Project vehicles. This does not include the majority of the public or residents in Bella Creek.	3.5, 3.5, 3.6
78	TERRESTRIAL REPORT 2.2.6.1 General • Prior to the completion of this report, the Study Area was altered due to a design change. This change occurred after field surveys had been undertaken and as such, some areas have not been surveyed (Figure 3.8). Ecological values associated with these areas (representing 4.6% of the Study Area) will be captured in future field survey effort. For the purposes of this report, only flora and fauna values determined from the desktop assessment have been described for these areas. Incomplete field study as only 4.6% of the study area was captured. 2.2.6.2 Flora • Timing of the flora field survey (autumn/winter) did not coincide with the main flowering periods of flora species in southeast Queensland. Incomplete field study as main flowering periods were not covered. 2.2.6.3 Fauna Incomplete field study as the survey was only conducted during Autumn and Winter. Frogs are less active and less vocal during these seasons. Fleay's Frog, which has been reported in the area previously, could have easily been missed under these circumstances. Lower Reservoir was not trapped or surveyed due to fact the Umwelt employees deemed it too dangerous to do so. Therefore the report is incomplete.	3.5, 3.5, 3.6
78	5.3.5 Contamination from hazardous materials Potential impacts of contaminated material that will be transported on Bella Creek Road which runs through our agricultural property. This includes impacts to my family's health, impact on soil, water, crops and livestock.	3.2.4
78	My name is [redacted] and I reside at [redacted] and I am commenting on behalf of myself, my husband [redacted], and our daughter [redacted]. We are the property owners [redacted] the Borumba Hydro project. Below are my comments on the draft and how they will impact my family's safety, workers safety and the future of our business. I am experiencing a decline in my mental health as a result of this project, as I am regularly required to take evasive action to prevent collisions on both Bella Creek Road and Yabba Creek Road. Attached is a letter from my GP who is helping me navigate through this difficult time. I have recently sent another email to Borumba Hydro, highlighting my concerns for our safety, on the 28th of February, 2025. MAIN REPORT 2.2.3 Project traffic We have been impacted by the Queensland Hydro traffic since February 2024. Queensland Hydro and Gympie Regional Council, have been made aware on numerous occasions about my concerns regarding safety on Bella Creek Road. I have reported numerous incidences where I have had to take measures to avoid collisions. There has been no resolution to the matter to date. The vast increase in both heavy and light vehicles, with no planned upgrades to the majority of Bella Creek Road, will only increase the risk of injury, fatality, injury or death of livestock, and vehicle damage. The increase in traffic will also impact our business, as well as our liveability, by hindering the access to our property and restricting our movements. 5.4 Facilitated impacts – RFI item 4.5(a). Upgrades to existing road network by the relevant road authorities are also required in support of the Project, with some of the upgrades required independent of the Project. However, the Project has facilitated the upgrade works earlier than originally scheduled with the road works aimed at improving road safety for staff working on the Project, along with local residents. Some of these works are not considered to be part of the action and were subject to a self-assessment that concluded there would be no impact to MNES. No other facilitated impacts are anticipated as a result of the Exploratory Works Project. There will be no upgrades to Bella Creek Road to ensure the safety of my family and our staff. We have already been impacted by the change of use to Bella Creek Road by Queensland Hydro. Queensland Hydro have been made aware of the impacts mentioned above, since February 2024 via various means of communication.	3.1
79	I oppose the proposed Borumba Pumped Hydro Exploratory Works because it clears huge areas of habitat necessary for the survival of countless animals and plants, many of whom are already endangered. It is ridiculous to destroy the environment, to mitigate the warming due to traditional power sources.	3.5, 3.5, 3.6
80	Firstly, let me say that I had limited time to review the documentation as the cyclone meant we lost internet access for most of the time I had allotted for the review. The Documentation states that in the Exploratory Works Survey area there are two threatened ecological communities, nine threatened flora and twelve threatened fauna. It is noted that mitigation measures and offsets are being proposed. If the offsets include the planting of new vegetation, how are they of any help to the animals that will be killed or displaced? Are the offset areas connected to the Borumba vegetation so that the animals can in future move into these areas as they reach sufficient maturity. Is there any effort to trap and relocate numbers of the displaced animals so that the remaining areas of original vegetation can support the various populations? Even if this was to be done, are there any appropriate areas that such animals could be relocated to? Are they of sufficient maturity and not already fully populated with wildlife, so as to provide a home for additional animals?	3.5, 3.5, 3.6
80	Above and overarching the discussion about habitat and wildlife protection, which is of very great significance and should be enough to halt the project now, before any exploratory works are started is the viability of the entire proposal itself. Will it actually produce enough power to ever warrant the huge environmental destruction and the monetary cost of the project, which will no doubt blow out? The amount of energy required to pump the water back up to the top reservoir and the uncertainty of rainfall makes one wonder if the only thing that makes the numbers appear to work is the slight of hand of the differential pricing mode, which makes the same unit of energy worth more or less depending on the time it is released into the power network. Above and overarching the discussion about habitat and wildlife protection, which is of very great significance and should be enough to halt the project now, before any exploratory works are started is the viability of the entire proposal itself. Will it actually produce enough power to ever warrant the huge environmental destruction and the monetary cost of the project, which will no doubt blow out? The amount of energy required to pump the water back up to the top reservoir and the uncertainty of rainfall makes one wonder if the only thing that makes the numbers appear to work is the slight of hand of the differential pricing mode, which makes the same unit of energy worth more or less depending on the time it is released into the power network.	3.1
80	My final comment is again to say that it is dishonest not to include the environment impact of all of the proposed new powerlines, that are required to link the borumba hydro to the power grid, into this same assessment.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
81	1.Costing billions to complete and taking years to complete! Is its proposed contribution to our QLD power base worth this expense? Fear there has been mismanagement in this project and tax payer money would be wasted again! 2. The Communities along the Great Sandy Straits Marine Park are really concerned for the impacts it would have on our Mary River Catchment area that flows into the protected Great Sandy Straits water ways. 3 The natural environment and protected wildlife in the huge project area is admired and enjoyed by visitors from busy urban areas for relaxation and time out with a natural environment! So important for young families to experience! 4.Please pause this large-scale construction of renewable projects that destroy our biodiversity in beautiful natural environments with wildlife that we value and many threatened species! Concerned community, [redacted]	3.1
82	Has anyone pointed out the basic technical problem with this project/technology. Although the technology copes admirably with providing power back-up to renewables in summertime, it cannot cope with the wintertime issue of extended sun/wind drought. It looks to me that the project can provide power continuously for no more than 24 hours, by which time the upper reservoir is empty. Sun/wind droughts can last significantly longer than 24 hours. Since the system is dependent upon the availability of renewables to refill the upper reservoir, it cannot provide the back up needed, throughout the full year. Happy to expand on my thoughts - if required.	3.1
83	A 510 page report excluding appendices has been prepared by Queensland Hydro in connection with “Exploratory Works” for Borumba Pumped Hydro Energy Storage Project (BPHES). The whole process requires immediate stop and for all activities and related projects to be assessed under one controlled action project. To expand:- 1) The Borumba Project (BPHES) is overseen by Qld Hydro. 2) In 2023/2024 BPHES was declared as a controlled Action Project by the Federal Environment Minister. 3) The implication of this is that an independent environmental assessment is required to be carried out on the project because matters of national environmental significance had been identified. 4) The BPHES requires transmission lines be built. 5) Powerlink (also Qld Govt owned) is tasked with the transmission for the BPHES. 6) Powerlink has made continual representation since first announcing the project that the Kilkivan/Woolooga transmission line is 100% dependent on the BPHES. Accordingly, its construction is dependent on the BPHES coming to fruition. 7) Haly’s transmission is likewise connected. 8) The three components are inextricably one project and must be assessed under one Controlled Action Project. 9) The effects of the whole combined project are so significant, that the outcomes must be considered as matters of national environmental significance.	3.1
83	We are unable to find any meaningful detail in these works about how the electricity generated by BPHES will be transmitted to the electricity grid via the transmission lines. You cannot have one without the other, they are fundamentally attached, and therefore details of the transmission lines (Woolooga Transmission Corridor) should be included in this published report.	3.1
84	Greenhouse gas audit. (refers Overview 1.1) If this were a mining operation proposed in this location, it would be unlikely to receive approval given the number of environmental matters that it triggers. Explaining its role is storing (largely) renewable energy implies it is beneficial in reducing greenhouse gas emissions. Its rationale is in terms of meeting Queensland’s renewable energy targets, rather than reducing emissions. Despite our repeated requests, this emissions audit has never been conducted. While the operation of a pumped hydro plant may have few emissions, this is far from the case for its construction. Moreover, the methane emissions of the existing Lake Borumba have been assessed and the enlargement of this, plus the addition of the upper reservoir would add markedly to these. These need to be assessed in conjunction with forest lost in upper reservoir construction, transmission lines, roadworks etc, not to mention forest lost in locating wind and solar farms to supply the working pumped hydro plant. The benefits of the BPHES project, apart from job creation, have neither been assessed or articulated.	3.8.6
84	Ongoing management of Offsets (refers section 8.1) There has been consistent criticism of the shortcomings of an offsets policy to address habitat loss. This should not be an “identify, set and forget” approach but needs to include an adequate and ongoing realistic budget to deal with environmental threats on identified offsets.	3.6.3
84	Listings of Matters of National Environmental Significance. (refers 1.4.2 P13) We note that there have been some changes in MNES with several classifications being upgraded (eg Mary River turtle) and other species (eg Conondale spiny crayfish) being recently listed. It surprised us that the legislation seemed to allow that proposed works didn’t need to address the “fullest and latest” situation. We were surprised also that the critically endangered Nangur Skink wasn’t included as a possibility given its presence at Oakview NP and the opportunity this provided to survey for it.	3.3.2
84	Geotechnical sites at the edge of lake Borumba. (refers Fig11c, 49c) There is considerable information provided for the exploratory works just downstream of the existing dam wall with mapping showing access tracks, drill sites etc. No such information seems to be provided for the geotechnical site on the edge of the lake itself. It is not listed as part of “Borumba Dam” but included under Walker’s Top. The only reference we could find was that “geophysical surveys are proposed at the Lake Borumba waterline in addition to geotechnical drilling due to the difficult terrain and minimise disturbance to the lake environment.” It would appear to be part of the Resource Area excised temporarily from the National Park that surrounds it, but we could find no reference as to how this geotechnical work would be carried out there. Is it the backpack drilling referred to, or is drilling access via the dam? We note too that there seemed to be a paucity of testing for terrestrial species in the vicinity of the site although there was aquatic eDNA testing. It is in the vicinity of a white throated snapping turtle nesting site and would be the site for the major works involved in the water offtake from Lake Borumba.	3.2.6
84	Location of Explosives Store. (refers Figs23, 41e) The location of the Explosives Store identifies a blast exclusion area and makes reference to clearing for firebreaks. Given that over half of the blast exclusion area is well-wooded, with some of it identified as Subtropical Eucalypt Floodplain Forest (and buffer) and that it is quite close to a large area of Lowland Rainforest of Subtropical Australia, the location would seem sub-optimal and the proposed firebreaks need to be identified.	3.2.5
84	Source of materials for shot-creting. (refers Table 2 2.1 viii) In response to the request for information about proposed “quarries and other resource extraction sites including locations, size, method of extraction of materials and transport of materials”, the response was that “no resource extraction proposed” The source(s) of the considerable quantities of coarse aggregate, fine aggregate and sand needed to keep a batching plant operating 24/7 needs to identified, particularly as they, at the scale proposed, may have their own EPBC implications.	3.2.3
84	Components of the Proposal. (refers to Overview1.1, 1.2) Figure 4 plainly states that “The Borumba PHES Project includes two Project phases”, the Exploratory and the Main Works. This is a semantic untruth and misleading for any assessors of it. Reviews of the effectiveness of the EPBC Act have repeatedly pointed to the failure to recognise cumulative impacts of projects. This is particularly true of staged projects such as this. There are a number of other projects associated with this one, each with its own assessment pathway and these need to be identified. Nowhere could we find reference to the two transmission lines, absolutely integral to this project. While there is mention of nearby solar farms at Woolooga, and Munna Creek, geographical proximity is not as relevant as electrical connectivity. The raison d’etre for this project is to store excess wind and solar energy so both of these types of developments would be facilitated by Borumba Pumped hydro (and Borumba rely on them) and their respective impacts need to be assessed collectively rather than in a piecemeal fashion. This may be difficult for geographically separated projects but that can’t be said for a pumped hydro project that divides itself into three separate phases, one (the transmission lines, absolutely integral to the project) with a separate proponent responsible. All three components need to be clearly identified, at the very least, in the Overview. Environmental significance. The environmental values of the area are plain, not only in terms of the MNES present, but also in terms of remnant forest of a number of types. The simple fact that it has taken almost two years to respond to the detailed questions asked, is an indicator of the ecological significance of the area. The assessments needed for both the proposed main works as well as the transmission lines will need to be far more substantive. It is abundantly plain to us that the environmental significance of the area was not adequately assessed in the very early stages of this proposal. The area includes both Conondale and Wratten’s National Parks (and a number of outliers of each). As part of the Southeast Queensland Forest Agreement, in recognition of high conservation, biodiversity and connectivity values (section 3.5), surrounding state forests were to transition to National Parks, a tenure change picked up and advocated by our organisation, National Parks Association of Queensland, Sunshine Coast Environment Council and a number of others as the Yabba NP proposal (sometimes called the Yabba Links Proposal). Beyond this, Fig 35 shows how the project area for these exploratory works as well as the main works lie in identified corridors of both state and regional significance. Overview maps need to make really plain the proximity to areas of national park eg	3.2.1
84	Changes to project details. (refers1.4) Recent media reports indicate that there may be some revisions and down-scaling of the proposal. While these may not affect the exploratory works (and the exploratory works may help inform them), this possibility needs to be made plain in the project overview.	3.2.1
85	I oppose the proposed Borumba Pumped Hydro Exploratory Works because There is absolutely no value to what you are proposing & it’s just another money laundering scheme. My best friends live in Imble & I have been to meetings with your people & local council representatives. I could see straight through the agenda & it’s unforgivable what damage you are trying to get away with!	No response required
86	I oppose the proposed Borumba Pumped Hydro Exploratory Works because it poses unacceptable risks and direct impact on a suit e of threatened species and it situated in a sensitive biodiverse location worthy of perpetual protection.	3.5, 3.5, 3.6
87	10. Economic and social matters 10.3 Public stakeholder consultation – RFI item 8.3 The consultation with the aboriginal title holders is outlined but there is nothing about the result of that consultation. While summaries of the other consultations are given we are not told anything much and not provided with any agreement or much at all about the agreement reached, the degree of consultation or the results so it is impossible to evaluate the effectiveness of that consultation. 10. Economic and social matters 10.3 Public stakeholder consultation – RFI item 8.3 Stakeholder consultation has been extensive and effective but I still think that the people of the area do not understand the sheer scale of the work and the preliminary work. This is a continuing need. General comment: Probably my comment on consultation is general. The effort being made on consultation is good but needs to be extended so that it gets to more people. Free BBQ’s, Bus trips, Stalls in Imbil market, an Imbil newspaper?- anything to get people some idea of the scale	3.8.3
87	4.2 Results – RFI item 3.3(h) Around P358 the breeding period of the Black Breasted Button Quail is given alternatively as May June and Sept May I think that it is Oct - Dec. This makes no difference to the recommendation but the workers should know when to avoid disruption.	3.5, 3.5, 3.6
87	8. Proposed offsets – RFI item 6.1 8.1 Offset Area Management Plan – RFI item 6.2 The effectiveness of these offsets depends entirely on the work in implementing them and so will need to be greater than is necessary to allow for implementation that may vary.	3.7

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
88	I am writing to formally submit my objection to the proposed Borumba Pumped Hydro Scheme due to its significant and unacceptable impacts on threatened ecological communities in the region. The development poses serious environmental risks, including habitat destruction, biodiversity loss, and long-term ecological degradation, which cannot be justified by its purported benefits. 1. Impact on Threatened Ecological Communities The Borumba Pumped Hydro Scheme is proposed within an ecologically sensitive area that supports several threatened ecological communities listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Key concerns include: a. Loss of Critical HabitatThe project area includes remnant vegetation that provides habitat for numerous threatened species, such as the Mary River Turtle (Elusor macrurus), the Australian Lungfish (Neoceratodus forsteri), and the Greater Glider (Petauroides volans). The destruction of these habitats will significantly impact their survival. b. Fragmentation of EcosystemsPumped hydro infrastructure, including reservoirs, transmission lines, and roads, will result in habitat fragmentation. This disrupts ecological corridors, impeding wildlife movement and genetic diversity essential for species resilience. c. Waterway Degradation and Aquatic LifeThe scheme involves major alterations to water flow in the Borumba Dam and surrounding catchment areas. Changes in hydrology will degrade aquatic ecosystems, affecting breeding cycles, water quality, and food availability for species dependent on stable water conditions. 2. Climate Change and Long-Term Sustainability Concerns While hydro projects are often presented as “green” energy solutions, the environmental costs of large-scale pumped hydro projects can outweigh their benefits. Given Queensland’s commitments to biodiversity protection and climate resilience, the destruction of irreplaceable ecosystems contradicts sustainable development principles. 3. Insufficient Environmental Impact Assessment The Environmental Impact Statement (EIS) for the Borumba Pumped Hydro Scheme must comprehensively address the ecological ramifications of the project. It must consider: Alternative locations with lower environmental impact Detailed assessments of cumulative biodiversity impacts Strict ecological offset requirements Rigorous monitoring and mitigation strategies 4. Call to Action I urge the Queensland Government and relevant authorities to: Reconsider the approval of the Borumba Pumped Hydro Scheme due to its adverse impact on threatened ecological communities. Conduct further independent ecological assessments to determine the full extent of potential environmental damage. Prioritize renewable energy solutions that do not result in irreversible biodiversity loss, such as solar and wind projects in less ecologically sensitive areas. The protection of Queensland’s biodiversity and ecological integrity must be a top priority in all infrastructure decisions. I strongly oppose the Borumba Pumped Hydro Scheme and request that alternative, less damaging solutions be explored. The development poses serious environmental risks, including habitat destruction, biodiversity loss, and long-term ecological degradation, which cannot be justified by its purported benefits. 1. Significant Impact on Threatened Ecological Communities The Borumba Pumped Hydro Scheme is proposed within an ecologically sensitive area that supports several threatened ecological communities listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Key concerns include: a. Destruction of Critical HabitatThe project area includes remnant vegetation that provides habitat for numerous threatened species, such as the Mary River Turtle (Elusor macrurus), the Australian Lungfish (Neoceratodus forsteri), and the Greater Glider (Petauroides volans). The destruction of these habitats will significantly impact their survival and contribute to their decline. b. Fragmentation and Degradation of Sensitive EcosystemsPumped hydro infrastructure, including reservoirs, transmission lines, and access roads, will result in significant habitat fragmentation. This disrupts ecological corridors, impeding wildlife movement and genetic diversity essential for species resilience. c. Hydrological Disruptions and Aquatic Ecosystem DamageThe scheme involves major alterations to water flow in the Borumba Dam and surrounding catchment areas. Changes in hydrology will degrade aquatic ecosystems, affecting breeding cycles, water quality, and food availability for species dependent on stable water conditions. 2. Non-Compliance with EPBC Act and Environmental Obligations Under the EPBC Act, projects with significant impacts on listed threatened ecological communities must be subject to rigorous assessment and mitigation strategies. The scale of environmental damage anticipated from this project is inconsistent with Australia’s obligations to protect biodiversity and maintain ecological integrity. 3. Climate Change and Long-Term Sustainability Concerns While hydro projects are often presented as “green” energy solutions, the environmental costs of large-scale pumped hydro projects can outweigh their benefits. Given Queensland’s commitments to biodiversity protection and climate resilience, the destruction of irreplaceable ecosystems contradicts sustainable development principles. 4. Insufficient Environmental Impact Statement (EIS) and Assessment Gaps The Environmental Impact Statement (EIS) for the Borumba Pumped Hydro Scheme must comprehensively address the significant impact on threatened ecological communities. The following issues must be thoroughly investigated and addressed: Assessment of alternative locations with lower environmental impact Comprehensive evaluation of cumulative biodiversity impacts Adherence to strict ecological offset and mitigation requirements Rigorous and independent monitoring strategies 5. Call to Action I urge the Queensland Government and relevant authorities to: Reject the Borumba Pumped Hydro Scheme due to its significant and irreversible impact on threatened ecological communities. Ensure a thorough and independent review of the project’s environmental consequences, particularly in relation to compliance with the EPBC Act. Prioritize renewable energy alternatives that do not result in extensive biodiversity loss, such as solar and wind projects in less ecologically sensitive areas. The protection of Queensland’s biodiversity and ecological integrity must be a top priority in all infrastructure decisions. The Borumba Pumped Hydro Scheme poses an unacceptable risk to threatened ecological communities, and I strongly oppose its approval.	3.1
89	2.7.3.2 Operation Water from the tunnelling operation (e.g. drilling water and groundwater seepage) will be transferred via a laminar clarifier or similar to treat coarser sediment before being discharged into a dirty water basin for temporary storage. Solids may also be dewatered using a belt filter press or dewatering bags made of geotextile before water is transferred to the dirty water basin. Water from the dirty water basin will be transferred to the water treatment plant for treatment. Treated water will be discharged via pump and pipeline to storage tanks for reuse. Sludge (rock particles and fines) will periodically be removed from the dirty water basin and stored in the spoil disposal area. Water required for use in tunnel drilling operations will be sourced from the treated water storage on the portal pad. If necessary, additional water may be supplied by truck from the temporary water infrastructure (Tank Farm 1) or the storage tanks at the staging pad. Clean water will be used to support the Project activities where possible. It is noted that water with a high mineral content containing nitrates from the use of emulsion explosives can be reused underground as service water. If the ingress of water into the tunnel (from underground aquifers via fissures and fractures in the rock) exceeds the consumption of water, then excess water will be sent from the temporary water storage pond to the water storage tanks at the staging pad. It has been assumed that groundwater ingress, post underground grouting, will occur at a rate of two litres per second per kilometre. This will be confirmed as the groundwater assessment progresses and water balance modelling for the exploratory tunnels is refined. Where water ingress into the tunnels exceeds the capacity of the storage tanks (e.g. in large rainfall event), alternative disposal methods will be utilised (e.g. release to the environment, trucking offsite, irrigation, additional storage at another location). All releases to the environment will be in accordance with relevant approval conditions, including applicable water quality guidelines. 1. “Operation Water from the tunnelling operation (e.g. drilling water and groundwater seepage) will be transferred via a laminar clarifier or similar to treat coarser sediment before being discharged into a dirty water basin for temporary storage. Solids may also be dewatered using a belt filter press or dewatering bags made of geotextile before water is transferred to the dirty water basin.” [redacted]; The actual volume of ingress of drilling water and ground water seepage is unknown, (guessed at two litres per second per kilometre) and will determine the size and type of technology used to dewater sediment sludge, drilling mud residue etc Laminar/Lamella separators as suggested, work best with flocculant or coagulant dosing and a steady flow rate. Will this be the case and if so where and how will the collected sludge product, treated OR untreated, be collected and stored? How will this water of unknown volume or rate of ingress to the tunnelling area be collected before any treatment or transfer – by launders, gutters, diaphragm pump and pipes? There will need to be a collection/ buffer tank for the primary dirty raw water to facilitate a steady flow rate for lamella separator treatment, (if this technology is chosen) and then pump transfer the treated water to the dirty water basin sited ... where ? What form would this buffer tank take - size and type – materials - manufacture ? What form and size/volume will the dirty water basin take – turkey’s nest dam with synthetic liner – clay liner ? In case of overflow, will there be bund walls to contain this primary treated water and prevent it entering the surrounding environment ?	3.2.2, 3.2.4
89	2. “Water from the dirty water basin will be transferred to the water treatment plant for treatment. Treated water will be discharged via pump and pipeline to storage tanks for reuse. Sludge (rock particles and fines) will periodically be removed from the dirty water basin and stored in the spoil disposal area. “ “The water treatment plant will be capable of treating water to the required standards (e.g. reverse osmosis treatment plant) and have a capacity of approximately 100 L/s to allow for typical inflow fluctuations.” Is this the RO potable water plant for the worker’s camp also ? [redacted]; 100L/s sounds improbable for RO product rate – maybe a typo – 100 L/min ? Who or what would consume this RO product water, whatever the output, and what would be the size/volume of the storage/surge/tank farm for this water ? There will be a concentrated waste product from raw water membrane plant prefiltration and membrane operation and if so to where will this waste water be directed, stored and/or removed from the area? What is the projected volume and chemical composition required for the RO treated water - potable? What is the size/ volume/type and materials of manufacture of the storage tanks? How will sludge as "rock particles and fines", be removed from the dirty water basin and stored in the spoil disposal area ? Will the spoil disposal area be constructed so that sludge, (rock particles and fines etc) is contained/ covered and protected from eroding by rain and the eroded material entering the surrounding environment.? Where is the sediment basin(s) to be situated – size/volume - sediment removed how and to where ? 3. “Water required for use in tunnel drilling operations will be sourced from the treated water storage on the portal pad. If necessary, additional water may be supplied by truck from the temporary water infrastructure (Tank Farm 1) or the storage tanks at the staging pad. Clean water will be used to support the Project activities where possible. It is noted that water with a high mineral content containing nitrates from the use of emulsion explosives can be reused underground as service water. If the ingress of water into the tunnel (from underground aquifers via fissures and fractures in the rock) exceeds the consumption of water, then excess water will be sent from the temporary water storage pond to the water storage tanks at the staging pad. It has been assumed that groundwater ingress, post underground grouting, will occur at a rate of two litres per second per kilometre. This will be confirmed as the groundwater assessment progresses and water balance modelling for the exploratory tunnels is refined. Where water ingress into the tunnels exceeds the capacity of the storage tanks (e.g. in large rainfall event), alternative disposal methods will be utilised (e.g. release to the environment, trucking offsite, irrigation, additional storage at another location). All releases to the environment will be in accordance with relevant approval conditions, including applicable water quality guidelines.” Removal of excess water during an extreme rain event, to be performed by; a. "release to the environment" ... (where – into the local waterways ?) b. trucking offsite ... (likely fast increasing volume to deal with makes this completely unfeasible -trucked to where ?) c. irrigation ... (where ... rehab plots ? ... in an extreme rainfall event ?) d. additional storage at another location ... (where ... in what ... how does it get there ?)	3.2.2, 3.2.4
89	GENERAL As an experienced water treatment professional and manufacturer of water treatment equipment, my small second generation, family company has supplied equipment and services to remote areas for decades, including mine waste water recycling and RO seawater and waste water plants of significant size. The dearth of hard data publicly available and details of alternative designs that we know are being considered makes it impossible to make a value judgement on this part of the exploratory works, let alone cost it. I can find no water balance published, no volumes or physical sizes or materials of tanks or impoundments. This gives me no confidence at all for the successful completion and benefit to the public of this massive, expensive, complicated, attack on a valuable and quite fragile river system that is sensitive to weather and extended drought. [Redacted] For clarity, the published material for water management infrastructure needed during exploratory works has been reproduced here in separate talking points for comment and conjecture. 2.7.3.1 Construction Water management infrastructure such as storage basins, sediment dams, and tank pads to support water treatment infrastructure will be constructed at the same time as the portal pad and staging pad. The water treatment plant and associated tanks will be installed	3.1
90	1.3 Failure to assess indirect, cumulative and facilitated impacts to MNES Under the Terms of Reference (TOR) for the Main Works Environmental Impact Statement (EIS), along with assessing the direct impacts to MNES the proponent is also required to assess the indirect, cumulative and facilitated impacts to MNES from the proposed action. Despite the requirement for the proponent to assess the indirect, cumulative and facilitated impacts that will potentially occur to MNES by the main works, the proponent has not assessed the indirect, cumulative and facilitated impacts that could potentially occur to MNES by the exploratory works. As it is facilitated by the exploratory works, the proponent must be required to assess the direct, indirect and cumulative impacts to MNES from the upgrade of existing and construction of new access roads for the project. Recommendation: ● In accordance with the TOR for the Main Works EIS, the proponent must be required to assess the indirect, cumulative and facilitated impacts that could potentially occur to MNES by the exploratory works	3.5.8
90	1.5 Failure to assess impacts to MNES from providing sand and gravel From our estimation, the proposed exploratory works will require approximately 10,000 cubic metres of sand and gravel to produce concrete required for the exploratory works. Depending on where it’s sourced from, providing the volume of sand and gravel required for the exploratory works may cause significant adverse direct, indirect, cumulative and facilitated impacts to MNES, which the proponent has not assessed in the preliminary documentation for the exploratory works. Given the risk of them occurring, it’s therefore essential that the proponent is required to assess the adverse direct, indirect, cumulative and facilitated impacts that could occur to MNES from providing the sand and gravel required for the exploratory works. Recommendation: ● Require the proponent to assess the adverse direct, indirect, cumulative and facilitated impacts to MNES potentially caused by providing the sand and gravel required for the exploratory works	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
90	1.6 Failure to assess options to avoid adverse impacts to MNES Under the EPBC Act (the Act), proponents of proposed development projects that trigger the Act are required to avoid, minimize and mitigate (offset) impacts that occur to MNES from their proposed development project. While QLD Hydro have described how they will mitigate adverse impacts that occur to MNES under the proposed Offset Area Management Plan, they have not provided sufficient information in the preliminary documentation about how they will firstly avoid and then minimize any adverse impacts that occur to MNES as a result of the exploratory works. The single best option to firstly avoid and then minimise adverse impacts to MNES and other ecological values is by reconfiguring the project as [redacted], which involves building the proposed upper reservoir and a new, purpose-built lower reservoir in the Borumba Creek sub-catchment instead of increasing the size of Lake Borumba as is currently planned. In comparison to the proponent's current design, [redacted] will avoid adverse impacts to MNES by: ● Substantially reducing the footprint of the project by not having to increase the size of Lake Borumba, which will avoid direct impacts to MNES from occurring and, ● Changing the PHES from an open loop system as its currently designed to a closed loop system, which will isolate the operation of the PHES from the Mary River via Lake Borumba thereby avoiding adverse impacts to MNES downstream of the project As it has the potential to significantly reduce adverse impacts occurring the MNES within the project footprint and downstream, QLD Hydro must be required to assess [redacted] proposal's ability to avoid adverse impacts to MNES as part of the exploratory works. Recommendation: • Require the proponent to assess [redacted] proposal's ability to reduce adverse impacts to MNES as part of the exploratory works	3.5, 3.5, 3.6
90	1.2 Failure to assess impacts to MNES from water quality degradation caused by inundation of spoil dumps Under s2.4.2.3 of the main report, the proponent states that any remaining spoil within Area 2 (Kingaham Creek) disposal site will be inundated by the reservoir after the new Borumba Dam wall is constructed. As it may contain toxic substances, there is a potential risk that inundating any remaining spoil could cause adverse impacts to water quality in the lower reservoir, which in turn may cause adverse impacts to MNES and other environmental values. Despite the potential for it to occur, the proponent has not assessed the risks to MNES and other environmental values from poor water quality in the lower reservoir potentially caused by inundating remaining spoil in Area 2 (Kingaham Creek). Recommendation: ● Require the proponent to assess potential adverse impacts to MNES and other environmental values from poor water quality in the lower reservoir caused by inundating spoil in Area 2	3.2.4
90	1.4 Failure to assess risk to MNES from deterioration and failure of spoil dumps Under the Queensland mine site rehabilitation framework, it's recognised that the materials used to cover mine spoil dumps will deteriorate over time, which poses a significant future risk to MNES and other environmental values from the toxic substances that could be potentially released to the environment when mine spoil dumps deteriorate and fail over time. Despite the risk of it occurring, the proponent has not assessed the potential adverse impacts that could occur to MNES and other environmental values from the future deterioration and failure of the spoil dumps for the exploratory works Recommendation: ● Require the proponent to assess the potential risk to MNES and other environmental values from the future deterioration and failure of the exploratory works spoil dumps	3.2.4
90	1. Comments and recommendations 1.1 Offsets Area Management Plan (OAMP) Under the proposed OAMP, the proponent has stated they anticipate that the ecological benefit (future habitat quality score) of the provided offsets will be realised after 20 years of active management, monitoring and adaptive management, and as such their obligation to actively manage the proposed offset areas including any required corrective actions will cease after 20 years. Due to the physical challenges associated with restoring the affected ecological communities, we do not agree with the proponents' claim that the ecological benefits the offsets must provide will be fully achieved within 20 years. As it's highly unlikely the ecological benefits the offsets must provide can be achieved within 20 years, we strongly recommend that the proponent is required to actively manage the proposed offset areas for a minimum of 50 years in order to ensure the offsets provide the required ecological benefits. Recommendation: Require the proponent to: ● Actively manage the proposed offset areas for a minimum of 50 years and, ● Update the OAMP upon completion of the recommended next steps for Project survey effort as detailed in Section 6.0 of the Terrestrial Ecology Technical Report, November 2022.	3.7
91	Tourism The project will cause lengthy interruption to tourism in the area, perceptually if not initially directly. If tourists and visitors are unsure of access or quality of access to the Dam they will not make the journey. The Mary Valley has only just reconstituted itself after the Traveston Dam debacle and Covid lockdowns both of these 'events' almost crippled us. Recreational availability to both visitors and residents is beneficial for economic, physical and mental wellbeing. I note below that Qld Hydro states "The Exploratory Works are not expected to restrict public access to the lake, the lake day use area, boat ramp parking and general parking." However I notice Qld Hydro does not assure uninterrupted access. 10.2.2 Tourism p462 Lake Borumba's primary function is providing water resources to the Mary Valley agricultural area. However, the lake is also utilised for tourism and recreational purposes, including fishing and boating, powered water sports (water skiing, jet skiing and tubing), non powered water sports (rowing, canoeing, kayaking), dirt biking, horse riding, birdwatching, picnicking, sightseeing, and camping. Based on results from a community survey, the most popular activity to Lake Borumba visitors is camping, followed by fishing, boating, and picnicking/sightseeing. The Exploratory Works are not expected to restrict public access to the lake, the lake day use area, boat ramp parking and general parking. The Lake Borumba Caravan and Campground will also remain operational. However, some public amenity impacts may result, specifically noise impacts, from the geotechnical program proposed downstream of the dam and near the Lake Borumba Caravan and Campground.	3.8.5
91	10.1 Social and economic costs and/or benefits – RFI item 8.1 P457 Employment Qld Hydro promotes employment as a draw card for the locals of the area however they also identify that there are "low rates of labour force participation. This accords with the older age profile of the two LGAs." and "SAMP, indicate mixed views about the level of workforce visibility and interaction in nearby townships such as Imbil." How will the PHES benefit the town and its residents with employment opportunities if we are too old and are not of an appropriate employment pool as identified and reported several times by Qld Hydro? 10.1.1.2 Social and economic matters Workforce development and management P457 Key workforce and labour market characteristics across the area around the Project include: • Relative to Queensland, the Gympie and Somerset LGAs are characterised by low rates of labour force participation. This accords with the older age profile of the two LGAs. P 458 Consultation undertaken by Queensland Hydro about the Exploratory Works scope, together with consultation to develop the SAMP, indicate mixed views about the level of workforce visibility and interaction in nearby townships such as Imbil. While the indirect economic stimulus and strong interest in Project updates have generally been viewed positively, stakeholders have also expressed concern about the potential for activities associated with Exploratory Works to affect local business service capacity from labour draw, or to affect existing housing and accommodation, or change local character and values. 10.2 Economic benefits and employment opportunities – RFI item 8.2 p461 10.2.1.1 Employment opportunities There is potential for some degree of unskilled labour to be employed by the Exploratory Works Project, providing opportunities for employment for a small number of residents within the local area. The volume of local residents benefiting from additional employment is likely to be small, however the value of employment to each of these residents may be significant, including through access to incomes, improved self-esteem, improved sense of identity, improved opportunities for social interaction and personal development (AIHW, 2023). Social & Liveability As noted, my concerns about the Borumba Pumped Hydro project also relate to Social & Economic and Liveability matters, the potential impact it will have on our livelihood and liveability. We already have many impacts to contend with yearly. Floods, being isolated in flood, risk of bush fires to name a few we really don't want to have to manage the identified impact risks Qld Hydro predict during the proposed exploratory works. 10.1 Social and economic costs and/or benefits – RFI item 8.1 Residents surrounding Lake Borumba and Imbil highlight the area as a close-knit community that exhibits strong social cohesion. Imbil township is revitalising and growing with the in-migration of new residents from coastal cities attracted to the lifestyle and surrounding natural environment. Residents have expressed the importance of tourism to the Mary Valley area, both from an economic generation and community perspective. At the regional level, residents of the Gympie LGA value the scenic environment, strong sense of community, friendly people, strong economy, and the level of services and facilities available (Gympie Regional Council, 2023). 10.1.2 Economic costs P460 As a major project in a regional area, the Exploratory Works have the potential to temporarily impact the businesses, labour and amenity in the immediate vicinity. Potential adverse impacts during the Project include pressure on the local labour market, reduced tourism activity, and impacts on road use, the environment, residents' health, cultural concerns, and short-term accommodation. Housing and accommodation P458 The low rental vacancy rates have been accompanied by increased rental costs. Based on median weekly rent data, rental prices have more than doubled in the last three years. It is possible that any changes to local rental capacity may affect vulnerable low-income households significantly due to the related potential for price hikes.	3.8.4
91	Why am I emailing my response instead of using the portal on the website, frankly I'm bamboozled by the 500+ page submission. The narrow drop-down options provided in the online submission has sent me on a slippery slope of 'snakes and ladders' trying to decipher which RFI number I am to attach to my broad layman comments, so I have done my best in this email. Also, I would prefer our elected officials to receive an uncensored version of my thoughts, so they are not lumped into a general watered-down response. Qld Hydro, you purport that you encourage 'community engagement' with this project, however this intentionally large, rambling and overwhelming document suggests otherwise. I fear most general public participants will feel, (as I did at first), that they are not able to sit and read this unnecessarily bulky and inaccessible document in the short time frame provided meaning the deadline for submissions will pass without comment, seemingly suggesting the project acceptable. To the many I speak with, it is not.	3.8.3
91	Traffic - This should be titled "Survivability." The increase in traffic is already significantly noticeable. Already multiple "heavy vehicles" (truck and dogs) trundle along Yabba Creek Road, Imbil at 6am in the morning, large vehicle noise and dust, debris falling from trucks (recently large rocks have been observed on Yabba Creek Road and were difficult to miss). Deterioration of our road conditions, increased potholes, weakened edges of the road leading to wear and tear on tyres from deteriorating roads. Not to mention the increased risk of collision on our narrow roads and single laned bridges (we have already had instances where trucks have not stopped at give way signs at single lane bridges and travel across the centre lane where oncoming traffic have to veer off the road to avoid collision). They are then followed by the "light vehicles" as they conga-line along (always single occupants of course…). According to the table below this traffic and risk to our personal safety will significantly increase along Yabba Creek Road if this project is to continue. 2.2.1 Project area – RFI item 2.1(c) 2.2.3 Project traffic P35 Access to the Project, which is approximately 2.5 hours by car from Brisbane, will be primarily from Imbil via Bella Creek/Borgan Road. Bella Creek Road is accessed from Yabba Creek Road and traverses the northern part of Lake Borumba. Access to the Project will generally occur during standard working hours. Table 5: Estimated site vehicle movements Location Estimated vehicle movement forecast Access to site Lower reservoir - access to Borumba Dam Peak vehicle movement estimates: 120 light vehicle trips / day 105 heavy vehicle trips / day* 10.1 Social and economic costs and/or benefits – RFI item 8.1 Health and community wellbeing P460 Yabba Creek Road is the main road though Imbil town centre and is the main access route connecting Lake Borumba to Imbil and other key communities in the Gympie LGA. Yabba Creek Road reduces from two lanes to a single lane at a number of crossings across Yabba Creek and can be susceptible to flooding. Bella Creek Road is accessed from Yabba Creek Road and traverses the northern part of Borumba Dam. The road is a rural gravel road that is susceptible to frequent flooding. Stakeholders have raised flood islands as a critical issue with lived experience of being cut off from Imbil during flood events due to inaccessible roads.	3.8.1
91	Environmental I am so very concerned that with so many vulnerable, endangered and CRITICALLY ENDANGERED species identified in the survey areas that this project is given ANY type of approval, exploratory or otherwise. I cannot understand how there is even a consideration to disturb these ecological communities and habitats. Once they are gone, they are gone! Along with possible ('likely' according to the draft document) direct impacts on our ecological communities, I am also concerned about the anticipated potential impacts on water quality, vegetation and the loss of habitat for our ALL of our local wildlife. Some are already struggling with impacts such as habitat loss, impact of floods, seasonal drought and predators in both the exploratory area and communities in downstream catchment areas and wetlands, including estuarine, coastal and marine environments where there does not look like any surveying has been implemented.	3.5, 3.5, 3.6
91	4.3 Likelihood of occurrence – RFI item 3.3(a-e) 7.1 Threatened ecological communities 7.1.1 Lowland Rainforest of Subtropical Australia TEC – RFI item 3.4 Two threatened ecological communities (TEC): – Lowland Rainforest of Subtropical Australia TEC, Critically endangered – Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions, Endangered Table 39: Significant impact assessment for the 'critically endangered' Lowland Rainforest of Subtropical Australia TEC Impact criteria Assessment Reduce the extent of an ecological community Likely The Project will reduce the extent of the TEC by clearing a total of 2.5 ha of TEC. Adversely affect habitat critical to the survival of an ecological community Likely The Exploratory Works Project is likely to adversely affect habitat critical to the survival of the ecological community (HCSEC). Interfere with the recovery of an ecological community Likely The Exploratory Works Project is likely to interfere with the recovery of the TEC. Clearing 2.5 ha of the TEC is likely to interfere with the recovery of the community. The Project may also assist in the recovery of existing patches by reducing threats such as cattle grazing, weeds and hydrology. Recommendation: Significant impact is Likely	3.5, 3.5, 3.6

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91	4.2.4 Aquatic flora and fauna No aquatic flora considered to be MNES were recorded during field surveys, and none are documented to occur in the Yabba Creek catchment or more broadly in the Mary River system. A total of 34 fish species were recorded during site surveys, representing 20 families. Two threatened fish species were recorded in field surveys: • Australian lungfish (Neoceratodus forsteri) – listed as 'vulnerable' under the EPBC Act • Mary River cod (Maccullochella mariensis) – listed as 'endangered' under the EPBC Act. Six species of freshwater turtle were recorded during field surveys. Two threatened turtle species recorded in field surveys: Mary River turtle (Elusor macrurus) – listed as 'critically endangered' under the EPBC Act and the NC Act. • white-throated snapping turtle (Elseya albagula) – listed as 'critically endangered' under the EPBC Act and the NC Act. The location of all threatened aquatic species observations is shown in Figure 44. Surely, this project cannot be approved if three Endangered fauna species have not been surveyed? These species were added to the threatened list since the controlled action decision, they do not appear in the table above. Absence of detection does not equate to absence of the species. • Australian painted snipe Rostratula australis Endangered • Northern quoll Dasyurus hallucatus Endangered • Spotted-tail quoll (SE mainland population) Dasyurus maculatus maculatus Endangered There also seems to be detail missing about the actual numbers of fauna present in the surveys, like the above table for Terrestrial flora.	3.5, 3.5, 3.6
91	4.2.3 Terrestrial fauna P159 & 160 Fauna surveys recorded more than 200 terrestrial fauna species within the Borumba PHES Survey area, seven of which are MNES. The following threatened fauna species protected under the EPBC Act and NC Act were identified during the field surveys within the Borumba PHES Survey area: • black-breasted button-quail (Turnix melanogaster) – listed as 'vulnerable' under the EPBC Act and the NC Act • glossy black-cockatoo (south-eastern) (Calyptorhynchus lathami lathami) – listed as 'vulnerable' under the EPBC Act the NC Act • greater glider (southern) (Petauroides volans) – listed as 'endangered' under the EPBC Act and NC Act • grey headed flying fox (Pteropus poliocephalus) – listed as 'vulnerable' under the EPBC Act and 'least concern' under the NC Act • koala (Phascolarctos cinereus) – listed as 'endangered' under the EPBC Act and NC Act • long-nosed potoroo (Potorous tridactylus tridactylus) – listed as 'vulnerable' under the EPBC Act and the NC Act • yellow-bellied glider (Petaurus australis australis) – Mixophyes iteratus. MNES fauna for which suitable habitat was observed: • giant-barred frog (Mixophyes iteratus) – listed as 'vulnerable' under the EPBC Act and NC Act • Australian painted snipe (Rostratula australis) – listed as 'endangered' under the EPBC Act and NC Act • Coxen's fig-parrot (Cyclopsitta diophalma coxeni) – listed as 'critically endangered' under the EPBC Act and NC Act • northern quoll (Dasyurus hallucatus) – listed as 'endangered' under the EPBC Act and 'least concern' under the NC Act • spotted-tail quoll (Dasyurus maculatus maculatus) – listed as 'endangered' under the EPBC Act and NC Act.	3.4, 3.5, 3.6
91	When the proposed Traveston Crossing Dam was stopped in 2009 under the federal EPBC Act, the then Federal Environment Minister Peter Garrett rejected the controversial Traveston Crossing Dam on the Mary River, south of Gympie citing his decision was based on science and the "unacceptable impact" it would have on threatened species, including the Mary River turtle and Australian lungfish. Mr Garrett said the economic benefits of the project did not stack up against the "serious and irreversible adverse effects" on endangered species. "The fact is that this proposal in my opinion will have unacceptable impacts. "Australia's environment is of importance to all Australians and those nationally listed species we need to protect to the best possible extent we can" and yet here we are, threatening them again. I also consider the proposed Borumba Pumped Hydro Energy Storage Project Exploratory Works to have unacceptable impacts on our economic, environmental and social and liveability of our town.	3.1
92	The offset areas selected by Queensland Hydro will provide opportunities to rehabilitate both offset area A and B. Due to historical fire events, grazing and some logging activities, the flora regrowth in the proposed offset areas has degenerated over time. Queensland Hydro has the opportunity to revegetate and rehabilitate with high quality species. I suggest the genuine remnant areas that have survived fire events be used as an example of the high quality, signature species that could be reintroduced into the offset areas. The forest north east of the Borgan Pocket (along Yabba Creek) is a prime example of signature vegetation. Petrogale herbertii (Rock Wallaby) habitat is known in offset area B and the areas immediately adjacent. Protecting this area will mean long-term benefit to the species. It will also provide connection to other habitat.	3.7
92	The Kingaham Creek bypass will be of significant benefit to the community and the environment. The improved flood immunity for motorists means better access to the Somerset and South Burnett regions and back to the Mary Valley and Sunshine Coast. This will bring an economic benefit to the region. By eliminating the creek crossings, there will be improved ecological outcomes as pollutants from vehicles won't wash into the waterways. The use of asphalt or concrete will eliminate the exposure to naturally occurring asbestos in dry times. Also eliminates slipping in wet times - NOA becomes extremely slippery and can be dangerous. By sealing the road, these risks will be mitigated.	3.1
92	The overall project will bring great environmental value to the region. The yabba is a secondary stream which has already been dammed which people appreciate - fishing, recreation, tourism, and water supply/irrigation. I believe that because platypus are in all three sections of the Yabba (above the falls, below the falls to the dam wall and downstream of the dam), and lung fish and turtles are in two sections (blow the falls to the dam wall and downstream of the dam at least), I don't anticipate large impacts to aquatic fauna. If the lower dam is designed in a strategic way, the project could have flood improvement to downstream communities.	3.1
93	The capacity of the proposed dams far exceeds the current capacity of Borumba Dam. The time taken to fill these dams would severely impact the Mary River downstream, thus impacting the habitat of several listed threatened species, including those that have survived in that environment since pre-dinosaur days. This is not something that can be offset. The only catchment that would still be feeding into the Yabba and thence the Mary while the dams are filling is the Bella Creek Catchment - that is not sufficient to maintain habitat (or the plantations and growing areas established on irrigation from the Mary River).	3.5, 3.5, 3.6
93	The long-term effects of the repeated concussion of explosives in creatures living in the water nearby and in the surrounding areas are largely unknown. Just using a hydrophone in the river and being able to hear someone walk quietly from at least three metres away from the edge of the water has shown me the impact loud noises could have on water creatures. There are a lot of unknowns in this exploratory work, potentially impacting rare and endangered creatures that should be protected.	3.5, 3.5, 3.6
93	General comment: The Borumba Pumped Hydro Scheme would usually get my tick of approval, as I understand the need for alternate energy generation. However, this scheme is being proposed on a valuable, living water source, and will have enormous impact. The siting of the one at Mt Perry sounds much more acceptable to me, as it is not trying to be a flood mitigation tool, an energy generation machine, and remain a valued contributor to the sustained life of a river. If this does get to go ahead, then please consider the alternate plan offered by the Mary River Catchment Coordinating Committee.	3.5, 3.5, 3.6
93	I call on the Minister (Commonwealth Minister for the Environment and Water) to say NO to this project, on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection nad Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts cannot be mitigated or offset.	3.1
94	I have welcomed the opportunity to be on two focus groups for this project and commend the manner in which the groups have been managed. I understand that the project will be able to enhance our local community by monetary support and provision of services (doctors) for the community. For this, I am very thankful. I am concerned about the employment drain on businesses in the entire area when workers will leave already established jobs for well-paid work on the project. I have experienced this drain in 3 mining communities where I have lived. In a central Queensland coal mining town, even the school principal left the school and went to a higher paying job, driving trucks. How can this drain be minimised? I am concerned about road safety on Yabba Ck Rd and Bella Ck Rd. How can the roads be made safe for local residents particularly around bus transport time along these roads? I am supportive of this project as I believe pumped hydro is an integral partner, along with wind and solar, in providing a seamless supply of electricity. General comment: I am supportive of this project and hope it brings further benefits to our community.	3.8.4
95	I realise that this project is pretty much a done deal, and you have made this submission process purposefully difficult. We have 1 km of Yabba creek on our property with Mary valley turtles, lung fish, white tail rats, Mary valley cod & platypus. Any extra sedimentation downstream from any earthworks performed will endanger this wildlife, how can you guarantee that it won't.	3.5, 3.5, 3.6
95	There is absolutely no way that this exploration works will not cause extra sedimentation down Yabba Creek. We are concerned about weather events on top of this, which will impact the existing fauna, which currently inhabit the pristine Yabba creek. This includes the endangered Mary Valley cod.	3.5, 3.5, 3.6
95	General comment: I oppose this project as it will have extreme negative impacts on our environment and existing residents of the Mary Valley. I realise that by doing this process you are merely ticking the boxes, and any objections will be disregarded. Throwing money at residents and council to buy their support and approvals, makes this project feel like a political concession to the greens party, who should be standing up for the wildlife & fauna that this project will endanger.	3.5, 3.5, 3.6
96	I would like you to email me All the details you have on "Native Title" for the proposed Borumba Pumped Hydro footprint and surrounding area please email [redacted]	No response required
96	You have made this submission process extremely difficult , And I can only imagine this is on purpose ...	3.8.3
96	I have a massive concern with this project up stream of our pristine Yabba creek and Mary river For instance if we have a major weather event dumping 1000mm of rain or even just our regular floods we have each season and the Project is in the building stage(7 years ?) with large areas of stripped vegetation , you will not be able to keep back the flood water with massive amounts of Silt , Dirt , Sand ,Top Soil being washed from that open ground down our Pristine Yabba creek and Mary River this will have a devastating impact on the Already fragile ECO System , We have constantly observed this fragile ECO system for over a decade in and around Yabba creek 11km down stream on our property some of the species we regularly observe are Platypus , Endangered Mary River Turtle , Endangered Lung Fish , Endangered Mary River Cod , Koalas just to name a few , I have witnessed Mary River Cod breeding and growing to full size in our beautiful Yabba creek . We are so lucky to still have these sensitive natural environments PLEASE don't damage the environment the young will have nothing to show their grandchildren	3.5, 3.5, 3.6
97	We are a local small scale accommodation provider in a neighbouring town. We have only been operating for the last two years and projects like these are hugely valuable to us and others alike. Food, accommodation and fuel are just a few small pieces of the puzzle. Those that stay with us grab a coffee and a wrap in the morning and dinner from town at night. They visit the grocery store and might grab a donut. We value their contribution at local business's to date and going forward as do our staff and towns. Rural towns are not always traditional coastal accommodation business's in terms of holiday loading so we are working towards communicating this with the project as needed. They were very strong on not interfering with existing business which has worked well with previous bookings mid week also with our high demand for weekend wedding bookings or similar. We are actually in the process of adding extra rooms to our offering based on what we feel will be growing demand going forward in general. I believe it's a hugely positive thing for the area, electricity supply going forward and will be of massive value to a huge range of small business's. The staff involved that I have had contact with to date have been a pleasure to work with. Good luck with the next stages of the project.	3.8.4

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98	The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage Exploratory Works and Main Works project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing facilitated impacts The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage Exploratory Works and Main Works project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing cumulative impacts as well.	3.5.8
98	The Exploratory Works would lead to habitat disturbances for local wildlife through increased noise, dust and traffic near the dam. If these works are near sensitive ecosystems, there could be long-term effects on the area's wildlife populations, impacting wildlife watching and nature-based recreation I have lived off grid with solar batteries, wind generator and batteries for years. With the decreasing feed in tariff for roof top solar and lowering of cost of batteries, more people will go off grid and then who pays for the power grid?	3.5, 3.5, 3.6
98	"The EPBC Act provides for the protection of the environment and the promotion of Ecologically Sustainable Development (ESD) at a Commonwealth Level. Although ESD lacks a universally accepted definition, the National Strategy for Ecologically Sustainable Development summarises ESD as 'development which aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations' (ESDSC, 1992)." I have walked much of the footprint of the proposed Exploratory Works over the years and often fished at Borumba Dam when I worked at Imbil Forestry. I am very concerned that this area could be changed with irreversible environmental damage and my children will never experience what I have experienced in that special area of Borumba Dam. I hope that the EPBC Act provides for the protection of the Borumba Dam and its surrounding environment, and the Minister says "No" to the Exploratory Works.	3.5, 3.5, 3.6
98	"Figure 4 illustrates the relationship between the Borumba PHES Project phases in the context of the EPBC assessment." I disagree with Figure 4 (Borumba PHES Project definition) where it shows that the Borumba PHES Project includes two Project phases, the Exploratory and the Main Works. There is a third phase and that is the Transmission lines from Borumba Dam to Halys and Borumba Dam to Woolooga. Transmission lines are essential to this project and will have facilitated/cumulative impacts on Matters of National Significance. I also do not trust the staged piecemeal approach to the Borumba PHES Project and don't believe that the exploratory works will be completed before the Main Works are assessed under the EPBC Act. The "tunnelling" appears to me to be the start of the Main Works.	3.2.1
98	The Borumba Pumped Hydro Project's footprint is within the Conondale National Park and borders Wrattens National Park. Imbil and Yabba State Forest also border the project footprint. The project footprint is also at the top of the Mary River catchment, an important river with matters of national environmental significance including threatened species and feeds into an internationally recognised Ramsar Wetlands, The Great Sandy Strait. I call on Minister (Commonwealth Minister for the Environment and Water) to say no to this project on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts cannot be mitigated or offset. Reasons will be detailed under a few sections of the Preliminary Documentation.	3.1
98	The description of the proposed action is not clearly defined. The State LNP Government is stating in the media that the Borumba Pumped Hydro Energy Storage Project is too expensive, and it is being downsized. Also in the media, there is a discovery of a culturally significant site that has raised environmental and cultural concerns. All options are back on the table. This EPBC Act assessment must be paused until the project is properly defined.	3.1
98	The cost is high risk and poorly explained in the Preliminary Documentation. I have never seen the Detailed Analytical Report (DAR), justifying the Borumba Pumped Hydro Energy Storage Project. All that is stated is a 2GW, 24 hr energy storage (48 GWh) proposal costing $18 Billion, with no detail of costings or assumptions. The DAR must be made public to assess the economic cost and assumptions.	3.1
98	The announcement of the transmission lines has put my life into uncertainty for a number of years, lowered the value of my property, potential loss of visual amenity and will greatly affect my tourism business as the proposed location of the lines is close to my accommodation for my visitors and where they recreate. It will also increase my insurances and fire risk and make it very difficult to manage the increase biosecurity risks. In addition, there will loss of biodiversity and significant impacts on MNES on my property, in particular Koalas and Greater Gliders.	3.1
98	There is no social license for the construction of any of the proposed transmission line routes connected to the Borumba Pumped Hydro Project and we have locked our gates to Powerlink.	3.1
99	[Redacted]. The Australian/Queensland Governments/corporations and Gympie Regional Council, are all acting in FRAUD, acting as a government, when they have NO Jurisdiction over the land of [redacted] Our Decision for this proposed Unlawful Occupiers Development is, NO CONSENT. We REJECT this Development, and any other Developments made without our consent on [redacted]. There's been NO BILL of Sale or NO TREATY with [redacted] or any Contract with this TRUST	3.1
100	I also find it problematic the Queensland Pumped Hydro is making promises to the community despite the project not even being improved. For example, the promise to open the GP practice in Imbil is creating unrealistic expectations in the community. I am a medical doctor and I have seen patients in the hospital who have delayed seeking GP care because they are waiting for the GP in Imbil to reopen. This is the kind of expectation the company is creating. Will the company fulfil its promises to the community if the project is not approved?	3.8.3
100	In this section it is implied that the water quality in the Mary River is poor due to landuse. While it is true that it is not pristine in it's entirety there are many sections in tributaries that have excellent water quality and there is also decades of community effort and millions of dollars spent to improve the health of the river. Then of course there is the fact that the river supports numerous threatened species, has high biodiversity values and is considered by eminent scientist Tim Flannery to be one of the most important rivers in Australia.	3.5.5
100	This comment actually pertains to the Appendix but Appendix was not an option that I could select. There has been an incomplete assessment of the impact that the exploratory works will have on water quality. Appendix G states "The risks to water quality within streams and the lake near site works have been determined as Low level except with respect to potential contamination from the spoil disposal area impacting Yabba Creek, and suspended solids affecting Yabba Creek below the dam, both of which were determined as Medium risk(lower end). Both can potentially be reduced to Low levels with further detailed development of mitigation strategies." The proposed mitigation strategies should be provided in this document not left to a later date. The impacts on water quality are one of the primary ways in which the MNES of the Mary catchment will be affected by this project. It is inadequate to omit details of risk minimisation strategies as it means they cannot be reviewed and scrutinised in this public comment period nor by the EPBC review team. The impact of access roads on water quality as a result of erosion seem to have not been considered. (no mention in Table. This is a serious omission given the sensitivity of the environment and the well established impact that roads have on surrounding water quality. Presumably there is detail in the PESCP but I could not find a copy of this to review. The plan should be revised to address this and provide details regarding the impacts of the construction of the roads and runoff from the roads during heavy rainfall will have. Mitigation measures should also be provided. If these are in the PESCP these need to be made publicly available. General comment: I have major concerns about this project due to the impact it will have on the project area but also the area downstream. These impacts are in terms of water quality and changes in timing and quantity of flow and how this will then flow on to impact on threatened aquatic species of the Mary river.	3.5.5
100	Regarding the Queensland Lungfish, the comment has been made that only a small amount of foraging and breeding habitat is impacted by the project. However, there is a significant knowledge gap in times of the life cycle of Lungfish. The habitat utilised by juvenile lungfish is poorly understood. Therefore the proponent can not make accurate statements about the impact on habitat for juvenile fish.	3.5, 3.5, 3.6
100	The new LNP government has made comments indicated that they may not support complete of the project. Therefore It seems prudent to suspend any progress with the exploratory works unless the Government have made a commitment to proceed. Otherwise we risky unnecessary damage being done to the habitat of numerous threatened species and considerable public funds being wasted .	3.1
101	1.How are they assessing this project? 2.Impact on areas not defined on impact on the environment and eco system. 3.Risk to human life, 1st thing to be assessed. If the dam wall breaks the water will affect locals and Gympie within just a few hours. 4.Dangerous materials onto the flood plains, and the Yabba, affecting water quality /wildlife/tourism/fishing/the caravan park, and recreational use for our once beautiful area. 5.To mention a few of the wildlife affected by this invasion includes our turtles, Platypus, lung fish, barred frogs and other species in the area. 6.Recreating new roads through proposed forest areas will affect many people and interfere with access to their properties, and heavy vehicles on our already bad roads, most dirt, will only make this worse. As rate payers we don`t need this as councils are flat out now keeping up with maintenance as it is. We should all have a say here. Also making forest activities impossible for recreational purposes like riding and walking and hiking 7.Exploratory works are far from safe or stable with blowing up areas for tunnels, dangerous materials and fault lines could be present. How stable is this? If not safe and there is an accident Imbil would be inundated very quickly, as the water volume comes down with even higher volumes of water than prior as they lift the dam walls to higher levels. A top reservoir would increase the danger to all. Where is the emergency evacuation plans? How will they get the people out in time? We have had major floods out here before but this would be another level and possibly a high case of lives lost. 8.STOP THIS DAM from going ahead. Please for all our sakes.	3.5
102	Quarries were also something not mentioned in the PHES Exploratory Works paperwork - mention was made to a member of the public that all sand and gravel will be coming from a registered supplier offsite , does that then mean that there will be no quarries within the footprint of the exploratory works . With Materials Change of Use being applied for in relation to extractive and screening applications via the State Referral Assessment Agency , will that block of land then be utilised for rock crushing ? dredging ? quite a range of things come under the banner of extractive and screening permits . Or will it just be used for stockpiling of materials like Qld Hydro have implied to residents ?	3.2.6
102	Ecologically Sustainable Development - Communities living in the surrounding areas are very worried about the proposed developed , along with recreational users of the dam site . The Borumba Dam site should be protected along with the surrounding environment . left intact for the people to enjoy for their leisure activities , bush walking , bird watching , fishing , canoeing , just somewhere to escape the rat race with 4 relative ease . A short drive from the coast , people from all walks come here simply to enjoy what the region has to offer . Something that so many of us consider irreplaceable . Only recently the public were made aware via the news media of indigenous sacred sites being identified within the Projects footprint . Hence it is more than likely that certain parts of the project may be moved to alternative sites ? Qld Hydro have not been forthcoming with any of this information .	3.8.5

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
102	Like many people who are responding to the comments / submissions on the exploratory works draft plan . I was totally unfamiliar with the definition of exploratory works , so after looking for the precise definition this was what came up a few times ' Exploratory Works " refers to any activity or research conducted to gain initial understanding or insight into a topic or situation where little is already known , often with the goal of developing further research questions or hypotheses rather than reaching definite conclusions , essentially its a preliminary investigation to ' explore ' the subject matter and discover key aspects before diving deeper into specific analysis . The Preliminary Draft for Exploratory Works appears to be more , the precursor to the Main Works . Would Qld Hydro be attempting to avoid all checks and balances by including so many more things in this document . The amount of times the word 'may ' was used in the document as in we may do this or we may do that , leaves many people in doubt as to what we are actually reading . The likes of the heli-pad which was removed from the equation due to safety concerns in the beginning of the paperwork then appears again towards the end as a contingency ?	3.8.3
102	Social License - Something that Qld Hydro do not have in relation to this proposed project , Why the need for paid surveys ? Some of which only finished a few weeks ago . Why the need for the flooding of the media with billboards , radio ads , t.v ads , newspaper ads .	3.8.3
102	Mapping - Why are there very few topographical maps included in the proposed exploratory works . How on earth is the general public expected to comment on these exploratory works documents when there are so many variables listed ?. Certain information unavailable to the general public ? When I first started reading the document I became aware of a theme that was continued through the entire document - i.e the word may ! It is listed 658 times ! this seems to very excessive ! how can we possible comment on things that may or may not happen through out the entire exploratory works ? This is not possible to respond to . We need the Minister to instruct Queensland Hydro to return to the drawing board and submit a preliminary exploratory works document that is not full of wishy washy terms like may !	3.8.3
102	Traffic Management - Will the increase on traffic impact the town of Imbil ? It most certainly will - Perusing through Qld Hydros table of expected traffic through Imbil on a daily basis . Consideration of how many management , employees vehicles along with contractors and sub-contractors to be using the road to access the proposed project site - the numbers given are significantly under quoted ! Stated in the draft paperwork is a paragraph of how many people will be housed outside of the project perimeters , this does not include any local labor coming from Gympie and the surrounding regions . With no quarries being listed on Qld Hydros paperwork in their drawings / mapping , the question was asked as to where the sand and gravel will come from ? The answer was from a registered supplier offsite - Hence all sand and gravel to be used will be trucked in , with these trucks doing how many loads a day ? The addition of so much heavy machinery coming 3 in through this small country town , the damage , wear and tear on these roads will be significant , who will bear the price for this ? the ratepayers of the Gympie Region ? All townsfolk will be severely impacted on a daily basis , whether it is just taking the kids to school or going into Gympie or beyond . Whereby Qld Hydro also state in their paperwork that they will monitor their employees , contractors and sub-contractors speed whilst inside of the proposed footprint . To date Qld Hydro have been unable to ensure that their employees abide by the Qld traffic rules and regulations , so whereby there is much documented on inside the footprint - nothing for the roads coming through the town . Qld Hydro have already received many complaints in regard to this and done nothing . Will there be curfews put in place during the time preceding school starting in the morning , along with curfews when school lets out in the afternoons ? Traffic curfews need to be in place to restrict the movement of heavy vehicles during these times , something that needs to be addressed .	3.8.1
102	As the proposed project is projected as running entirely from electricity generated from renewable sources the cumulative impacts are immense - from the Wambo Wind Farm to the west of Kingaroy which advertises the fact that the power generated there will travel down to the proposed Borumba PHES . Then we have the solar farms at Woolooga and the surrounding areas , along with Forest Wind Farm to the east of Gympie 226 wind turbines proposed for the state forests , with the power generated from it also going to the Woolooga substation . At private meetings with the State Member and the Local Mayor when both were asked if the proposed hydro was cancelled would the wind farm go ahead - both responded with probably not - which leads up to believe that the power generated there will also be for the proposed PHES . So many , many communities along the way , along with the impacts to the environment , vegetation , MNES . Something that certainly needs to be addressed .	3.5.9
102	Whereby the transmission lines are not included in this exploratory works it was acknowledged that these lines will be a facilitated impact if the project should go ahead . Over 129 landholders are in the corridor from the Borumba to Woolooga line along with just over 80 landholders will be impacted with the proposed Borumba to Halys substation transmission line . These corridors will have significant impacts on Matters of National Significance . It appears to be from the additional shapefiles that there are access tracks to the east near Brooloo that are proposed to be upgraded through the state forest for the Exploratory Works , these have not been included in the Preliminary Documentation but have been surveyed for MNES. Potentially there will be facilitated impacts on critically endangered subtropical lowland rainforest ecological communities . The Preliminary Documentation appears to be a piecemeal approach to the proposed Borumba PHES Project . The proposed schedule for the EIS for the Main Works is published before the exploratory works will be completed . The tunneling seems to be the start of the Main Works and an underhanded approach to fast track the project	3.5.8
102	In the PHES there are 132 references to studies done on the impact of noise pollution , but no details for the noise and vibration assessment relative to the potential environmental impact , the absence of detailed findings raises serious concerns about transparency and the potential environmental impact . Noise pollution from exploratory works including drilling , blasting and heavy machinery , poses a very significant threat to local wildlife , especially to sensitive species like platypus , by disrupting feeding , breeding and natural behaviors . Transparent reporting of noise and vibration impacts is not just a regulatory obligation but it is a critical step in safeguarding the regions environmental and social future .	3.5.3
102	Artificial Lighting mentioned on page 196 of the draft document . Artificial lighting from infrastructure and machinery has the potential to impact fauna in the vicinity of the proposed project footprint during works . Artificial lighting has the potential to cause terrestial fauna to avoid areas of habitat that they previously relied upon for foraging / breeding / sheltering may lead to an increase in the risk of predation for some fauna species and potentially disrupt breeding patterns or cause general disorientation . No mention is made here in relation to migratory birds also becoming disorientated . Something that the Queensland Government have been putting in place for a while now is what is termed DARK SKY mapping of certain areas to protect fauna and terrestial species . Species that are know to be nocturnal will be severely impacted with machinery and lighting proposed to run 24 x 7 within the proposed footprint .	3.5, 3.5, 3.6
102	The reason this proposed project was declared a controlled action was if the project were to go ahead the proponent Qld Hydro has identified that the project will cause direct , indirect and significant residual impacts to several threatened fauna and fauna species listed under the Environment Protection and Biodiversity Conservation Act . As the proposed project will cause adverse impacts to Threatened Species and Ecological Communities and Migratory Species justifies the Minister saying No to this Exploratory Works . Some of the impacts - the Ramsar Wetlands if constructed the proposed PHES could substantially alter flow regimes that support flow dependent species along with ecosystems which underpin the ecological health of the Great Sandy Straits Ramsar Listed Wetlands . If approved the proposed PHES could substantially alter flow regimes that support flow dependent species and ecosystems in the Mary River and estuary , which underpins the ecological health and productivity of the Great Barrier Reef . In addition to assessing direct , indirect and significant residuals impacts to MNES Qld Hydro should also be required to assess the cumulative impacts that could potentially occur to MNES from their proposed exploratory works . The Proposed Borumba Pumped Hydro Projects footprint is within the Conondale National Park and borders Wrattens National Park , Imbil and Yabba State Forest also border the project footprint . All of these protected places contain MNES including Threatened species . I call on the Minister (Commonwealth Minister For the Environment and Water) to say NO to these exploratory works . These works would be located , unavoidably , in vegetated areas that provide essential habitat for so many listed threatened species under the Environmental Protection and Biodiversity Conservation Act . These potential severe impacts cannot be mitigated or offset .	3.5, 3.5, 3.6
102	Were offset regions considered on a like for like basis ? If so where is the documentation for this ?	3.7
102	With regard to Queensland Hydro - So many surrounding communities were caught unawares by this opportunity to comment / make submissions on this Draft Exploratory Works . The reason being is that with the change of government in Queensland in October last year Queensland Hydro were instructed by the government to come up with alternative plans for this PHES , We think that the reasons for this are financial costs of the proposed project blowing out from $ 14 Billion to $ 18 Billion . Hence most people were expecting to be commenting on a down-scaled model of the original proposal . Due to the fact that the Detailed Analytical Report has never been released to the public - we the public are left in the dark in regard to so many things in the proposed project .	3.1
102	Queensland Hydro do not have Social License for this proposed project ! So many people are mistrusting of the Management team in place - Kieran Cusack the CEO of Queensland Hydro was formerly an Executive of the Snowy 2.0 Hydro project . Snowy 2.0 has been the subject of so many breaches of their environmental conditions . The cost blow-outs are well documented . So many unanswered questions from Qld Hydro employees - when questions are asked at public forums - the response is generally ' We will get back to you ' which never appears to happen . The lack of transparency and the scant communication does not bode well for landholders - we do not feel we are being told everything relevant to these proposed exploratory works !	3.1
102	We the general public would also like to be privy to the Detailed Analytical Report which Qld Hydro are using as a reference in their document .	3.1
102	Exploratory Works were not meant to include tunneling as such ? Tunneling that after inspection of the diagrams greatly resembles the Main Works Design ? Ventilation pipes only intended for the Main Works are included in the drawings here . Noise mitigation from certain parts of the works ? How much noise will be carried down to the town in the still of the night ? So many aspects of this require much more investigative done ! Will there be subsidence ? Surface Settlement ? Groundwater drawdown ?	3.1
102	Where the likes of Intergeneration Equity were mentioned as in leaving these areas for future use ? Providing them with Clean and Green Energy ? The same terminology could be used - as in leaving the natural beauty of this place alone for generations to come to enjoy and treasure the same as we all do ! No mention is made of Intergenerational Debt - as in how many generations of our children and our grandchildren will be forced to pay for this infrastructure ?	3.1
102	The comments on MNES in particular the critically endangered species , the endangered species , the vulnerable species , their habitats , their breeding places , their foraging areas . the migratory birds flight paths , so many of these things cannot be offset , cannot be replaced simply by the designation of one area for another . More in depth comments on these things I will leave to people much more qualified than myself to answer	3.1
103	Invasive weeds and pathogens Introduction of weeds should be minimised by vehicle wash downs with removal from washwater of weeds and their seeds. Ideally site vehicles would remain on site for the duration of the project; vehicles used to bring workers, equipment and materials to the Project site should report to a site entrance where they transfer to an on-site vehicle. I have no suggestion regarding the risk of introducing invasive pests. Next is another suggestion for minimising the risk of spreading weeds (ref Table 31: Potential impact pathways in each work area). Additional mitigation measures for invasive weeds and pathogens would include ongoing monitoring by trained personnel, and removal and killing of detected weeds (if any). That is, you should employ a vegetation management team to monitor and eradicate weeds as and when they appear.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
103	The following comments are made on the supposition that the Full Supply Level of the new Lake Borumba will be between 145 m AHD and 155 m AHD. Constructed in 1964, the existing Borumba Dam (Full Supply Level 135 m AHD) is already over 6 decades old and requires replacement. If Qld Hydro's proposed replacement dam is built then the Full Supply Level of the new Lake Borumba will be 155 m AHD; if, however, either Borumba PHES does not proceed or the "Balancing Storage Proposal" (https://mrccc.org.au/borumba-pumped-hydro-the-mrcccs-balancing-storage-proposal/) of the Mary River Catchment Coordinating Committee (MRCCC) is adopted then the Full Supply Level of the new Lake Borumba will be 145 m AHD. Refinement of the tunnel spoil disposal area design and the addition of a new disposal area to support the Kingaham Creek bypass construction Storage location for drilling spoil: It is understood that two dedicated areas are proposed for the storage and management of excess material from exploratory tunnelling, geotechnical drilling and construction activities. One of these sites will be adjacent to Kingaham Creek. There will also be a tunnel spoil disposal area, and in addition stripped topsoil will also be stockpiled. To avoid disturbance of vegetation that will not be inundated regardless of which (if any) PHES proposal goes ahead, it is recommended that spoil storage be on areas with elevation not exceeding 145 m AHD. Next is my comment on what should be done with water produced by drilling activities, but I cannot find any mention of such "produced water" anywhere in the documentation. Discussion of such "produced water" is therefore included with comments relating to 5.3.8 Impacts to surface water quality – RFI item 4.5(d)vi, viii, and 5.1(m) Produced water treatment and reuse: It is expected that initial water for drilling will redrawn from Lake Borumba; however, groundwater in which is suspended fine solids will be produced as drilling proceeds. To avoid contaminating Lake Borumba with these fine solids they must be separated from the produced water, which can then be reused as drilling water without further pumping from Lake Borumba. Such fine solids can be added to the drilling spoil stockpile. Spoil solids stockpile leachate: Water leaching from stockpiled spoil solids will contain fine suspended particles and dissolved ions from reaction of spoil solids which are essentially rock suddenly dug up after millions of years of isolation from weathering processes. If allowed to drain into Lake Borumba this leach water (leachate) will be contaminated with these fine solids and dissolved ions, meaning the water needs to be treated to separate out dissolved ions and suspended fine solids. These can be returned to the stockpile, and the decontaminated leachate could be incorporated into makeup drilling water. It may be possible to treat both produced water from drilling and leachate from spoil solids stockpile in the same treatment plant.	3.2.4
104	I have been watching this project closely. I am a local in the Sunshine Coast hinterland for over 30 years. I feel strongly that the biggest environmental improvement that Qld Hydro could do is to disconnect the pumped hydro from the existing Borumba Dam. It would be far better to create two new dams that work independently of Borumba – and in doing so:- •massively reduce risks downstream •to the Lake itself •no change to the existing irrigation and town water supplies (Gympie, Noosa) •recreational fishing can continue •large reduction in Carbon footprint •It is my understanding that the Mary River Catchment Coordinating Committee has prepared such a proposal, & I fully support that proposal	3.1
105	I call on the Commonwealth Minister for the Environment and Water to say "NO" to this project on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts cannot be mitigated or offset.	3.1
105	The State LNP Government is stating in the media that the proposed Borumba Pumped Hydro is too expensive and they are considering downsizing. The description of the proposed action is not clearly defined. Also, with the recent discovery of a culturally significant site, all options are back on the table. This EPBC Act assessment must be paused until the project is properly defined.	3.1
105	The cost is high risk and poorly explained in the Preliminary Documentation. The Detailed Analytical Report (DAR), justifying the proposed Borumba Pumped Hydro Poject, has never been released to the public. The DAR must be made public to assess the economic cost and assumptions and to compare with alternatives. The trajectory of battery prices is falling astronomically and by the time the proposed Borumba pumped hyrdo project is ever up and running, the economics of the project won't even be comparable. The ongoing cost of running the proposed Borumba project, if it's ever completed, will be far greater then roof top solar on exisiting buildings coupled with batteries of varying chemistries, such as lithium and flow batteries, which can be located anywhere, close to where the energy is getting used. Compared to the proposed Borumba project, smaller local battery/solar systems are very resilient and reliable in the event of a major breakdown of the proposed pumped hyrdo. Unfavourable weather conditions can cause large parts of the network to be disrupted like we have just experienced in south east Queensland. As I live downstream of the proposed Borumba Pumped Hydro Energy Storage project, I would like to see the dam failure report. Should there be a dam wall failure, it would be a catastrophic event for me and thousands of my community. General comment: I believe this project is a huge economic risk. Our State cannot afford to proceed with the proposed Borumba Pumped Hyrdo Project. The price of electricity from the proposed project will not be affordable. There are cheaper alternatives. Potential irreversible environmental damage in a very sensitive location should be enough to say "NO" to this action. Details of the project are wishy-washy and it appears that some works are being inappropriately staged to rush through the progress of the project.	3.1
106	My comment refers to the Criticality of this habitat for MNES listed fauna, particularly the Glossy Black-Cockatoo (EPBC Act - Vulnerable). This habitat is critical habitat for the survival of the Glossy Black-Cockatoo into the future as confirmed in the Risk Assessment documents for this project. The exploratory works and main works will have adverse impacts on this species life cycle as this habitat is feeding and breeding habitat. There are a significant amount of Glossy Black-Cockatoo Sightings concentrated around Area 3 - Walkers Top. These geological disturbance areas will likely fragment this habitat and make it difficult for Glossy Black-Cockatoos to travel through the landscape safely. If this site is a nursery site where Glossies bring their fledglings it will likely fragment this habitat to a point where it is no longer usable as a nursery site. I believe this project should not go ahead as it has huge impacts on not just the Glossies but many listed threatened species that need to be protected. I am highly concerned about the impacts of this project and I believe as future generations we should have a say in projects that are important to us. The youth has not been consulted as part of this project as far as I am aware. I would like to wrk with the decision makers to protect this habitat for the Glossies and other threatened species that call it home. Please listen to our voices. General comment: I believe this project should not go ahead as it has huge impacts on not just the Glossy Black-Cockatoo but many listed threatened species that need to be protected. We cannot afford to lose any more critical threatened species habitat in 2025. Enough is Enough. I am highly concerned about the impacts of this project and I believe as future generations we should have a say in projects that are important to us. The youth has not been consulted as part of this project as far as I am aware. This is not sustainable. Offsets will never fully replace the habitat that will be destroyed for this project.	3.5, 3.5, 3.6
107	The Exploratory Works would lead to habitat disturbances for local wildlife through increased noise, dust and traffic near the dam. If these works are near sensitive ecosystems, there could be long-term effects on the area's wildlife populations, impacting wildlife watching and nature-based recreation that our community highly values.	3.8.5
107	The Borumba Pumped Hydro Project's footprint is within the Conondale National Park and borders Wrattens National Park. Imbil and Yabba State Forest also border the project footprint. The project footprint is also at the top of the Mary River catchment, an important river with matters of national environmental significance including threatened species and feeds into an internationally recognised Ramsar Wetlands, The Great Sandy Strait. I call on Minister (Commonwealth Minister for the Environment and Water) to say no to this project on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts cannot be mitigated or offset. Reasons will be detailed under a few sections of the Preliminary Documentation.	3.5, 3.5, 3.6
107	"The EPBC Act provides for the protection of the environment and the promotion of Ecologically Sustainable Development (ESD) at a Commonwealth Level. Although ESD lacks a universally accepted definition, the National Strategy for Ecologically Sustainable Development summarises ESD as 'development which aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations' (ESDSC, 1992)." I have walked and canoed some of the footprint of the proposed Exploratory Works. I am very concerned that this area could be changed with irreversible environmental damage and future generations will never experience what I have experienced in that special area of Borumba Dam. I hope that the EPBC Act provides for the protection of the Borumba Dam and its surrounding environment, and the Minister says "No" to the Exploratory Works.	3.5, 3.5, 3.6
107	"Figure 4 illustrates the relationship between the Borumba PHES Project phases in the context of the EPBC assessment." It appears that Figure 4 (Borumba PHES Project definition) is incorrect where it shows that the Borumba PHES Project includes two Project phases, the Exploratory and the Main Works. There is a third phase that has not been included and that is the Transmission lines from Borumba Dam to Halys and Borumba Dam to Woolooga. Transmission lines are essential to this project and will have facilitated/cumulative impacts on Matters of National Significance. It appears from the additional shapefiles that there are access tracks to the east near Brooloo that are proposed to be ungraded through the state forest for the Exploratory Works and these have not been included in the Preliminary Documentation but have been surveyed for MNES. Potentially there will be facilitated impacts on critically endangered subtropical lowland rainforest ecological community. The staged piecemeal approach to the Borumba PHES Project has the proposed schedule for the EIS for the Main Works published before the exploratory works will be completed. The "tunnelling" appears to me to be the start of the Main Works and an attempt by the Proponent to fast track the project.	3.2.1
107	The description of the proposed action is not clearly defined. The State LNP Government is stating in the media that the Borumba Pumped Hydro Energy Storage Project is too expensive, and it is being downsized. Also in the media, there is a discovery of a culturally significant site that has raised environmental and cultural concerns. All options are back on the table. This EPBC Act assessment must be paused until the project is properly defined.	3.1
107	The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage Exploratory Works and Main Works project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing facilitated impacts	3.1
107	The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage Exploratory Works and Main Works project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing cumulative impacts as well. In addition, the project facilitates industrial scale renewable energy projects as far east as the Forest Wind project via Woolooga substation and west to Wambo Wind Farm via Halys substation.	3.1
107	Although the Offset Area Management Plan is quite detailed, it has a fundamental flaw in that no where is there a cost estimate of the management actions over time. Being involved with restoration of areas for over 20 years on my own property, the costs, labour and chemical use of what is being proposed must be estimated and budgeted for and included in the Offset Area Management Plan. This will highlight that there is insufficient data on weed mapping, type, extent and location in the offset areas to adequately cost what is proposed here. Also Offset Area B in Kingham catchment is owned by Department of Regional Development, Manufacturing and Water – DRDMW so how secure is it from future dam developments in the Kingaham catchment.	3.1
107	The cost is high risk and poorly explained in the Preliminary Documentation. The Detailed Analytical Report (DAR), justifying the Borumba Pumped Hydro Energy Storage Project has never been made public. All that is stated is a 2GW, 24 hr energy storage (48 GWh) proposal costing $18 Billion, with no detail of costings or assumptions. The DAR must be made public to assess the economic cost and assumptions and to compare with alternatives like Batteries. For the first time, the latest CSIRO GenCost estimates capital 24 hr batteries with cost of $400/kWh with costs going down while Pumped hydro capital costs of $383/kWh and going up. Within a year, they will be comparative and alternatives to safer options than Lithium Batteries are starting to be used. The Australian Energy Market Operator, AEMO uses $200/kWh for Pumped Hydro in their Integrated Systems Plan estimates. I live downstream of the proposed Borumba Pumped Hydro Energy Storage project and should there be a dam wall failure or a cascade event of more than one wall failing, I and thousands of my community down to Gympie, am in the path of a wall of water within 1-6 hours that will flood my house and my business. I know this based on the Emergency Action Plan for the existing Borumba Dam and the knowledge that this Borumba Pumped Hydro Project proposes to increase the Borumba dam by about 5 times and to put a top reservoir 300m higher with 1 and a half time the existing dam volume. Although there is a GHD 2023 flood study referenced in Appendix B, it has not been published to the public even though we have repeatedly asked to see the dam failure report.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
107	The announcement of the transmission lines to the Woolooga substation has put my life into uncertainty for a number of years, lowered the value of my property, potential loss of visual amenity and will greatly affect my grazing business as the proposed location of the lines is right through the middle of my property at very steep, well vegetated block at Kinbombi. It will also increase my insurances and fire risk and make it very difficult to manage the increased biosecurity and erosion risks. In addition, there will loss of biodiversity and significant impacts on MNES on my property, in particular Koalas and Greater Gliders. There is no social license for the construction of any of the proposed transmission line routes connected to the Borumba Pumped Hydro Project and our Kilkivan Community have locked our gates to Powerlink.	3.1
108	Recommendation: The description of the proposed action is not clearly defined. This EPBC Act assessment must be paused until the project is properly defined. In the media, the State LNP Government is stating that the Borumba Pumped Hydro Energy Storage Project is too expensive, and it is being downsized. Also in the media, it is stated "there is a discovery of a culturally significant site that has raised environmental and cultural concerns". Non committed language (e.g. "may") is used 658 times in the main Preliminary Document.	3.8.2
108	Recommendation: The (tunnel) spoil area should not be collocated within the inundation area for the Main Works. The tunnel works should not even be included in the Exploratory Works. "The (tunnel) spoil area is also collocated within the inundation area for the Main Works to reduce the risk of unnecessary clearing." The tunnel works should not even be included in the Exploratory Works. Proposing to leave a tunnel through unknown geology in that location to become a pollution problem in the future is highly risky to the Borumba Dam water quality. Proposing to place the tunnel spoil within the proposed inundation area of the Main Works is also highly risky given the potential risk of acid generating materials and heavy metals leaching into the Borumba Dam and affecting water quality.	3.2.4
108	Recommendation: Figure 4 be revised to include a Phase 3 -Transmission lines to Halys and Woolooga substations. "Tunnelling" should be excluded from the Exploratory Works action. "Figure 4 illustrates the relationship between the Borumba PHES Project phases in the context of the EPBC assessment." Figure 4 (Borumba PHES Project definition) shows that the Borumba PHES Project includes two Project phases, the Exploratory and the Main Works. We disagree that there are only 2 phases. There is a third phase the Transmission lines from Borumba Dam to Halys and Borumba Dam to Woolooga. Although being proposed by a third party, Powerlink are aware that there are Matters of National Significance that would be impacted on the proposed corridors and are facilitated/cumulative impacts from the Borumba PHES Project. This is a staged piecemeal approach to the Borumba PHES Project implying that the exploratory works will be completed before the Main Works is assessed but from the scheduling timeframe for the Main Works EIS this is not possible. The "tunnelling" appears to be the start of the Main Works and an attempt by the Proponent to fast track the project	3.2.1
108	Recommendation: Potential residual Impacts cannot be offset with the current Offset Area Management Plan. There is insufficient data on weed and pest mapping to estimate the costs involved. Although the Offset Area Management Plan appears quite detailed, it has a fundamental flaw in that a cost estimate of the management actions over time is missing and that 20 years in nothing compared to the age of some of these RE's that are trying to be offset. To suggest that there are big numbers of MNES proposed to be destroyed, moved on or their habitat directly or indirectly impacted on and it can be fixed by Offsets is not substantiated in the Preliminary Documentation. This Exploratory Works is a project proposed in the wrong place. Many of our members have been involved with weed control and restoration of areas on their own local properties. We know the costs, labour and chemical use of what is being proposed must be estimated and budgeted for and considered in a project proposal Offset Area Management Plan.	3.7
108	Recommendation: We call on Minister (Commonwealth Minister for the Environment and Water) to say no to this project on the grounds that as the Proponent has stated "much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)." The Borumba Pumped Hydro Project's footprint is within the Conondale National Park and borders Wrattens National Park. Imbil and Yabba State Forest also border the project footprint. The project footprint is also at the top of the Mary River catchment, an important river with matters of national environmental significance including threatened species and is the lifeblood of the internationally recognised Ramsar Wetlands, The Great Sandy Strait. From reading the Preliminary Documentation, all potential impacts cannot be mitigated or offset in the way put forward by the Proponent. Reasons will be detailed in comments under the next few sections of the Preliminary Documentation.	3.1
108	Recommendation: The project should not go ahead based on the presence of so much Mount Mia Serpentinite (DCs) (being highly likely that there will be naturally occurring asbestos) in a number of locations in the Project area for the proposed Exploratory Works. Impacts of disturbing asbestos must be assessed on human health and the health of wildlife including MNES. "The design includes an additional spoil disposal area to ensure sufficient space to stockpile excess materials and to minimise potential social and environmental impacts associated with transporting materials from the Kingaham Creek bypass construction. Its location is in a previously disturbed area used for cattle grazing, more than 100 m from Kingaham Creek, and was selected to avoid additional impacts to MNES. The site was also preferred as it is collocated with a proposed camp location for the Main Works reducing the risk of unnecessary clearing and potentially reducing the Main Works footprint and impacts." Figure 28 (Topography) shows the additional spoil disposal Figure 29 (Geology) shows the proposed Kingaham Creek bypass being constructed through the Mount Mia Serpentinite (DCs) geological area so it is highly likely that there will be naturally occurring asbestos in the spoil material. However, even though the soil disposal area is shown as being 100m from Kingaham Creek, it is located across a drainage line that runs directly into the creek and increases the risk of polluting the creek. It would also appear to be too much of a human health risk to be collocating a proposed camp location for the Main Works at the same location.	3.1
108	Recommendation: Release to the public the documents that have been requested by the [redacted]. These include the Detailed Analytical Report and FEED report, the GHD 2023 Dam Flooding report and any other reports relating to the risk of dam failure and give us opportunity to make relevant comments. There has been a lack of transparency in the community consultation conducted by Qld Hydro. For example, the Detailed Analytical Report and the FEED on which the feasibility of the Borumba Pumped Hydro Energy Storage is based on, has never been released to the public. All that is released is a total figure cost of about $18M. This does not instil trust in the Government processes. The cost is high risk for the Borumba Pumped Hydro Energy Storage Project at $18 Billion and there is no information on the cost and assumptions of the Exploratory Works and breakdown of the details in the draft Preliminary Documentation. The Detailed Analytical Report (DAR), justifying the Borumba Pumped Hydro Energy Storage Project and the GHD 2023 Dam Flooding Report are referenced in the draft Preliminary Documentation. For the first time, the latest CSIRO GenCost estimates capital 24 hr batteries with cost of $400/kWh with costs going down while Pumped hydro capital costs of $383/kWh and going up. Within a year, they will be comparative and alternatives to safer options than Lithium Batteries are starting to be used. The Australian Energy Market Operator, AEMO uses $200/kWh for Pumped Hydro in their Integrated Systems Plan estimates. Similarly the community needs to know the potential dam failure scenario for the Probable Maximum Flood (PMF) failure and show dam failure flood maps for the lower proposed dam and a cascade failure scenario from the upper storage. Show number of residences that would be in the path of the dam failure and warning time. It must consider climate change and increasing risk of extreme events. Our Kandanga Community live downstream of the proposed Borumba Pumped Hydro Energy Storage project and should there be a dam wall failure or a cascade event of more than one wall failing, thousands of our community are in the path of a wall of water within 1-3 hours that will flood parts of our towns and businesses. This would include houses, our water supply and road networks. Dams are not built forever. Although there is mention of a project life of 100 years, average life of dams is cited at 50-70 years but based on the Paradise Dam experience, can be as little as 17 years before serious safety issues with the dam wall can appear. The current wall at Borumba Dam does not even meet the ALCOLD safety guidelines. We know about the risk only based on the Emergency Action Plan for the existing Borumba Dam (Flooding from Borumba Dam failure is shown in Map 6 of the Emergency Action Plan at https://www.rdmw.qld.gov.au/__data/assets/pdf_file/0010/1619641/borumba-eap.pdf) and the knowledge that this Borumba Pumped Hydro Project proposes to increase the Borumba dam by about 5 times and to put a top reservoir 300m higher with about 1 and a half times the existing dam volume. Although there is a GHD 2023 flood study referenced in Appendix B, it has not been published to the public even though we have repeatedly asked to see the dam failure report. Borumba Dam area is a recreation area for many of our members. We walk, canoe, ski, boat and camp in this area and highly value its special unique wildlife and rainforest, aesthetic and peaceful amenity. The Exploratory Works would lead to habitat disturbances for local wildlife through increased noise, dust and traffic near the dam. If these works are near sensitive ecosystems, there could be long-term effects on the area's wildlife populations, impacting wildlife watching and nature-based recreation that our community highly values. The announcement of the transmission lines to the Woolooga substation has put regional communities in uncertainty for a number of years, lowered the value of properties, potential loss of visual amenity and are greatly impacting businesses as the proposed location of the lines have been put over houses and infrastructure, through the middle of properties, through very steep, well vegetated country with highly erodible soils and serpentinite rock geology(asbestos bearing rock). It will also increase insurances and fire risk and make it very difficult to manage the increased biosecurity and erosion risks in our region. There is no social license for either this project or the construction of any of the proposed transmission line routes connected to the Borumba Pumped Hydro Project.	3.1
109	Dust and air pollution from earthworks and vehicle movement may not only affect air quality but also create an unpleasant environment for outdoor enthusiasts. Additionally, concerns about water quality degradation due to sediment runoff and potential chemical spills pose a direct threat to aquatic ecosystems, impacting fishing and boating conditions in Lake Borumba and surrounding waterways. Access to popular recreational areas could be restricted or entirely cut off during construction phases, limiting public enjoyment of the region. The destruction of local flora and the clearing of vegetation may further diminish the area's biodiversity, reducing its appeal for nature lovers and wildlife observers.	3.8.5, 3.5.5
109	• Reduced recreational opportunities such as fishing, swimming, and tourism activities that depend on a clean and thriving waterway.	3.8.5
109	4. Social and Economic Impacts on the Community Any degradation of Yabba Creek due to exploratory works has wide-reaching social and economic consequences. Residents could face economic burdens from increased water treatment costs or the need to source water from alternative suppliers. Additionally, the environmental damage to the creek may reduce property values and harm local businesses that rely on the creek for tourism and recreation. In summary, the exploratory works pose a serious risk to Yabba Creek, potentially leading to water contamination, disruption of natural water flow, and degradation of the local ecosystem. For the residents of Imbil, this would mean reduced access to safe, clean water, higher costs for water treatment, and long-term environmental and economic consequences. Given the town's complete reliance on Yabba Creek, any harm to this vital water source would have profound and far-reaching impacts on the health, livelihoods, and quality of life of the entire community.	3.8.5
109	Visual amenity is another major concern, as the construction of new infrastructure—such as the expanded dam wall and upper reservoir—could alter the picturesque landscape, undermining the scenic value that defines the region.	3.5.9
109	Despite proposed mitigation efforts, the cumulative impact of these disturbances on such a fragile ecosystem cannot be understated. Once biodiversity is lost, it cannot be easily restored, and the disappearance of these species would not only be an ecological tragedy but also a cultural and environmental loss for future generations. These concerns underscore the urgent need for stronger protections and comprehensive assessments before further exploration or development proceeds in this ecologically sensitive region.	3.5.9
109	"The Project could impact surface water quality through contamination and increasing erosion and sedimentation." This is alarming with 7 specific areas of concern highlighted in this section. It is arguable that these are unacceptable risks for any stage of the project as they will cause irreparable damage to the current and future ecosystem.	3.5.2
109	3. Ecosystem Degradation and Long-Term Consequences Yabba Creek is not only a crucial water source but also an essential ecosystem supporting aquatic life and local biodiversity. Pollution and sedimentation can destroy critical habitats for fish, amphibians, and other wildlife, including the Mary River cod, Mary River turtle, and Australian lungfish, all of which are already vulnerable or endangered. If these species decline, the ecological balance of the creek could collapse, further impairing water quality and the longterm sustainability of the water source. For the community of Imbil, these environmental impacts could result in: • Loss of local biodiversity, diminishing the natural beauty and ecological value of the region. • Reduced recreational opportunities such as fishing, swimming, and tourism activities that depend on a clean and thriving waterway. • Increased public concern and pressure on local authorities to implement costly mitigation and restoration measures.	3.5, 3.5, 3.6

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109	It is noted that whilst the platypus barely rates a mention in the Exploratory Works documentation, there are numerous platypus that live in the Yabba Creek and surrounding waterways. As a particularly special part of Australia's unique native wildlife population, it's incredibly sensitive to even minor disruptions in it's environment. If the Platypus Management Plan (PMP) for the Borumba Hydro Project is not adequate to protect local platypus populations during exploratory works, several serious ecological consequences could arise, affecting both the species and the broader ecosystem: 1. Habitat Loss and Degradation Consequence: Platypuses rely on stable riverbanks for burrowing and calm, clean waters for feeding. If the PMP fails to prevent habitat degradation through vegetation clearing, sedimentation, or waterway modifications during exploratory works, the loss of these critical habitats could lead to population declines. Impact: Reduced suitable nesting and foraging areas may force platypuses to relocate, increasing competition for resources in other habitats, which could threaten their survival. 2. Water Quality Decline Consequence: Inadequate safeguards against soil erosion and chemical runoff during exploratory works may degrade water quality, reducing the availability of invertebrate prey (e.g., insects and crustaceans) that platypuses depend on. Impact: Poor water quality can lead to malnutrition, reproductive challenges, and increased mortality rates within the platypus population. 3. Disruption of Breeding Cycles Consequence: Platypuses have highly sensitive breeding cycles, and increased noise, vibration, and human disturbance during exploratory works could disrupt their mating behavior and the nurturing of juveniles. Impact: Reduced breeding success may cause a long-term population decline, as fewer young survive to maturity. 4. Increased Mortality Risk Consequence: Inadequate protection measures could result in direct harm to platypuses through accidental injury or entrapment caused by machinery, altered water flows, or new infrastructure. Impact: Increased mortality rates could threaten the local population's viability, especially since platypuses have relatively low reproductive rates. 5. Fragmentation of Populations Consequence: If exploratory works create physical barriers (e.g., temporary dams, access roads) that block waterways, platypus movement between habitats may be disrupted. Impact: Isolated populations are at greater risk of genetic inbreeding, reducing resilience to environmental changes and diseases. 6. Legal and Reputational Consequences Consequence: Failure to protect a vulnerable species like the platypus could result in breaches of environmental protection laws, including the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. Impact: Queensland Hydro may face legal action, fines, and delays in project approval. Public backlash and loss of community trust could further jeopardize the project's future. 7. Ecosystem Imbalance Consequence: Platypuses play a vital role in aquatic ecosystems by controlling insect and small invertebrate populations. Their decline could disrupt the ecological balance. Impact: Without their presence, pest species may proliferate, leading to broader ecological consequences that affect other wildlife and water quality. In summary: If the Platypus Management Plan is not effectively enforced or proves inadequate, the Borumba Hydro Project could lead to significant harm to local platypus populations and their ecosystems, with far-reaching environmental, legal, and social consequences. Ensuring the plan is robust, continuously monitored, and updated is crucial for protecting this iconic and vulnerable species.	3.5, 3.5, 3.6
109	It is deeply troubling that multiple species of flora and fauna, including an alarming number of vulnerable, endangered, and critically endangered species, have been identified in the region. Among these are iconic and ecologically significant species such as the koala, Mary River cod, Mary River turtle, Australian lungfish, greater glider, greyheaded flying fox, spotted-tail quoll, northern quoll, native guava, and scrub turpentine. These species are integral to the health and stability of the local bushland ecosystem, which operates as a delicately balanced web of interdependence. Any disruption or disturbance to this fragile environment—no matter how well-intentioned the mitigation efforts—can trigger a cascade of harmful and irreversible consequences. Such consequences may include habitat loss and fragmentation, leading to the displacement and decline of wildlife populations; degradation of water quality through increased sedimentation and chemical runoff, which threatens aquatic life; the disruption of breeding and feeding patterns due to noise and human activity; increased vulnerability of endangered species to predators and invasive species; loss of biodiversity as plant and animal species struggle to adapt to a changing environment; and long-term ecological imbalances that affect not only wildlife but also the broader health of the region. The potential for these outcomes raises serious concerns about the lasting damage this project could inflict on the natural environment and the species that depend on it for survival. Further, the presence of multiple vulnerable, endangered, and critically endangered species in the region raises profound concerns about the long-term survival and well-being of these animals and plants. Each species plays a vital role in maintaining the ecological balance, and any disruption to their habitat can have far-reaching and irreversible consequences. The koala, for instance, relies on specific eucalyptus species for food and shelter. Habitat destruction and fragmentation not only reduce their food sources but also force them into unfamiliar areas, increasing their risk of vehicle collisions, dog attacks, and disease outbreaks such as chlamydia. Given their already declining numbers, further disruption could accelerate their path to extinction. Similarly, aquatic species like the Mary River cod, Mary River turtle, and Australian lungfish are particularly vulnerable to changes in water quality and flow. These species are unique to the region and depend on clean, slow-moving rivers and undisturbed habitats for breeding and feeding. Increased sedimentation from soil relocation, runoff from heavy machinery, and water pollution threaten these species by degrading their spawning grounds, reducing oxygen levels, and introducing toxins. For the Mary River turtle, which relies on sandy banks for nesting, even minor disturbances could severely impact reproductive success and juvenile survival rates. The greater glider, grey-headed flying fox, and spotted-tail quoll are also at considerable risk. The greater glider depends on mature, hollow-bearing trees for shelter and breeding. The removal of these trees through excavation or land clearing destroys their homes and limits their ability to find suitable nesting sites. The grey-headed flying fox, a key pollinator and seed disperser, is highly sensitive to habitat loss and noise pollution. Disruptions to their roosting areas can lead to stress, decreased reproduction, and further population decline. The spotted-tail and northern quolls are already listed as endangered due to habitat destruction, poisoning, and predation by invasive species. Land disturbance increases their exposure to predators while reducing the availability of prey and safe denning sites. Native plant species such as the native guava and scrub turpentine are also at risk of extinction due to land clearing and soil disruption. These plants are not only vital to the region's botanical diversity but also provide essential food and shelter for local wildlife. Once these plants are removed, their ability to regenerate in disturbed soils is limited, especially if invasive species take hold. The loss of native flora can trigger a domino effect, leading to a diminished food web and threatening the survival of herbivorous species that depend on these plants. In addition to these species-specific concerns, broader ecological effects pose further threats. Fragmentation of habitat disrupts wildlife corridors, preventing species from migrating and reducing genetic diversity. Noise pollution from heavy machinery interferes with animal communication, particularly for species that rely on vocal signals for mating and territorial defense. Soil degradation and erosion reduce the availability of nutrient-rich soil, which is essential for plant regeneration. Waterway pollution from construction runoff introduces heavy metals, sediment, and chemicals that poison aquatic ecosystems and kill sensitive species. Furthermore, increased human activity and heavy vehicle traffic raise the likelihood of introducing invasive species that can outcompete native flora and fauna, further destabilizing the environment.	3.4, 3.5, 3.6
109	The acknowledgment in the Borumba Pumped Hydro Exploratory Works Preliminary Documentation that the remnant vegetation provides critical foraging, breeding, denning, nesting, sheltering, and dispersal habitat for threatened fauna, as well as the presence of threatened flora species, underscores the unacceptable risk posed by the exploratory works to these irreplaceable native species. The fact that mature trees with hollows—essential for species such as the greater glider, yellow-bellied glider, and glossy black-cockatoo—are present within the project area is particularly alarming, as these habitats take decades to centuries to form and cannot be easily replaced once destroyed. Species like the greater glider are already facing severe population declines due to habitat fragmentation and loss. This nocturnal marsupial depends on hollow-bearing trees for daytime shelter and breeding. Any disturbance to these mature trees directly threatens their survival and reproduction, as they are highly specialized and cannot easily relocate to other areas. Similarly, the yellow-bellied glider relies on the same mature ecosystems for denning and foraging. Both species are territorial and have limited dispersal capabilities, meaning that the destruction of even small sections of habitat can isolate populations, reduce genetic diversity, and increase the risk of local extinction. The glossy black-cockatoo faces comparable threats, as it depends on specific tree species for nesting hollows and requires native casuarina trees for food. The loss of mature trees and surrounding vegetation disrupts their breeding cycles and reduces their already dwindling population. Given that glossy black-cockatoos exhibit strong site fidelity—meaning they return to the same nesting and feeding areas year after year—the destruction of these areas could permanently displace local populations, leaving them vulnerable to starvation and reproductive failure. Additionally, the remnant vegetation described in the documentation is not just a collection of trees and plants—it is a complex, interconnected ecosystem where each species plays a critical ecological role. The removal or degradation of this vegetation can create a cascading effect where the loss of one species triggers further ecological decline. For example, the disappearance of gliders could reduce natural pollination and seed dispersal, impacting plant regeneration and leading to the further collapse of local biodiversity. The threatened flora within this environment faces direct destruction from soil disturbance and invasive species introduced by exploratory works, further accelerating the loss of rare and endangered plant life. Even with mitigation efforts, it is impossible to recreate the complexity and ecological value of these mature habitats. Environmental offsets, such as replanting, cannot replicate the old-growth hollows required by gliders and cockatoos for many decades or centuries. Once these critical habitats are destroyed, the damage is effectively permanent for these species, many of which are already struggling to survive under mounting pressures from land clearing, climate change, and human encroachment. Given the undeniable importance of this remnant vegetation to multiple threatened species, proceeding with exploratory works represents an unacceptable risk to invaluable native wildlife. The loss of even a portion of this habitat could push already vulnerable species closer to extinction, fundamentally altering the biodiversity of the region in ways that cannot be undone. This raises a pressing ethical and environmental question: Is the destruction of irreplaceable ecosystems and the potential extinction of iconic Australian wildlife an acceptable price to pay for development? The profound and irreversible consequences for these fragile species demand a reconsideration of the project's scope and a commitment to protecting the precious biodiversity that defines the region.	3.4, 3.5, 3.6
109	The potential impact of exploratory works on Yabba Creek, the sole water source for the town of Imbil, is a significant concern due to the risk of contamination, degradation, and disruption to the creek's natural flow. Exploratory activities such as excavation, soil relocation, and the operation of heavy machinery can introduce pollutants and sediments into the waterway, jeopardizing the creek's water quality and, by extension, the health and well-being of Imbil's residents. 1. Water Contamination and Quality Degradation Exploratory works often involve disturbing large areas of soil and rock, which increases the likelihood of sediment runoff into nearby waterways. This can cause turbidity (cloudiness) in Yabba Creek, making the water unsafe for consumption and reducing its quality for domestic and agricultural use. Additionally, chemical pollutants such as oils, fuels, and lubricants from heavy machinery may leak into the creek, introducing toxic substances that are hazardous to human health. Any disturbance to the underlying geology could also release heavy metals or other harmful compounds, which may infiltrate the water supply. For the residents of Imbil, degraded water quality could lead to: • Unsafe drinking water, requiring costly filtration or alternative water sources. • Health risks from consuming or using contaminated water, including gastrointestinal illnesses and long-term exposure to heavy metals. • Disruption of household activities such as bathing, cooking, and gardening due to reduced water availability and safety. • Increased water treatment costs for local authorities, potentially raising utility bills for residents. 2. Disruption to Water Flow and Availability Heavy machinery and excavation can alter the natural landscape, which may disrupt the flow patterns of Yabba Creek. Changes to the hydrology of the creek could reduce the water volume, especially during dry periods, resulting in lower water availability for the town. Sedimentation can also clog waterways, reducing the creek's capacity and causing localized flooding during heavy rainfall while simultaneously diminishing water flow during droughts. This disruption could impact Imbil's residents by: • Reducing the town's primary water supply, leading to water shortages and increased reliance on external sources. • Increased costs to maintain or restore water flow through dredging or other remediation efforts. • Damage to agricultural productivity, as local farms rely on Yabba Creek for irrigation. • mitigation and restoration measures.	3.2.2
109	After reviewing the Borumba Pumped Hydro Energy Storage Project - Exploratory Works Preliminary Documentation for public comment, I wish to note just how daunting and consequently prohibitive it is for any member of the public to have to review and address their concerns about the project, particularly in the time frame given which is grossly inadequate. I noted many areas of concern as a local citizen and will raise some general points before addressing some specific areas of the document of particular concern.	3.1
109	1.1 There is no detailed analysis provided of costs of potential alternatives of building Borumba Pumped Hydro Energy Storage Project. The lack of a detailed cost analysis comparing potential alternatives to the Borumba Pumped Hydro Energy Storage (PHES) project raises significant concerns about the transparency and justification for proceeding with this large-scale development. Without a comprehensive evaluation of other renewable energy storage options—such as battery storage, distributed energy solutions, or smaller-scale pumped hydro systems—it is impossible for the public and decision-makers to assess whether the Borumba project represents the most cost-effective and least environmentally damaging solution. This omission also prevents a thorough understanding of long-term financial risks, including maintenance costs, environmental remediation, and potential economic impacts on local communities. Providing a clear, comparative analysis of alternative energy storage methods is essential for ensuring that public funds are being used responsibly and that the project aligns with Queensland's broader energy transition goals while minimizing ecological and social harm. Such transparency is vital to foster public confidence and enable informed, evidence-based decision-making. Considering the extensive inevitable irreversible damage this project will ultimately cause to the local environment in our area, and the loss of habitat, and death of species of flora and fauna, some of which are considered, vulnerable, endangered and even critically endangered, would it not be prudent for a such an analysis to be undertaken before proceeding any further with this project, including the exploratory works.	3.1

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109	1.2 When I attended a local drop in session in Imbil regarding the future of the project, I specifically asked if there had been any analysis done on the amount of energy expenditure would be required to complete this project including all the fuel for all vehicles, construction of roads, infrastructure, clearing of land, exploratory works, essential environmental studies, manufacturing of components, operation of heavy machinery, etc to complete this project, and how long it would take to recoup all these energy costs for the project to become energy neutral and eventually energy positive. Whilst I note this is not limited to the exploratory works, it is a relevant question in relation to the project and should be a primary consideration. The staff member was unaware of any such study and stated that would be a very extensive study.	3.1
109	The Borumba Hydro Project raises significant concerns about its potential impact on future recreational activities in the area, which is renowned for its natural beauty and outdoor pursuits such as camping, fishing, boating, and bushwalking. During construction, increased noise from heavy machinery, drilling, and blasting could disrupt the tranquility that attracts visitors seeking a peaceful escape. Collectively, these environmental impacts could significantly reduce the area's attractiveness for both local residents and tourists, jeopardising the longterm sustainability of the region's recreational and economic value.	3.1
110	Recommend regional EPBC assessment of Matters of National Environmental Significance (MNES) impacts before any planning commences In hindsight, a regional assessment of EPBC MNES of the Borumba Pumped Hydro proposal should have been performed by the Qld Government before planning commenced to understand the extent of EPBC impacts of this project. This proactive step may have ruled out the current design of BPHES prior to commencement with initial and detailed planning.	No response required
110	The area includes both Conondale and Wratten's National Parks	No response required
110	Figure 6 p. 29 does not detail the Yabba Creek bed-level stream crossing design for Site access. Area 1. Table 3 p31 does not indicate what area of instream and riparian vegetation will be directly impacted for the bed-level stream crossing and temporary bridge construction at Yabba Ck Area 1, as the area impacted is rolled into Site Access footprint. The instream habitat and riparian vegetation at Area 1 are of high quality and value. There is excellent potential for Mary River cod and lungfish habitat, due to the overhanging vegetation, potential hydrophyte colonisation, instream pools and riffles, and instream woody debris found at this location.	3.8.1
110	Table 4 p.32 does not provide detail on the anticipated Project Schedule for the bed-level stream construction and temporary bridge construction for Area 1 – in particular, the timeframe for construction and usage of the temporary crossing. It may be assumed that timing for the construction is covered under 'Construction of new and upgrade to existing tracks at Borumba Dam to service geotechnical investigations, between April and December 2025', but it is not clear.	3.8.1
110	5.5 Potential cumulative impacts – RFI item 4.5(b) There are many large-scale renewable energy projects in the vicinity of the Borumba project that may or may not have significant impacts on MNES. However, they contribute to the general cumulative impact of the wider changes being planned for the local power grid, of which Borumba is only one component. If the exploratory works for Borumba were not to proceed, the wider impacts of most of these other proposals would still occur, given that the energy storage and grid services required would be provided by means other than Borumba. The major exception is the Powerlink project for two power line connections from the Borumba site to Halys and Woolooga substations. The Powerlink project will have major impacts on MNES, and its impacts should not be assessed separately from the Borumba exploratory works and main works, as all three referrals are integrally interconnected parts of the same project, artificially divided into separate assessments. At a smaller scale, there are several actions currently underway or being planned in the Mary River catchment with the specific purpose of enabling the exploratory works for Borumba to proceed, which have not been referred for assessment under the EPBC Act. These actions will have impacts on the same controlling provisions being assessed for the Borumba exploratory works– namely threatened ecological communities and threatened species. Considered individually, these actions may or may not have significant residual impacts, but because they would not be taking place if the Borumba exploratory works were not proceeding, their impacts should be considered as cumulative impacts of the exploratory works. These actions will also benefit the Borumba main works, but it can be argued that as they are being built and planned now for the exploratory works, their impact and any offset requirement should be assessed as part of the exploratory works referral. The two main areas of concern for [redacted] are the planned access route to the exploratory works site along Old Forest Drive, Casey's Gully Road, and Western Creek Road (in conjunction with Gympie Regional Council) and plans for bridge upgrades across Yabba Creek on Yabba Creek Road between Imbil and Borumba (in conjunction with Qld Main Roads).	3.5.9
110	Changes to the local bushfire regime The risk assessment underestimates the fact that more vehicles and human activity is likely to create a higher fire risk to areas that were previously inaccessible. Increased fragmentation will also create greater fire risk. A Fire management plan is recommended, which links to [redacted] recommendations to protect the Glider species.	3.5.7
110	Impacts to surface and groundwater… On page 222, the document is quoted, "The Project will improve the hydrology of Borgan Road which is surrounded by TEC". This statement is cryptic, without any validation. [Redacted] is unsure how this project will actually improve the hydrology. The hydrology will be changed, whether the hydrology is improved is debateable.	3.5.5
110	2.3.2.1 Investigation Areas – Area 1, below Borumba Dam p.44 The proposed crossing and Exploratory Works Area 1 site at Yabba Creek is downstream of the dam wall where the vulnerable Australian lungfish (Neoceratodus forsteri), critically endangered Mary River turtle (Elusor macrurus), and the critically endangered White-throated snapping turtle (Elseya albagula) are known to occur. Historically, Mary River turtles are reported to have nested on the creek banks at this site in past years. It is likely that the endangered Mary River cod (Maccullochella mariensis) use this instream habitat as well. Riverine reaches directly downstream of water storages have been shown to have the greatest potential for restoration of macrophyte beds (Marshall et al., 2015). The Site Environmental Plan (SEP) for Area 1 (Borumba Dam) must detail site specific constraints and key environmental management measures that minimize all potential interactions with lungfish, Mary River turtles and Mary River cod during the construction, operational and decommissioning phase of the Exploratory works. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the SEP. Details of the Erosion and Sediment Control Plan are also required for assessment during the Exploratory Works phase to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream. Table 5 p.36 indicates 10 light vehicles and 60 heavy vehicles plan to use the bed-level stream crossing per day in this environmentally sensitive area. The instream habitat and riparian vegetation at Area 1 are of high quality and value. There is excellent potential for Mary River cod and lungfish habitat, due to the overhanging vegetation, potential hydrophyte colonization, instream pools and riffles and instream woody debris found at this location. One Permit to disturb riparian vegetation has already been issued, however the location is not provided. A request for further information for the location of the Permit is requested in order to assess other areas of riparian vegetation yet to be assessed.	3.5, 3.5, 3.6
110	The Site Environmental Plan (SEP) for Area 1 (Borumba Dam) must detail site specific constraints and key environmental management measures that minimize all potential interactions with lungfish, Mary River turtles and Mary River cod during the construction, operational and decommissioning phase of the Exploratory works. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the SEP. Details of the Erosion and Sediment Control Plan are also required for assessment during the Exploratory Works phase to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream.	3.5, 3.5, 3.6
110	Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the Sediment and Erosion Plan (SEP). The "as constructed" Exploratory Works Erosion and Sediment Control Plan is not likely to be available for scrutiny by the public to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream.	3.5, 3.5, 3.6
110	3.10.1 Invasive species and disease, p.133 [Redacted] understands that Qld Hydro has prepared a Biosecurity Management Plan, referenced on p.240. The biosecurity management plan hasn't been included in the supporting documents, so cannot be reviewed. There are a number of biosecurity risks to the environment that have been identified including myrtle rust, chytrid fungus, bunya Pine dieback associated with phytophthora species, and more recently, fire ants. [Redacted] will primarily focus on Weedy Sporobolus Grasses (WSG) in this section given the scale of the issue, and the potential risk it poses to the environmental values of the proposed upper reservoir (Walkers Top). The introduced rat's tail (Sporobolus) grasses are invasive grasses that reduce pasture productivity, out-compete native pasture plants, and cause significant degradation of natural areas. They are broadly referred to as weedy Sporobolus grasses (WSG). Four species of introduced Sporobolus grasses are invasive plants in Queensland: giant rat's tail grass (Sporobolus pyramidalis and S. natalensis) American rat's tail grass (S. jacquemontii) giant Parramatta grass (S. fertilis) Legal requirements All of the above four Sporobolus grasses are declared category 3 restricted invasive plants under the Biosecurity Act 2014. The Act requires land managers to take all reasonable and practical measures to minimise the biosecurity risks associated with the spread of these invasive plants under their control. This is referred to as a general biosecurity obligation (GBO). Firstly, on p.279 of the Construction Environmental Management Plan Qld Hydro states they plan to treat "large" infestations of weeds. However the GBO requires Qld Hydro to treat all infestations of declared weeds such as WSG. Given the scale of vehicle movements across the exploratory works area – upwards of 380 heavy vehicle movements per day (p.36), Qld Hydro and its contractors hold a significant biosecurity obligation, particularly with weed seed spread via roads e.g. Bella and Kingaham Creek Roads and the proposed new track network. Controlling WSG infestations on the road networks associated with the exploratory works is essential to minimise weed seed spread given the significantly increased traffic of light and heavy vehicles estimated in the document. [Redacted] also recommends Qld Hydro adopts the 'early detection, rapid response' protocol. This will involve regular auditing. In the Construction Environmental Management Plan Qld Hydro has recommended six-monthly audits including weed incursions. [Redacted] recommends much more regular weed auditing, particularly along freshly cleared tracks, and tracks with high traffic loads. A weed management plan is recommended to bring all these responsibilities into one clear, concise document that can be communicated to all stakeholders, contractors etc. Methods of weed seed spread WSG seeds are mainly spread by livestock, vehicles, and machinery (especially earthmoving equipment and slashers), and also by flowing watercourses. Livestock can spread seed in manure, on fur and with mud on hooves. This includes invasive animals such as feral deer, as well as native animals. Environmental impacts WSG infestations can seriously degrade conservation and natural areas (native grass open forest ecosystems), reducing ecosystem values and habitat for native fauna. Borumba Pumped Hydro Project - WSG Bio-Security Management Plan Wash-down bays The current exploratory works include regular vehicle and machinery access along Kingaham Creek road, plus other roads, for a range of purposes including tunnelling operations. Significant roadside infestations of WSGs and their resultant seed banks, currently exist along all of these roads. The seed life of WSG seed is in excess of 10 years. As these past and present infestations contaminate the gravel road surface with WSG seed, Qld Hydro vehicles and other vehicles are also re-contaminated on a daily use basis. This is compounded by these vehicles fording major creeks: Yabba, Sandy, Kingaham Creeks and similar wet creek crossings en-route, as subsequent WSG seed will stick to the wet vehicles due to the seed's gelatinous seed coating (sticky when wet!). Therefore, professionally designed wash-down bays with elevated ramps, seed-catching mechanisms and water capture/recycling facilities should be priority infrastructure to pressure-wash both the underside and topside of vehicles. These wash-downs need to be done both prior to access to all Qld Hydro landholdings, and again when the vehicles exit the gravel road complex when returning to town. Such wash-down bays would not only play a key role as part of Qld Hydro's Bio-Security Management Plan, but would visibly demonstrate Qld Hydro's professed high standing in the community (especially farming and landholder communities) as a professional and responsible Range Manager. Upper Reservoir site This Upland Open Eucalypt Forest with a kangaroo grass meadow understory is a unique land type with high ecological values. Unfortunately, it currently appears to have a comparatively low-level population of WSG plants, probably due to regular access by feral red deer, deer hunting vehicles, and logging operations in past years. Therefore it is imperative that this unique upland Forest estate is not further infested by WSG-contaminated vehicles and machinery during the current Qld Hydro exploration works. Accordingly, additional wash-down facilities should be installed on both the Kingaham Road and Jimna Road access points to ensure that only ultra-clean vehicles (including cleaning vehicle floors), have access to the Upper Reservoir site. Wild fires A further biosecurity-related threat to the Upland is wild fires, the frequency of which has increased in recent years. Wild fires will not only cause severe ecological damage to this fragile land type, but will also provide a window for the germination of WSG seed already present on this site. In wild fire emergencies, bulldozers are frequently employed to cut firebreaks without a prior clean down process. The resultant contaminated machinery and disturbed soil on the fire breaks would create an additional WSG weed seed spread risk as well as a seedbed for the germination of any WSG seed. There is also urgency to develop a Wildfire Management Plan, including winter season controlled patch-burning practices, and construction of a helipad adjacent to the planned Upper Reservoir, to facilitate on the spot fire-fighting helicopter support. Emerging biosecurity threats Qld Hydro should also consider the development of additional Bio-Security Management Plans for feral red deer (the population of which could explode when the Upper Reservoir provides permanent water), fireweed Senecio madagascariensis – (wind spread seed with the SE trade winds), and fire ants (most recently found within 100 km at North Arm).	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Vegetation mapping shapefiles provided by Qld Hydro as part of the draft preliminary documentation shows patches of remnant Lowland Rainforest of Subtropical Australia along the planned access route via Old Forest Drive out to the Gympie Brooloo Road. Significant roadworks in these locations will have the effect of further fragmenting important remnant patches of this community (which was purposefully kept intact by early 20th century foresters when clearing for plantations). Overlaying the impact of a 50 m buffer on either side of this access route, would seriously fragment this important connected network of remnant patches. It is not clear from the documentation whether this impact has been accounted for in the development of the draft OAMP for the exploratory work. There are six bridges across Yabba Creek on Yabba Creek Road between Imbil and Borumba Dam, several of them one lane timber bridges not suitable for heavy transport of the size required for the exploratory works. This stretch of Yabba Creek has high ecological value, providing habitat for Mary River cod, Lungfish, Mary River turtle and White throated snapping turtle. In many places the riparian vegetation is Qld Regional Ecosystem 12.3.1, which is very likely to contain the EPBC Lowland Rainforest TEC and individually listed flora species. Queensland Hydro plans to upgrade/rebuild these bridges in conjunction with Main Roads. The impacts of these upgrades should be considered and assessed as part of the cumulative impacts of the Borumba PH exploratory works, and incorporated into the OAMP for the exploratory works.	3.5, 3.5, 3.6
110	Vegetation mapping shapefiles provided by Qld Hydro as part of the draft preliminary documentation shows patches of remnant Lowland Rainforest of Subtropical Australia along the planned access route via Old Forest Drive out to the Gympie Brooloo Road. Significant roadworks in these locations will have the effect of further fragmenting important remnant patches of this community (which was purposefully kept intact by early 20th century foresters when clearing for plantations). Overlaying the impact of a 50 m buffer on either side of this access route, would seriously fragment this important connected network of remnant patches. It is not clear from the documentation whether this impact has been accounted for in the development of the draft OAMP for the exploratory work.	3.5, 3.5, 3.6
110	Section 7 - Significant impact assessment 7.1 Threatened ecological communities 7.1.1 Subtropical lowland rainforest – critically endangered Threatened Ecological Community, p.215 [Redacted] has a long history (over 30 years) of working with private landholders to rehabilitate and restore the subtropical lowland rainforest vegetation community, primarily in riparian zones. These riparian zones tend to have a high edge-to-remnant area ratio, and are therefore exposed to transformational environmental weed incursions. [Redacted] understands the importance of maintaining edges and preventing fragmentation to maintain condition; and the issues and costs involved in restoration and rehabilitation of this vegetation community. [Redacted] cannot stress the importance of regular surveillance and vigilance to maintain and encourage expansion of these important rainforest patches, and the costs involved cannot also be underestimated. Experience has demonstrated (outlined in the giant barred frog comments) that at least a 25 to 30 year program is required to rehabilitate this vegetation community to restore functionality for key species to return eg. Giant barred frog.	3.5, 3.5, 3.6
110	Table 38, assessment of impacts, p.218 Changes to habitat quality as a result of erosion and sedimentation, p.220. Dispersive soils are likely to occur throughout the exploratory works areas, and Area 1 will involve clearing of vegetation (and Threatened Ecological Community [TEC] fragmentation) on steep slopes that are likely to be impact, as identified by Qld Hydro. [Redacted acknowledges that an Erosion and Sediment Control (ESC) plan has been developed, but sodic and dispersive soils require specific treatments and erosion control measures. Mitigation strategies need to be developed beyond the ESC Plan that includes gully erosion control measures. Ideally, avoidance of exposure of dispersive soils should be the first priority, and if there has to be disturbance, contractors need to demonstrate experience working in dispersive soils, whereby they understand the importance and how to create minimal disturbance, not exposing the dispersive, sodic subsoils that create the fine sediment plume and severe erosion issues. [Redacted] has observed many instances where contractors maintain that they understand how to work in dispersive soils (or even remediate these areas), but subsequently create bigger problems leading to exacerbated, more expensive outcomes. The document also states that TEC located outside and downslope of the project footprint could be at risk of erosion. However, often sheet wash and subsequent gully erosion moves up-slope thus creating issues with loss of surface (including potentially TEC) via gully erosion, once the dispersive sub-soil is exposed.	3.5, 3.5, 3.6
110	Spread of weeds, pests and disease due to increased human activity The risk assessment clearly identifies that the TECs have minimal weed threat at present, by only identifying lantana, corky passion vine and noogurra burr as weed threats. These weeds are relatively easily controlled compared to Sub Tropical Lowland Rainforest (STLR) transformer weeds such as Cat's claw vine and Madeira vine. As a consequence of minimal weed threat at present, higher levels of vigilance are required as fragmentation will allow easier pathways for new 'transformer' weed incursions to occur. To minimise the incursion of these weeds, greater attention is required to the threat posed by edge effects (section 5.3.2). It is well recognised in the Mary River catchment that many environmental weeds are introduced through wind-blown sources and establish themselves via TEC edges initially. Once established they are near impossible to eradicate.	3.5, 3.5, 3.6
110	7.3 Threatened fauna Section 7.3.3 Giant barred frog, p.366 The document's risk assessment states that there is 'Unlikely to be impact on the species' However, has this assessment been within and external to the area of works? We assume the risk assessment is only within the exploratory works footprint. Recommendation to assess the potential external impacts to the giant barred frog from increased human, vehicle and threats e.g. potentially increased pig threat due to more human disturbance, and chytrid fungus spread at higher elevations. There are known populations in adjacent Coonoongibber Creek sub-catchment. Therefore, it is very likely that M. iteratus occurs at least in the upper Yabba catchment (see comment and map below). Records demonstrate there is/was a connection in a north/south direction for this species in upper catchments and to the east and west of the main trunk of the Mary River (i.e. Six Mile sub-catchment with Tinana Creek sub-catchment, and Little Yabba with Coonoongibber Creek (Yabba) system). There has been a historical connection between the Mary River catchment and the Burrum River system (i.e. record of M. iteratus on Doongul Creek). Dams cause impenetrable barriers laterally and longitudinally in these vital upper regions of sub-catchments for movement of adults, juveniles and tadpoles. The main trunk of the Mary River is not a good conduit for movement of this species. Statement 'The Conservation Advice for the Giant barred frog states that the species is a large, ground-dwelling frog, often found in lowland open wet forests….' Conservation advice also states that '…the species is showing some signs of recovery at mid-elevations, with small numbers of individuals recorded at sites at 500 m in the Conondale Range and Lamington National Park'. Area of direct impact of the project is between 150 and 500 m and therefore likely to create barriers to movement (roads, tracks, water pipes, and infrastructure). To the north of Coonoongibber Creek its distribution is information deficient. Conservation Advice says 'The Giant barred frog is predominantly found in a limited range of wet forest types. This specialisation, together with the noted fragmentation of the population, the low number of individuals at localities (particularly within the south of the species range), its sensitivity to disturbance, and its low dispersal ability, increases the susceptibility of M. iteratus to local extinction.' Therefore further fragmentation (via the exploratory works stage) of key habitat ie subtropical lowland rainforest may prevent potential recolonisation of the species from adjacent populations or could lead to further risk of localised extinction, based on the Conservation Advice. Populations within the footprint and surrounding upper catchment streams could have declined or become locally extinct and may be currently recovering, as they are in the Conondale and Blackall ranges at altitude. Known declines elsewhere have been likely caused by infection from the Batrachochytrium dendrobatidis (i.e. Chytrid) fungus and may be the reason for apparent absence of M. iteratus within the survey area. The headwaters of the streams impacted by the project are adjacent to the upper catchments of Little Yabba and Coonoongibber Creeks (both with populations of M. iteratus). Landscape connection is possible through the upper Borumba Creek system. We recommend creating more and robust corridors, not further barriers or fragmentation to distribution movement and genetic pathways. The Conservation Advice for M. iteratus provides the following Conservation and Management Priorities – 'Identify and conserve landscape characteristics that facilitate movement between subpopulations.' and 'Investigate options for linking, enhancing or establishing additional subpopulations.'. This project has the potential to restrict movements, against the recommendations of the Conservation Advice priorities, by habitat clearing, fragmentation and barrier creation. Recent observations of the species (in 2023 and 2024) have been made in Imbil State Forest and near Yabba Creek (iNaturalist, 2023), less than 10 km from the Exploratory Works Project footprint. However, as these observations were lodged through a secondary source, they are subject to confirmation. This record is verified having been confirmed by Eva Ford (MRCCC) and Harry Hines (DETSI). Location information blurred in iNaturalist but may be in Coonoongibber Creek, or possibly Derrier Creek. M. iteratus records WildNet (two specimens) collected within 3 km of point on map below. The document needs to be reviewed to include these records and recognise the possible recovery of species that may be occurring or has the potential to occur with rehabilitation effort in disturbed areas. The proponent needs to recognise the threat of the project to what may be the last remaining small populations through clearing and replacement of habitat with barriers for connections between sub-catchments. Habitat Critical to the Survival of the Species: 'While the Project area is near the Conondale Ranges in the Mary River catchment, as the species was not detected within the Borumba PHES Survey Area despite extensive survey effort, and no records of the species have been recorded in the Exploratory Works Survey area, it is considered unlikely the Exploratory Works Survey area supports habitat critical to the survival of the species.' [Redacted] recommends that the survey area does contain habitat that could support the Giant barred frog, and therefore the area should be identified as 'possible' habitat not 'unlikely' habitat. Survey effort o Amphibian targeted surveys only between 11 to 21 December 2022 at only seven sites. While 2022 is remembered as a very wet year in the Mary River catchment, the last few months of 2022 were drier than usual. December 2022 mean rainfall for Upper Kandanga (Oakwood rainfall station) is 124mm, however December 2022 only recorded 73mm; therefore conditions may not have been conducive for Giant barred frog acoustic detection. o No mention of effort for targeted amphibian surveys. o Where are the seven amphibian targeted survey sites? o Call playback was only for one hour during each of the periods 5th to 9th December 2024 and 5th to 9th February 2025. Not very long periods. How many sites? Unfortunately February 2025 was not a good survey period with below average rainfall conditions ac We have evidence that at some of the [Redacted] long-term frog monitoring transects (20+ years of annual surveying along standard transects), some periods of non-detectability occur even where there are known to be large populations (e.g. Cooroora Creek) Potential habitat on Cedar Creek (Upper reservoir feeder creek) was not included within the survey area therefore not identified as potential habitat. This needs to be assessed for habitat potential, and surveyed. Other systems that may not have been surveyed, and should be, are: Cedar Creek in gorge reach. Little Bella Creek Upper Kingaham Creek. According to the Oakwood rainfall station. [Redacted] frog surveys in February 2025 were not as successful compared to other wetter years. December conditions? No description of conditions conducive for M. iteratus activity and calling. More information is required.	
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110	[Redacted] recommends that the survey area does contain habitat that could support the Giant barred frog, and therefore the area should be identified as 'possible' habitat not 'unlikely' habitat. Survey effort o Amphibian targeted surveys only between 11 to 21 December 2022 at only seven sites. While 2022 is remembered as a very wet year in the Mary River catchment, the last few months of 2022 were drier than usual. December 2022 mean rainfall for Upper Kandanga (Oakwood rainfall station) is 124mm, however December 2022 only recorded 73mm; therefore conditions may not have been conducive for Giant barred frog acoustic detection. o No mention of effort for targeted amphibian surveys. o Where are the seven amphibian targeted survey sites? o Call playback was only for one hour during each of the periods 5th to 9th December 2024 and 5th to 9th February 2025. Not very long periods. How many sites? Unfortunately February 2025 was not a good survey period with below average rainfall conditions according to the Oakwood rainfall station. [Redacted] frog surveys in February 2025 were not as successful compared to other wetter years. December conditions? No description of conditions conducive for M. iteratus activity and calling. More information is required.	3.5, 3.5, 3.6
110	Section 7.3.9 Mary River cod (Maccullochella mariensis) p.410 Reference sources seem old in general. The document does not refer to any other Maccullochella species as a potential reference for some of the unknown aspects of the Mary River cod. Table 94: Spawning habitat: No mention of undercut banks. M. peeli (Murray Cod) recorded use of undercuts. Distribution: the 2016 data used only mentions "Tinana-Coondoo Creek, Six Mile Creek, and upper Obi Obi Creek". Qld Hydro do recognise that Yabba, Lake Borumba has previous records of Mary River cod. Yabba Creek is a key cod habitat. Survey effort: The following doesn't make sense and should be clarified, "Surveys involved visual observations of the Mary River cod via kayaking in the Kingaham, Yabba and Sandy Creeks, eDNA surveys, fyke netting, cathedral trapping, electrofishing (backpack and boat-based electrofishing), snorkelling, angling, and box trapping (Hydrobiology, 2023)." Table 95: Bed level crossings: the constructed bed level may be designed to not restrict fish passage but the level of traffic will, especially at times of higher activity for cod (Dusk and dawn). Light pollution is considered, but not vehicles headlights while crossing. Contamination via petroleum based oils during vehicles crossing is a potential risk that is likely to impede fish passage. Table 96: Due to the project's "temporary nature" the impacts are deemed "unlikely to lead to a long-term decrease in the size of a population". However, there are likely to be significant localised effects.	3.5, 3.5, 3.6
110	Survey effort: The following doesn't make sense and should be clarified, "Surveys involved visual observations of the Mary River cod via kayaking in the Kingaham, Yabba and Sandy Creeks, eDNA surveys, fyke netting, cathedral trapping, electrofishing (backpack and boat-based electrofishing), snorkelling, angling, and box trapping (Hydrobiology, 2023)."	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Section 7.3.1 Lungfish (Neoceratodus forsteri) p. 335 Table 72, Impact Criteria: Disrupt the Breeding cycle of an important population: "Unlike Australian lungfish in the Burnett catchment, the Mary River catchment population is not known to undertake spawning migrations (Kind, 2003) p.335" – This information is provided from one publication by Peter Kind (2003) where it is stated that Australian lungfish spawning migration in the Mary River catchment was not detected. The Burnett catchment is more highly modified than the Mary River catchment. Lungfish are known to spawn in the Brisbane River (Kemp, 2017). The population of lungfish sampled from the Brisbane River were actively spawning and recruiting young to the population (Kemp, 1996 and Kemp, 2005 in Kemp, 2017). Research suggests that populations of lungfish in riverine systems are reproductively viable (Kemp, 1996 & Kemp, 2005 in Kemp, 2017). In contrast, lungfish sampled from Enogerra Reservoir were all of advanced age with no recruitment occurring from 1974. All samples taken from water impoundments during fish kills have been adults, with no sub-adults or juveniles (Kemp, 2017). Further research into the current spawning population of lungfish in Yabba Creek and the Mary River system is required. Lungfish spawn on dense macrophytes beds such as Eelgrass or Ribbon plant (Vallisneria nana and/or V. annua). Lungfish spawn seasonally in early to mid-spring during low-flow events where water temperatures range between 18 and 28 C. (Espinoza et al, 2013). Oviposition may occur on short, dense macrophytes in shallow water (Espinoza et al, 2013). The impoundment of riverine habitats changes water depths and impedes establishment and development and therefore the growth and distribution of macrophytes (Marshall et al., 2015). This information emphasizes the importance of riverine lungfish populations where the viability of fish eggs and recruitment success is greater than populations found in aquatic impoundments. All efforts to sustain and protect populations of lungfish in riverine systems such as the Sandy and Yabba Creek confluence in the vicinity of Area 4, Borgan, in particular the potential impact to this important riverine habitat by uncontrolled discharge of leachate-laden from the spoil dump, is of the highest importance. This also applies to Exploratory works Area 1 – the reach of Yabba Creek downstream of Borumba Dam, where lungfish occur.	3.5, 3.5, 3.6
110	Survey Effort: • Appendix K - Table M4 identifies the survey methodology and effort for Yellow Bellied Glider and other nocturnal species. The document identifies a Victorian Spotlighting Method which is substandard (at 2 observers over 40 minutes and over 1km) compared to the Qld Terrestrial Vertebrate Fauna Guidelines for Spotlighting which is 30 person minutes over a 100m x 100m site. The document mentions that some areas were spotlight surveyed from a moving car which does not align with any accepted survey methodology and would be ineffectual in nature. • Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car. No spotlighting surveys occurred in Spring and as such the life-cycle and maternal stages of the species were not covered adequately. It is unclear if the detections noted within the Survey reports are incidents of glider sightings and / or feed tree locations. Given the large territorial size of the species it is important that both occupation evidence indications are mapped and noted. The Yellow-bellied glider has the following lifecycle characteristics that impair fecundity: a) Breeding occurs in Spring – relatively small breeding window b) Young stay in den for 2-3 months – clearing could occur when young are denning in the hollow c) Become dependant 18-24 months – mum needs to care for the young over a long time period (high risk of mortality) d) Sexual maturity when 2 years old, with a short lifespan	3.5, 3.5, 3.6
110	Section 7.3.7 Koala (Phascolarctos cinereus) p.389 Koalas exist through the project area. The area forms a regional corridor that facilitates and connects a wider koala population in the region. Despite the plethora of best practice approaches that could have been selected and outlined in the project that have been utilised in other local State projects, the documentation falls well short in several areas. Survey effort: Best practice koala surveys for several years now have included the use of thermal drones to gauge location of individuals and density of population. The project to date as shown in survey documentation utilises largely outdated and ineffective Koala Spot Assessment Techniques (SAT) which are subjective and rely extensively on the expertise of individual ecologists. Acoustic surveys were documented as having been used however no methodology for survey layout or locational detection detail of the results of this survey or others used have been provided. Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car. Table 89 fails to include koala habitat features, in particular heavily used food trees, as values requiring protection during micro-siting track development. These need to be included and adequately trained and experienced ecologists used that can identify them. During proposed clearing operations, Koalas are omitted from careful consideration. It is well known that visual detection of koalas from ground level even by highly experienced koala spotters is extremely poor. A study undertaken in NSW identified the following success rates for koala detection - 38.9 ± 20.03% for visual human detection /Spotlight, 83.3 ± 11.39% for RPAS and 4.2 ± 4.17% for SAT. The project documentation and proposed clearing methods significantly fall short of both identifying and protecting koalas during the clearing process, namely: There is no outline of specific methods for the clearance of koalas during the vegetation clearing works other than mentioning the use of Spotter Catchers. As such it is perceived to rely on spotter catcher and ecologist visual observation of koalas in trees prior to felling. Given that only 40% of koalas are able to be seen in trees from ground level, even by experienced spotters, it is an unacceptable and poor clearance technique. It does not include thermal drone surveys on the day of clearing which is the accepted best practice for recent State projects in the region, including TMR's Stage C & D Cooroy to Curra programs. Further, project documentation does not specify who undertakes the mentioned health and injury assessment of koalas encountered during clearing activities. Ecologists and Spotter Catchers DO NOT have sufficient knowledge, training or qualification to undertake koala health assessment before relocation. Relocation techniques are not mentioned within the project documentation and as such the techniques used cannot be assessed against the various animal welfare standards and Wildlife Codes of Practice. No koala health data has been provided as part of documentation that given an indication of the level of physiological stress of the population in the impact areas. As such the impact of the works, machinery and activities in the impact areas cannot be determined. This information needs to be released to all parties for consideration and analysis. No consideration of the impact of an extra 970 vehicle movements per day during the investigation stage on the local koala population has been provided. While a statement has been made about the likelihood of vehicle strike on site, it does not consider the impact the activities will have on the local road network, including an increase in dawn and dusk traffic travelling to and from the area. This includes the already high koala vehicle strike areas of the Mary Valley Highway, the Old Bruce Highway, Yabba Creek Rd, Mooloo-Kenilworth Rd etc. These are real impacts of the project on the koala population that have not been addressed in any way in the EIS response. Further to this, no consideration has been made nor discussions held with local volunteer wildlife rescuers or facilities mentioned in the documentation in regards to the treatment of animals requiring assistance. Local wildlife rescue support in the Mary Valley is extremely limited and the need for local Hydro staff to have training and hold equipment to respond in a timely manner is needed. As an example, in February 2025 a Whiptail Wallaby was hit by a car at the dam wall. It took over 3 hours for the animal to be attended to by the nearest available volunteer Trauma Carer based over an hours drive away (Woombye). It also needs to be noted that there is no Wildlife vet or hospital in the vicinity of the project site. The closest facilities for treatment of injured wildlife are located at Eumundi (RSPCA Wildlife Hospital) or Beerwah (Australia Zoo Wildlife Hospital). The lengthy delay in locating, rescuing and transporting injured wildlife extends the time an animal is suffering and frequently results in additional complications from stress related myopathy.	3.5, 3.5, 3.6
110	Survey effort: Best practice koala surveys for several years now have included the use of thermal drones to gauge location of individuals and density of population. The project to date as shown in survey documentation utilises largely outdated and ineffective Koala Spot Assessment Techniques (SAT) which are subjective and rely extensively on the expertise of individual ecologists. Acoustic surveys were documented as having been used however no methodology for survey layout or locational detection detail of the results of this survey or others used have been provided. Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car.	3.5, 3.5, 3.6
110	Table 89 fails to include koala habitat features, in particular heavily used food trees, as values requiring protection during micro-siting track development. These need to be included and adequately trained and experienced ecologists used that can identify them. During proposed clearing operations, Koalas are omitted from careful consideration. It is well known that visual detection of koalas from ground level even by highly experienced koala spotters is extremely poor. A study undertaken in NSW identified the following success rates for koala detection - 38.9 ± 20.03% for visual human detection /Spotlight, 83.3 ± 11.39% for RPAS and 4.2 ± 4.17% for SAT. The project documentation and proposed clearing methods significantly fall short of both identifying and protecting koalas during the clearing process, namely: There is no outline of specific methods for the clearance of koalas during the vegetation clearing works other than mentioning the use of Spotter Catchers. As such it is perceived to rely on spotter catcher and ecologist visual observation of koalas in trees prior to felling. Given that only 40% of koalas are able to be seen in trees from ground level, even by experienced spotters, it is an unacceptable and poor clearance technique. It does not include thermal drone surveys on the day of clearing which is the accepted best practice for recent State projects in the region, including TMR's Stage C & D Cooroy to Curra programs. Further, project documentation does not specify who undertakes the mentioned health and injury assessment of koalas encountered during clearing activities. Ecologists and Spotter Catchers DO NOT have sufficient knowledge, training or qualification to undertake koala health assessment before relocation. Relocation techniques are not mentioned within the project documentation and as such the techniques used cannot be assessed against the various animal welfare standards and Wildlife Codes of Practice. Further to this, no consideration has been made nor discussions held with local volunteer wildlife rescuers or facilities mentioned in the documentation in regards to the treatment of animals requiring assistance. Local wildlife rescue support in the Mary Valley is extremely limited and the need for local Hydro staff to have training and hold equipment to respond in a timely manner is needed. As an example, in February 2025 a Whiptail Wallaby was hit by a car at the dam wall. It took over 3 hours for the animal to be attended to by the nearest available volunteer Trauma Carer based over an hours drive away (Woombye). It also needs to be noted that there is no Wildlife vet or hospital in the vicinity of the project site. The closest facilities for treatment of injured wildlife are located at Eumundi (RSPCA Wildlife Hospital) or Beerwah (Australia Zoo Wildlife Hospital). The lengthy delay in locating, rescuing and transporting injured wildlife extends the time an animal is suffering and frequently results in additional complications from stress related myopathy.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	7.3.10 Mary River turtle, p.419 The Mary River turtle is now listed as critically endangered. Table 97 Habitat: Primarily quotes Sam Flakus research. A considerable number of papers have been published since Sam Flakus' research released that has improved our knowledge of Mary River turtle habitat Previous records: Col & Duncan Limpus and Sam Flakus undertook surveys around Borumba dam wall and caught Mary River turtle, post 1999 floods, indicating that the turtles were washed down from the Lake above in 1999 flood. Unsure if they caught any Mary River turtle above the wall. In the Survey area: Quoted from the document: "Nesting habitat for the Mary River turtle includes unconsolidated sediments, particularly alluvial sand banks, within 100m of pool habitat." Unsure about the reference to within 100m of pool habitat, while it is highly likely, unsure that there is research evidence. Predated nests have been observed on suitable sandbanks in the upper reaches and fringing habitat of Lake Borumba. Present threats: on page 421 the document is quoted "invasive weeds including Lantana camara, passionflower, Noogoora burr, Crofton weed, and mistflower grow in riparian zones degrading habitat"; while these species are some minor concern, they rarely impact on the turtle given their nesting habitat occurs on dynamic fluvial features (sand banks) in the river system which is regularly naturally reset by low to medium streamflows. Thus this regular resetting (accretion or retreat of the sand banks) rarely allows these weed species to colonise on these banks. This is not a key threat – very minor. As identified in the Conservation Advice, and on page 420, the key threat is predation of eggs in nests by foxes. Feral cats and Dingoes have minimal impact upon the Mary River turtle. Vegetation clearing, creation of road/track networks and increased human activity are likely to increase fox populations and movement, and directly impact upon the long-term turtle population. Table 98 Instream earthworks causing: Mitigation Options: It isn't clear what Qld Hydro plans to do should they find suitable breeding places. Unless maybe the Exclusion zone marked as 'no go' actually means if they find a suitable breeding place it will be marked as a 'no go'. Will this no-go zone stay for the entire duration of the incubation period of the turtle eggs – which is minimum 55 days, however can extend to over 80 days if cloudy or cooler weather conditions occur? Bed level crossings will be used for the initial 6 months of the project before the Bailey bridges are constructed. These bed level crossings will be used extensively during construction of the Bailey bridges and to access the tunnel area (up to 380 truck movements each day p.36), and will need to have regular (daily) maintenance with the risk that large rock material will be washed downstream impacting upon potential turtle nest banks. The temporary bed level crossings are planned to be constructed in April 2025 for use until Spring 2025 (maybe later if delays are incurred building the bridges); therefore these crossings could be in place during turtle nesting when they move distances to nest. With this many truck movements there is also the potential for continual downstream turbidity, and if the crossing is required to be maintained regularly there is the risk that the structure will be constructed above bed level thus impeding passage. While a low rock structure will likely have a low impact on turtles moving upstream (or downstream), that impact coupled with regular traffic and turbidity will likely result in a turtle abandoning potential nesting habitat upstream and downstream of the crossing. Changes to habitat quality…: Of the utmost importance is control of erosion and sediment. There is a risk that the spoil dump could uncontrollably release leachate-laden fine sediment rich water into Sandy and Yabba Creek during high rainfall events which visually appear (aerial photography analysis) to have suitable nesting habitat before entering Lake Borumba. Depending upon the leachate content of the release water and fine sediment content, this could significantly impact directly upon the turtle and its nesting habitat. While the actions identified broadly cover the impacts, there are still many unknown elements eg. leachate discharge from spoil dump, impact of three creek crossings from high traffic loads for a 6+ month period etc.. We encourage Qld Hydro to 'Rehabilitate exposed area as soon as possible' but it is difficult to determine what this actually entails, therefore we recommend Qld Hydro to sow a grass cover crop immediately, as well as other measures detailed. Injury and mortality…reference is made to identifying nesting habitat and pre-clearance checks prior to activity. If a nest is identified in the construction area or near creek crossings, these nests should be relocated to safer, more appropriate locations by an experienced and trained freshwater turtle expert. It is very difficult to detect a turtle nest site, and there are very few turtle nest experts with the experience of nest relocation although Tiaro Landcare and MRCCC have a number of experienced and trained ecologists capable of undertaking this work if necessary. Impacts to surface water quality et al from construction… This is a real risk to species such as the Mary River turtle. There is no reference made of the potential contamination of surface water quality to Sandy and Yabba Creeks from an uncontrolled release of leachate-laden spoil dump runoff if a high rainfall event overwhelms any systems built into the spoil dump location. The Water Quality Risk assessment (Appendix G) tends to under-estimate the potential for this scenario to occur, and simply recommends that 'coir logs' or like could be used to bund the spoil dump area which is likely to contain 1,000,000 tonnes of rock, blasted using nitrate-based explosives up to 5metres high (potentially 7m high). This area should be bunded with much more substantial materials than coconut coir logs; and the contamination risk should be treated with much greater respect to the environment than is currently given by Qld Hydro. The Snowy 2.0 project uses nitrate-based explosives, and there have been multiple water quality breaches of nitrate-laden releases into sensitive waterways.as Light impacts to turtles Natural light=dark cycle is vital to the survival of a vast number of species, essential for the correct synchronization of periodic behaviours. Light pollution at nesting beaches is detrimental to sea turtles because it alters critical nocturnal behaviours namely: 1. How sea turtles choose nesting sites 2. How they return to the sea after nesting 3. How hatchlings find the sea after emerging from their nests 4. Swimming hatchlings may orient towards light cues and can be lured to shore again Section 2.2.2.1 (p.35) Hours of Work states "Geotechnical drilling 24 hrs a day, 7 days a week for boreholes equal to or more than 200m deep and shallower boreholes by exception. Underground construction activities (including blasting) and associated enabling works are planned24 hours a day, 7 days a week. Works outside of the above listed construction hours may occur during the Project. Within the Construction Environment Management Plan, Appendix J: Exploratory works flora and fauna sub-plan, section 5 impacts and risks identifies light emissions impacts (section 5.7, p.26) and Table 11 (p.53). Management: Artificial light to be very low intensity during breeding season for both turtle species (specifically during nesting and hatching). Although no studies have been conducted on these species, guidelines can be drawn from marine turtle studies (same taxa) as Elusor and Elseya are generally nocturnal breeders. Marine turtles are particularly sensitive between violet and green wavelengths (400 to 500 nm) (Kamrowski, Limpus, Moloney & Hamann 2012. Coastal light pollution and marine turtles: assessing the magnitude of the problem. Endangered Species Research. Vol 19:85-98). Very little light is necessary to disrupt orientation of hatchlings. Lights to be installed away from potential turtle breeding locations. Any lights installed that throw any light onto breeding areas to be on a separate circuit so they can be switched off during breeding season. Monitoring: Light levels to be monitored around potential nesting beaches during nesting and hatching for both turtle species. Trigger for corrective action: If light levels are higher than 500 nm at potential turtle breeding locations, actions must be taken immediately to reduce light level to within acceptable range. Table 99 Lead to long-term decrease….. again only Sam Flakus and Departmental research referenced. Marilyn Connell paper from 2018 Table 1 clearly shows species abundance. The Qld Hydro document quotes "The disturbance or temporary loss of 0.4 ha of foraging habitat and 0.1 ha of nesting habitat within the Project footprint is unlikely to reduce available breeding, foraging, or dispersal resources such that this loss would likely lead to a long-term decrease in the size of the population". Using these figures tends to be irrelevant to the Mary River turtle; the use of these figures deliberately appears to create a situation that the impact is relatively small. By comparison total nesting habitat used by the turtle across the Mary River catchment is likely to total only approximately 1 to 2 hectares; given the small turtle population and their high site fidelity for specific nesting sand banks (Mary River Turtle Conservation Advice pg 10). If 0.1 ha of nest habitat is likely to be affected, that is a relatively large area of nesting habitat in the catchment. A typical nest bank is only 10m x 5m (0.005ha), and throughout the catchment there are 12 to 15 nest banks. The loss of any nest bank habitat is a significant impact to this species given there are so few breeding pairs. Reduce area of occupancy: same comment… poorly researched. Historical records suggest that the Mary River turtle demonstrates nest-site fidelity and returns to the same nesting sites each year. Nesting is concentrated on a small number of sand banks. Not all females show nest-site fidelity, given that fewer than half of the females recorded nesting during 2009 at sites along the Mary River were recorded as returning to the same nesting bank in 2010 and 2011 (Micheli-Campbell 2012; Micheli-Campbell et al. 2013a). While the turtle is known to occur across 200km of the Mary River, its nesting habitat is very, very specific within that 200km distribution. As detailed above, there are specific nesting sand banks that the turtle utilises, with high site fidelity, therefore there is not 200km of habitat available. The statement is misleading, and under-estimates the site specificity and value of core habitat such as nest banks. Fragment an existing population: quotes species occurs from Conondale to Tidal barrage at Tiaro, whereas previous paragraph says Kenilworth to Tiaro; somewhat inconsistent. The Mary River turtle within Lake Borumba has now been potentially isolated from the rest of the Mary River catchment for the past 60 years.	3.5, 3.5, 3.6
110	Present threats: on page 421 the document is quoted "invasive weeds including Lantana camara, passionflower, Noogoora burr, Crofton weed, and mistflower grow in riparian zones degrading habitat"; while these species are some minor concern, they rarely impact on the turtle given their nesting habitat occurs on dynamic fluvial features (sand banks) in the river system which is regularly naturally reset by low to medium streamflows. Thus this regular resetting (accretion or retreat of the sand banks) rarely allows these weed species to colonise on these banks. This is not a key threat – very minor. As identified in the Conservation Advice, and on page 420, the key threat is predation of eggs in nests by foxes. Feral cats and Dingoes have minimal impact upon the Mary River turtle. Vegetation clearing, creation of road/track networks and increased human activity are likely to increase fox populations and movement, and directly impact upon the long-term turtle population.	3.5, 3.5, 3.6
110	In the Survey area: Quoted from the document: "Nesting habitat for the Mary River turtle includes unconsolidated sediments, particularly alluvial sand banks, within 100m of pool habitat." Unsure about the reference to within 100m of pool habitat, while it is highly likely, unsure that there is research evidence. Predated nests have been observed on suitable sandbanks in the upper reaches and fringing habitat of Lake Borumba.	3.5, 3.5, 3.6
110	Instream earthworks causing: Mitigation Options: It isn't clear what Qld Hydro plans to do should they find suitable breeding places. Unless maybe the Exclusion zone marked as 'no go' actually means if they find a suitable breeding place it will be marked as a 'no go'. Will this no-go zone stay for the entire duration of the incubation period of the turtle eggs – which is minimum 55 days, however can extend to over 80 days if cloudy or cooler weather conditions occur? Bed level crossings will be used for the initial 6 months of the project before the Bailey bridges are constructed. These bed level crossings will be used extensively during construction of the Bailey bridges and to access the tunnel area (up to 380 truck movements each day p.36), and will need to have regular (daily) maintenance with the risk that large rock material will be washed downstream impacting upon potential turtle nest banks. The temporary bed level crossings are planned to be constructed in April 2025 for use until Spring 2025 (maybe later if delays are incurred building the bridges); therefore these crossings could be in place during turtle nesting when they move distances to nest. With this many truck movements there is also the potential for continual downstream turbidity, and if the crossing is required to be maintained regularly there is the risk that the structure will be constructed above bed level thus impeding passage. While a low rock structure will likely have a low impact on turtles moving upstream (or downstream), that impact coupled with regular traffic and turbidity will likely result in a turtle abandoning potential nesting habitat upstream and downstream of the crossing. Injury and mortality…reference is made to identifying nesting habitat and pre-clearance checks prior to activity. If a nest is identified in the construction area or near creek crossings, these nests should be relocated to safer, more appropriate locations by an experienced and trained freshwater turtle expert. It is very difficult to detect a turtle nest site, and there are very few turtle nest experts with the experience of nest relocation although Tiaro Landcare and MRCCC have a number of experienced and trained ecologists capable of undertaking this work if necessary. Management: Artificial light to be very low intensity during breeding season for both turtle species (specifically during nesting and hatching). Although no studies have been conducted on these species, guidelines can be drawn from marine turtle studies (same taxa) as Elusor and Elseya are generally nocturnal breeders. Marine turtles are particularly sensitive between violet and green wavelengths (400 to 500 nm) (Kamrowski, Limpus, Moloney & Hamann 2012. Coastal light pollution and marine turtles: assessing the magnitude of the problem. Endangered Species Research. Vol 19:85-98). Very little light is necessary to disrupt orientation of hatchlings. Lights to be installed away from potential turtle breeding locations. Any lights installed that throw any light onto breeding areas to be on a separate circuit so they can be switched off during breeding season.	3.5, 3.5, 3.6
110	Reduce area of occupancy: same comment… poorly researched. Historical records suggest that the Mary River turtle demonstrates nest-site fidelity and returns to the same nesting sites each year. Nesting is concentrated on a small number of sand banks. Not all females show nest-site fidelity, given that fewer than half of the females recorded nesting during 2009 at sites along the Mary River were recorded as returning to the same nesting bank in 2010 and 2011 (Micheli-Campbell 2012; Micheli-Campbell et al. 2013a). While the turtle is known to occur across 200km of the Mary River, its nesting habitat is very, very specific within that 200km distribution. As detailed above, there are specific nesting sand banks that the turtle utilises, with high site fidelity, therefore there is not 200km of habitat available. The statement is misleading, and under-estimates the site specificity and value of core habitat such as nest banks.	3.5, 3.5, 3.6
110	7.3.2 Black-breasted button-quail (Turnix melanogaster) p.337 Discrepancies were found regarding the breeding season of BBBQ in the document. The breeding season is 9 months (September to May). The document states, "To mitigate the impacts of clearing on breeding, the clearing of potential habitat will be timed to avoid the species breeding period (May June), where possible," which is incorrect. Mitigation of airborne particles includes "regular wetting down" p.344. Wetting down could eliminate platelets and therefore evidence of BBBQ presence in the area. Will Qld Hydro check areas for platelets before "wetting down " occurs?	3.5, 3.5, 3.6
110	Important populations, p.358.. According to the Conservation Advice for the species, "the main threat causing the decline of south-eastern Glossy black cockatoo is a result of habitat loss, degradation, and fragmentation. Historic land clearance was the main cause of decline in the past, leading to the loss of both feeding and breeding habitats". The estimated total number of mature individuals is 7,500, and is declining rapidly (Cameron et al. 2021). Glossy black cockatoo populations are known from within the Conondale Ranges, and the properties that adjoin these ranges. Given the extensive prime habitat of sheoak and large eucalypt trees throughout the Conondales, the population of Glossy black cockatoos identified near Area 4, Borgan, an area which will be highly impacted by vegetation clearing, workers, vehicles and tunnelling operations, should be considered an important population. Glossy black cockatoos have a highly specialised diet, with a preference for individual feed trees. They nest only in very old trees with large hollows, which can take centuries to form. They are a long lived species with a slow breeding cycle. The species is also culturally significant for traditional owners including the Kabi Kabi, Jinibara and Butchulla First Nations peoples.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Table 80, p.359 Vegetation clearing 1. Assess for location of nesting hollows, identify location and dimensions and record loss of hollows due to clearing. 2. Install purpose-designed nesting boxes Recommended monitoring as per "Habitat survey for Bushfire Recovery for Wildlife and Habitat Community Grants Program, GLENRAC, 2020" https://landcare.nsw.gov.au/groups/glenrac/providing-homes-and-habitat-for-gliders-glossy-black-cockatoos/ Acoustic monitoring of Glossy Black Cockatoos is a useful and informative technique to both assess the site for occurrence of the species but to also gauge the utilisation of nesting sites through call behaviour. Acoustic monitoring should be utilised for nest site monitoring in proposed Offset areas. A study on the natural nest hollows, and the strategic placement of artificial hollows is recommended. This recommendation is based upon findings by the Glossy Black Conservancy, Qld that "Strategic placement of hollows requires a better understanding of the status and supply of natural nest hollows in the landscape. A study of hollow-bearing trees in urban forest fragments on the Gold Coast revealed that while there was a relatively high availability of hollows compared to other regions, many of these hollows were small (10cm) and trees with larger hollows may be limiting (Treby and Castley 2015). Treby, D.L. and Castley, J.G. (2015). Distribution and abundance of hollow-bearing trees in urban forest fragments. Urban Forestry and Urban Greening, 14: 655-663. https://doi.org/10.1016/j.ufug.2015.06.004 Quoted from Glossy Black-Cockatoo Conservation Guidelines for south-eastern Queensland and far North-eastern New South Wales 2022. Glossy Black Conservancy, Cleveland, Qld.	3.5, 3.5, 3.6
110	On page 4 (Relevant MNES section) the list of MNES does not include the endangered Giant barred frog as a potential species impacted by WQ contamination from the project. Given this species spends a part of its lifecycle instream, and habitat exists in the project area, impacts from WQ contamination on this species and potentially the Cascade treefrog should be considered. The recently listed freshwater crayfish should also be considered for inclusion in the WQ risk assessment.	3.5, 3.5, 3.6
110	The report also states on page 20 that the "proposed disturbance areas are individually small but cumulatively significant". [Redacted] agrees. The tunnelling and spoil dump area located in such a difficult location on the banks of Sandy and Yabba Creeks, which flow into an urban water storage, can cumulatively have a significant impact on WQ. However, [redacted] does not agree that the bed level crossing construction is the main WQ contamination risk; the risk of uncontrolled leachate and fine sediment rich contaminated runoff from the spoil dump is of much greater risk. Snowy 2.0 has incurred a number of breaches of contaminated WQ releases (nitrates from urea-based explosives) into the environment. As a consequence [redacted] maintains this is one of the main WQ issues.	3.5, 3.5, 3.6
110	[Redacted] expectations 1. That Qld Hydro and their contractors understand the sensitive environment that they plan to work in, want to genuinely minimise risk and harm to this sensitive environment and take full accountability and responsibility of maintaining the highest environmental outcomes and standards as a result of these exploratory works activities. 2. That Qld Hydro sets in place a culture of continuous improvement and sense of pride to deliver the best possible outcomes established at the highest level and filtered to all operators / staff / subcontractors. Without assurances to deliver on these expectations, it is anticipated operators and their management will be focused on meeting time and budget demands and environmental management will be compromised. Qld Hydro Monitoring frequency The EMP is generic and conservative in its approach to monitoring regardless of the risk and regardless of time in delivery. The monitoring should be increased during the high risk periods and risk reassessed as the project progresses. With this methodology, a culture of continuous improvement and accountability can be established very early on and tolerances well defined by Qld Hydro. Quarterly and annual audits are not frequent enough in the early stages to establish these expectations. Audit intervals need to be designed based upon environmental risk. For example, the sequential clearing will require quarterly and annual audits. This level of monitoring by Qld Hydro is not frequent enough to prevent inappropriate clearing methods and to issue penalties for breaches into no go areas. Monitoring also needs a response system. Monitoring is fine when systems are operating as planned and no breaches are occurring, but a response system is required when breaches and non-compliance does occur. For instance, water quality monitoring programs will identify when compliance or non-compliance is occurring, but the next step of an action/ response plan for breaches is the most important component of a water quality monitoring program. Lines of communication between Qld Hydro EMP and contractor Site environmental plans (SEP) pp 22 o If this is the main avenue of communicating where the MNES issues are located for the contractor and sub-contractors, it is important that this is continuously reviewed and reworked to ensure it is absolutely fool proof. If there is any ambiguity, the contractor will have an opportunity to breach conditions based on lack of information. There must therefore be assurances that a quick response and turn-around time can be achieved as further delays could result in further breaches. Roles and responsibilities pp 22 – 24 o This is where the 'culture' can be well defined and words used to ensure all persons involved in the project are engaged in the environmental responsibility to continuously improve the delivery. Each contractor should be able to present a method of how this can be achieved. Communication o What backup is there in place of failed phone signal if an immediate breach has occurred to prevent further work and reduce further impacts to MNES?	3.5, 3.5, 3.6
110	Management of Environmental Elements (Flora , fauna, water quality, noise , dust, light pollution) FLORA & FAUNA DURING CLEARING Statement – unregulated clearing and inappropriate clearing methods will impact potential MNES fauna. Further loss of TEC beyond the authorised clearing limit will reduce the TEC total area resulting in less of this unique ecology Pre-clearance survey design falls short in two specific areas: 1) The treatment of koalas and the absence of best practice pre-clearance drone surveys and or use of detection dogs on the day of clearing. This practice was successfully implemented on the DTMR Cooroy to Curra clearing with zero wildlife fatalities – why is it not included in this project? This is incredibly important in this instance with the existence of EPBC listed glider species that are difficult to detect in the field. The wording in the CEMP need to be changed from 'should' to 'will/must'. Further the specific koala capture and relocation actions mentioned require more detail and caveats to ensure compliance with Wildlife Codes of Practice for handling and holding until suitable for the species release (ie nocturnal vrs diurnal species). 2) The treatment of hollow bearing trees, namely those that are not detected by ecologists and spotter catchers. To this end we request that ALL trees over 30cm DBH that hold possibility of hollows and hollow dwelling species (including small microbats and Feathertail Gliders) be control lowered to the ground as opposed to felled. Each hollow can then be searched, wildlife collected, hollow salvaged and re-mounted the same day with the animal's replaced into the hollows that night in areas directly adjoining the impact area. Sequential clearing (pp277) is to be done 'where possible'. Repetitive use of this wording provides contractors an opportunity to justify activity which does not protect the environment. It is suggested that sequential clearing will be done unless guided by Qld Hydro to do otherwise in consultation with the environmental manager. o Will timber worth logging be logged along all access tracks / proposed cleared areas? o Where will cleared vegetation stockpiles will be located? The CEMP states that all timber will be stored in the spoil dump area, but realistically will Qld Hydro transport timber fallen from Walkers Top down to Borgan (Area 4) – this is a massive round-trip over difficult terrain. It is highly likely the timber will remain on-site where it is cleared, particularly if from Walkers Top. o What is the volume of cleared material? o Will flora worth saving / transplanting / seed saving be done? o Will a chipper be used to mulch vegetation and how will fauna residing in stockpiles be protected? o Management of fauna and salvaging fauna from hollows – use of cherry picker is recommended. How will this be done practically in steep country? o What contingency plans are in place to relocate MNES fauna species found on the site? o Use of' blade and grubbing clearing methods' (pp369) is not recommended. Employing these methods can lead to gullies occurring in dispersive country. What methods will contractors employ if these commonly used techniques are not to be used? o Will access track design include whoa boys or spur drains? The latter is not recommended as cleared vegetation will be 'pushed' into no go zones and will further add to erosion with clays from dispersive soils reaching drainage lines. Whoa boys are preferred to slow traffic and ensure rainfall impacts are minimized. Will the contractor maintain these whoa boys / spur drains to prevent clays from entering waterways? Drainage issues has led to landslips in the HQPlantations estate. Drains need to be checked during rainfall events to prevent unanticipated consequences such as major landslips. o There is no mention of edge effects on the MNES communities, particularly surrounding the TEC area. Additional biosecurity measures would be required. A site specific approach to environmental management is required. Turtles o Mary River turtle (MRT) monitoring daily inspections will need to be undertaken by trained personnel skilled in Turtle nest observation and management and cannot be assigned to a contractor EO unless they have undertaken appropriate training and have genuine experience in identifying nesting sites. o If daily inspections are to monitor for hatchlings and hatchlings are observed, this should be identified as a stop works notice. Continued work will impact hatchlings. Also impacts of light on hatchling migration to the creek needs to be accounted for. o Mary River Turtle/White throated snapping turtle/stream frog exclusion fencing is recommended at key turtle nesting banks along the creek. How will this be achieved without additional clearing of riparian vegetation? What success does this have in a construction context? o MRT nest protection structures – pp 297' "...10cm grid –sized over nests) around key nesting reaches to prevent nesting turtles from accessing the construction areas". The sizing is wrong and the wording does not reflect the intent of the outcome. It is a confusing instruction. Furthermore, a protected nest would need to be left for 55+ (80) days. Is the proponent willing to leave a site for this length of time as a no go zone? o MRT breeding season ends in February, not January (pp 297). All other aquatic fauna o Table 4 identifies a generic mitigation to 'avoid construction on creek banks with dense overhanging riparian vegetation" and, "where possible retain suitable breeding places". Does the contractor have an ecologist skilled in identifying aquatic threatened species habitat to delineate these areas for exclusion? There are few experienced personnel with the key skills for these species. Some are located in the Mary River catchment. o Another mitigation measure should be to include a total fishing ban throughout the duration of the works. Transparency in Animal interactions o For transparency and community confidence, all wildlife interactions need to be reported by contractors and the Spotter Catcher and the reports made available to at least the Environment Stakeholder Group. Currently only negative wildlife interactions are identified as requiring report. Advanced Spotter Catcher Expertise o Inadequately experienced Fauna Spotted Catchers are regularly used on projects with negative outcomes. Due to the low permitting standards and no formalised course for Spotter Catchers to undertake, wildlife carers and wildlife facilities regularly receive injured animals not seen or not treated appropriately during clearing works. o Further, the ability for Fauna Spotter Catchers to subcontract or employ other non-permitted staff to work on projects under them without supervision exacerbates the above-mentioned issues. o We request QLD Hydro employs the highest standard Ecologists and Spotter Catchers with all operating individuals (not just permit holders) assessed for competence and compliance. General If breeding window avoidance is the practice recommended, Mary River turtle, October to February; White-throated snapping turtle, April to July; Mary River cod and Lungfish August to December, March is the only month for works to occur in aquatic areas. It is therefore very likely works will occur during the critical breeding / hatching periods for aquatic MNES species. Mitigation detailed in the EMP is therefore currently insufficient.	3.5, 3.5, 3.6
110	Qld Hydro Monitoring frequency The EMP is generic and conservative in its approach to monitoring regardless of the risk and regardless of time in delivery. The monitoring should be increased during the high risk periods and risk reassessed as the project progresses. With this methodology, a culture of continuous improvement and accountability can be established very early on and tolerances well defined by Qld Hydro. Quarterly and annual audits are not frequent enough in the early stages to establish these expectations. Audit intervals need to be designed based upon environmental risk. For example, the sequential clearing will require quarterly and annual audits. This level of monitoring by Qld Hydro is not frequent enough to prevent inappropriate clearing methods and to issue penalties for breaches into no go areas. Monitoring also needs a response system. Monitoring is fine when systems are operating as planned and no breaches are occurring, but a response system is required when breaches and non-compliance does occur. For instance, water quality monitoring programs will identify when compliance or non-compliance is occurring, but the next step of an action/ response plan for breaches is the most important component of a water quality monitoring program. Lines of communication between Qld Hydro EMP and contractor Site environmental plans (SEP) pp 22 o If this is the main avenue of communicating where the MNES issues are located for the contractor and sub-contractors, it is important that this is continuously reviewed and reworked to ensure it is absolutely fool proof. If there is any ambiguity, the contractor will have an opportunity to breach conditions based on lack of information. There must therefore be assurances that a quick response and turn-around time can be achieved as further delays could result in further breaches. Roles and responsibilities pp 22 – 24 o This is where the 'culture' can be well defined and words used to ensure all persons involved in the project are engaged in the environmental responsibility to continuously improve the delivery. Each contractor should be able to present a method of how this can be achieved. Communication o What backup is there in place of failed phone signal if an immediate breach has occurred to prevent further work and reduce further impacts to MNES?	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Management of Environmental Elements (Flora , fauna, water quality, noise , dust, light pollution) FLORA & FAUNA DURING CLEARING Statement – unregulated clearing and inappropriate clearing methods will impact potential MNES fauna. Further loss of TEC beyond the authorised clearing limit will reduce the TEC total area resulting in less of this unique ecology Pre-clearance survey design falls short in two specific areas: 1) The treatment of koalas and the absence of best practice pre-clearance drone surveys and or use of detection dogs on the day of clearing. This practice was successfully implemented on the DTMR Cooroy to Curra clearing with zero wildlife fatalities – why is it not included in this project? This is incredibly important in this instance with the existence of EPBC listed glider species that are difficult to detect in the field. The wording in the CEMP need to be changed from 'should' to 'will/must'. Further the specific koala capture and relocation actions mentioned require more detail and caveats to ensure compliance with Wildlife Codes of Practice for handling and holding until suitable for the species release (ie nocturnal vrs diurnal species). 2) The treatment of hollow bearing trees, namely those that are not detected by ecologists and spotter catchers. To this end we request that ALL trees over 30cm DBH that hold possibility of hollows and hollow dwelling species (including small microbats and Feathertail Gliders) be control lowered to the ground as opposed to felled. Each hollow can then be searched, wildlife collected, hollow salvaged and re-mounted the same day with the animal's replaced into the hollows that night in areas directly adjoining the impact area. Sequential clearing (pp277) is to be done 'where possible'. Repetitive use of this wording provides contractors an opportunity to justify activity which does not protect the environment. It is suggested that sequential clearing will be done unless guided by Qld Hydro to do otherwise in consultation with the environmental manager. o Will timber worth logging be logged along all access tracks / proposed cleared areas? o Where will cleared vegetation stockpiles will be located? The CEMP states that all timber will be stored in the spoil dump area, but realistically will Qld Hydro transport timber fallen from Walkers Top down to Borgan (Area 4) – this is a massive round-trip over difficult terrain. It is highly likely the timber will remain on-site where it is cleared, particularly if from Walkers Top. o What is the volume of cleared material? o Will flora worth saving / transplanting / seed saving be done? o Will a chipper be used to mulch vegetation and how will fauna residing in stockpiles be protected? o Management of fauna and salvaging fauna from hollows – use of cherry picker is recommended. How will this be done practically in steep country? o What contingency plans are in place to relocate MNES fauna species found on the site? o Use of' blade and grubbing clearing methods' (pp369) is not recommended. Employing these methods can lead to gullies occurring in dispersive country. What methods will contractors employ if these commonly used techniques are not to be used? o Will access track design include whoa boys or spur drains? The latter is not recommended as cleared vegetation will be 'pushed' into no go zones and will further add to erosion with clays from dispersive soils reaching drainage lines. Whoa boys are preferred to slow traffic and ensure rainfall impacts are minimized. Will the contractor maintain these whoa boys / spur drains to prevent clays from entering waterways? Drainage issues has led to landslips in the HQPlantations estate. Drains need to be checked during rainfall events to prevent unanticipated consequences such as major landslips. o There is no mention of edge effects on the MNES communities, particularly surrounding the TEC area. Additional biosecurity measures would be required. A site specific approach to environmental management is required. Turtles o Mary River turtle (MRT) monitoring daily inspections will need to be undertaken by trained personnel skilled in Turtle nest observation and management and cannot be assigned to a contractor EO unless they have undertaken appropriate training and have genuine experience in identifying nesting sites. o If daily inspections are to monitor for hatchlings and hatchlings are observed, this should be identified as a stop works notice. Continued work will impact hatchlings. Also impacts of light on hatchling migration to the creek needs to be accounted for. o Mary River Turtle/White throated snapping turtle/stream frog exclusion fencing is recommended at key turtle nesting banks along the creek. How will this be achieved without additional clearing of riparian vegetation? What success does this have in a construction context? o MRT nest protection structures – pp 297' "…10cm grid –sized over nests) around key nesting reaches to prevent nesting turtles from accessing the construction areas". The sizing is wrong and the wording does not reflect the intent of the outcome. It is a confusing instruction. Furthermore, a protected nest would need to be left for 55+ (80) days. Is the proponent willing to leave a site for this length of time as a no go zone? o MRT breeding season ends in February, not January (pp 297). All other aquatic fauna o Table 4 identifies a generic mitigation to 'avoid construction on creek banks with dense overhanging riparian vegetation" and, "where possible retain suitable breeding places". Does the contractor have an ecologist skilled in identifying aquatic threatened species habitat to delineate these areas for exclusion? There are few experienced personnel with the key skills for these species. Some are located in the Mary River catchment. o Another mitigation measure should be to include a total fishing ban throughout the duration of the works. Transparency in Animal interactions o For transparency and community confidence, all wildlife interactions need to be reported by contractors and the Spotter Catcher and the reports made available to at least the Environment Stakeholder Group. Currently only negative wildlife interactions are identified as requiring report. Advanced Spotter Catcher Expertise o Inadequately experienced Fauna Spotted Catchers are regularly used on projects with negative outcomes. Due to the low permitting standards and no formalised course for Spotter Catchers to undertake, wildlife carers and wildlife facilities regularly receive injured animals not seen or not treated appropriately during clearing works. o Further, the ability for Fauna Spotter Catchers to subcontract or employ other non-permitted staff to work on projects under them without supervision exacerbates the above-mentioned issues. o We request QLD Hydro employs the highest standard Ecologists and Spotter Catchers with all operating individuals (not just permit holders) assessed for competence and compliance. General If breeding window avoidance is the practice recommended, Mary River turtle, October to February; White-throated snapping turtle, April to July; Mary River cod and Lungfish August to December, March is the only month for works to occur in aquatic areas. It is therefore very likely works will occur during the critical breeding / hatching periods for aquatic MNES species. Mitigation detailed in the EMP is therefore currently insufficient.	3.5, 3.5, 3.6
110	WATER QUALITY DURING ALL ACTIVITIES Statement - Inability to meet water quality objectives will impact downstream MNES fauna o Event sampling – there are no records of what the water quality results were during periods of heavy rain to place a background tolerance for occasions when the sites become inundated. As an example the Queensland Department of Transport and Main Roads (DTMR) conducted 2 years of event sampling (24 months minimum for seasonal variation) to obtain water quality results which then guided Erosion and Sediment Control and understanding of the natural loads of the system prior to major construction works. The Qld Hydro CEMP is based on regular 6 month monitoring leading up to commencement of construction work which is insufficient to gain a clear indication of water quality. Further, when does the actual start of 'construction work' commence? Gathering baseline data before any construction work will be difficult given that work will commence once the approval is given by the Australian Government. o Daily monitoring - Turbidity, pH and visuals are recorded by the contractor for monitoring purposes however, the EMP does detail risks from nitrates leaching from use of explosives. E-coli from contractor laydown areas / toilets is also a point source pollution to be monitored especially after rain events. In addition, heavy metals can also leach at this time. Pp 347 states there were noted exceedances of some heavy metals at sampling sites. What is not known is the threshold beyond which downstream MNES fauna will be directly impacted.. o 'Nitrate loaded water' (pp366) to be reused as underground service water. Then what happens to this water which presumably will still have nitrates? o WATER MONITORING – [redacted] recommends an INDEPENDENT WATER MONITOR, based on experience from involvement with large scale DTMR projects. The monitoring conducted by contractors is dubious at times, and often does not occur during key times, ie rainfall events, post rainfall, flow events; is not timely to address issues and tends to be a task given to inexperienced operators. The water monitoring plan does need to be tailored to capture the suite of parameters expected to be problematic in the local environment. o Clean water diversions round the stands should be a requirement not an 'if feasible' option. If clean water cannot be channelled around the site, the sediment basins will be overwhelmed and it will become highly likely leachate-laden water will be 'released to the environment'. The site is compact, and surrounded by difficult terrain. Diversion banks and measures to contain water, and provide construction area will be extremely difficult. Pp 113 states that 'where permitted by design and site space, a clean water diversion bank or similar should be constructed at the top of the activity zone…". This is unacceptable and offers the contractor a get out clause. Clean water diversions should be mandatory. o Pp116 states that 'where disturbed areas are not being worked for long periods (>30 days), temporary stabilisation treatments are to be considered, especially during summer (Dec – Feb). This demonstrates lack of attention to site specific conditions and the requirement for the contractor to plan for future weather events, undertaking risk assessments as required. There can be no assumptions made on wet vs dry season. Storms can happen at anytime. Usually BOM provides notice during which time plans can be made to reduce the impacts. This tailored approach needs to filter through in the contractors EMP. o Do we understand the impact of Floculant to MNES if a water quality breach occurs? Snowy 2.0 has had a number of water quality breaches, so it is highly likely to occur with this project. o Sediment traps will be emptied within 5 days of filling and spoil to be stored in the spoil area. How will this be possible when the site is likely to be closed following heavy rain with road access impassable particularly early in the construction before proper roads are complete with drainage infrastructure etc. And it is highly likely that sediment traps will need to emptied on a more regular basis than 5 days when heavy rainfall is occurring. o There appears to be some discrepancies with responsibilities in table 4 pp 362. Why is the environmental manager not given joint responsibility for Kingaham Creek, site access / new access tracks? o Tunnel spoil site – what is the plan if Borumba PHES does not go ahead? Where will all the spoil material go? There seems very little land available for it to be spread within the landform contour as detailed in the EMP. Will it be trucked out to paddocks downstream? o Tunnel spoil – if Borumba PHES does go ahead, and the spoil is inundated, how will resultant turbidity and leachates be controlled and stopped from entering waterways? Or will it be trucked out requiring road upgrades, which has been ruled out in the Preliminary Documentation providing the reason for the poorly located spoil dump on the banks of Sandy and Yabba Creek, requiring 3 creek crossings to move the spoil from the tunnel to the spoil dump. o It is noted that Kingaham spoil area will be placed at 1% AEP but there does not appear any reference to AEP objective for the tunnel spoil site. o Pp 352 discusses the spoil management and use of silt fence and coir logs as a minimum to manage any lateral movement of sediment towards the creek. The spoil site will be 5m – 7m high. A silt fence would quickly become overwhelmed and is not a realistic mitigation measure. Secure bunding of this nitrate-rich spoil water is required to maintain the environmental values of Sandy and Yabba Creeks. What contingency plans and redundancies will be in place if a spill/breach occurs and what additional 'room' will be needed to install a second bunding measure? o Pp 353 and 354 discusses the benefits of dilution effects from contaminants if entering the Lake Borumba bottom storage and that little would go past the Imbil weir. This implies that Qld Hydro do not take seriously avoidance of potential water quality breaches, and the Lake will solve these breaches. Wording such as 'unlikely' 'lower risk' for potential impacts to MNES is an oversight which dismisses the importance of addressing these issues. o Tunnelling activities will be 24/7 and 12 hours /7 days a week for all other activities. This presents considerable pressure on all fauna drawn to night lights and requiring calling for breeding / foraging activities.	3.5, 3.5, 3.6
110	Specific items contained in the CEMP Pp 177 mentions spoil from vegetation as presenting a high fire hazard and with controls reduced to medium. How will they control the volume and reduce the fire hazard? Has potential ash contamination on Borumba water supply been considered if a bushfire occurs? Pp215 water with "nitrates reused underground service water" – not sure what is underground service water. Pp 219 green waste processing - "for surplus material transported for green waste processing. Some reused onsite and weeds treated and some felled trees placed on ground as habitat" - The sheer volumes need to be better understood. This overlooks a massive 'green waste issue'. Pp221 waste water transported to appropriate licensed facility for treatment and disposal (wash down and waste water) - where would this be located? What volume of waste water is likely? Pp224 Qld Hydro do not have an agreement yet with Gympie Regional Council for sewage collection and disposal. At this stage there may be an agreement with South East Queensland water utility, Unity Water.. Pp236/7 Flora and fauna … does not mention the temporary barrier to terrestrial fauna corridors - light / physical / vehicle movement/ human etc. Terrestrial fauna have established corridors and migratory paths for foraging and breeding. This is not addressed in the mitigation (pp 289) Pp239 Reporting … Any fauna sightings and/or road kill regardless of MNES should be reported as contractors may not be able to distinguish the difference. Reporting on sightings and road kill will inform the locations of fauna corridors and guide site specific mitigation.. Pp 239 What does it mean "FSC report on a regular basis"? This should be tailored to the activity risk ie initial clearing etc. For example, daily initially and maybe weekly as project progresses Pp239….Potentially site staff could attend night walks with local experts eg [redacted] (Wildcare Australia) to better understand first-hand the night fauna – better than just toolbox alone. Toolboxes can be too academic, appear as though the risk is at arm's length and not really relevant – can be seen as a box ticking exercise. Needs to be more imaginative to build awareness and understand with training otherwise there is no genuine care for natural assets. Pp245 would be useful to have on the map the RE status next to the RE in the legend. It's very difficult to tell which is the least concern RE Pp 252 why does the explosive compound have to be so close to the subtropical eucalypt floodplain forest, with potential for bushfire risk. Pp274 says 10cm grid size mesh over turtle nests. Should be much smaller 5cm? Pp277 is the "use of cherry picker, drone or tree climber" Pp277 is it even possible to clear the site of fauna using a smoking technique simulating a bushfire? Pp277 how can Qld Hydro "maintain a habitat link" along an access road. Presumably the canopy won't be a closed canopy? Pp279 instead of treating only "large infestations" (eg weeds Cats Claw Vine and Giant Rats Tail grass), general biosecurity obligation should be to treat all infestations or else they become large infestations – need for a comprehensive weed management plan, with surveillance and early detection, rapid response measures. Erosion and sediment control sub plan - this is really very comprehensive and appears to be broadly best practice but from experience how that is implemented in the field, maintained, improved etc is the most important aspect. [Redacted] requests to review the contractor's final Erosion and Sediment Control plan to identify improvements or issues based on local knowledge [redacted] recommends a clause in the EMP that additional measures needed during construction will undergo a full flora and fauna impact assessment and consultation prior to implementation.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Section 7.3.5 p.368 Greater Glider Greater Glider – Petauroides volans, Endangered 33.9 ha of habitat to be cleared in Exploratory works project. A total of five records of greater glider (southern and central) were detected within the Borumba PHES Survey Area. One observation was recorded in the Exploratory Works Survey area along Walkers Top Road in Area 3 – Walkers Top. 33.9 ha of habitat occurs in the Exploratory Works survey area, which will all be cleared. Survey Effort: Appendix K - Table M4 identifies the survey methodology and effort for Greater Gliders and other nocturnal species. The document identifies a Victorian Spotlighting Method which is substandard (at 2 observers over 40 minutes and over 1km) compared to the Qld Terrestrial Vertebrate Fauna Guidelines for Spotlighting which is 30 person minutes over a 100m x 100m site. The document mentions that some areas were spotlight surveyed from a moving car which does not align with any accepted survey methodology and would be ineffectual in nature. Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car. The survey results are deficient given the KNOWN inadequacies of spotlight surveys for Greater Glider detection at under 7% effective for transect surveys and 25% for patch surveys (Lindenmayer et al. 2001). No spotlighting surveys occurred in Spring and as such the life-cycle and maternal stages of the species were not covered adequately. Emerging (and known to the project team) best practice methodologies for Greater Gliders including Thermal Drone surveys and Scat Detection Dogs were not employed for identifying the occupation and density of Greater Gliders in the Impact areas. Consequently, the value of the area and the impact of the clearing works on the population can not be feasibly determined. Qld Hydro plans to undertake vegetation clearing of prime habitat to establish roads, access tracks and facilitate the geotechnical investigations. This work will fragment high quality habitat and involve clearing up to 11 hollow-bearing trees for supporting infrastructure in Area 4 – Borgan, and clearing up to 16 hollow-bearing trees for temporary water infrastructure, access tracks and geotechnical investigations in Area 3 – Walkers Top. As quoted on p.369 “the Borumba PHES Survey area supports large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees, it is considered to support habitat critical to the survival of the species”. Disturbance to Greater Gliders is problematic of a species that are Endangered to Extinction, as they are slow to recover due to their life history traits, they have high site fidelity, low fecundity, and limited dispersal ability. Greater Gliders are unlikely to move from their home range. Greater Gliders prefer mature, relatively undisturbed forests with significant importance placed on mature habitat to provide refuge during and in the aftermath of a disturbance event. Tree cover and mature trees are especially significant as feed trees and den trees. Cally, JG, Macak, PV, Chick, MP, Blake, B, Wagner, B & Ramsey, DSL 2025, ‘Mature forest habitat mitigates the decline of an endangered greater glider population through a widespread disturbance event. Greater Gliders will use hollows from 10cm in diameter and larger. Every hollow is important for the future survival of the species; the species is known to use upward of 18+ hollows. The treatment of hollows (replacement and removal) is not clear throughout the document. In some sections there is the statement that salvaged hollows will be prioritised to the Offset sites as opposed to re-installation adjoining the impact site where the actual animals that are using them will remain after translocation. The proposed installation of nest boxes prior to the felling of hollow bearing trees and over 100 hollows lost, rests on the assumption that the translocated animals will take them up, an assumption that is not based in solid science given the early stage of knowledge collectively known on this topic. [Redacted] maintains that all hollows felled should be relocated in close proximity to the felled tree and within the same territory of the animal that resided within it. It is more likely that the animal with take up occupation of the hollow given their familiarity to it than a new nest box. Any animal found to be within a nesting hollow during clearing works should have the nesting hollow re-mounted in a tree in close proximity (within 100m) of the original location and the animal placed back within it. This facilitates continuance of habitat within the same territorial area as opposed to hard released without a familiarised hollow at night. This is standard practice in wildlife rehabilitation and rescue for displaced wildlife and should be the case also in this project. Currently, the documented approach does not stipulate this, only stating that the animal will be released at night. Greater Gliders are sensitive to heat. Natural hollows in trees are much cooler than surrogate hollows; extreme heat inside surrogate hollows and incorrect placement will lead to Greater Gliders spending time outside the hollow to regulate body temperature, which could lead to mortality and increased predation events. The Exploratory Works Flora and Fauna Management Sub-plan - Appendix D -Tree hollow replacement strategy, should consider that Greater Glider boxes are rear-facing and should not be mounted in tree species that shed large strips of bark as they can obscure and block the hollow entrance over time. Peer-reviewed literature on the ecology and behaviour of the Greater Glider includes extreme sensitivity to disturbance, often resulting in death and reduced population numbers. These include reduced population numbers within a 1km radius of previous land clearing, fire, or logging activities. The species will often not move on during activities and will likely perish (similar behaviour to Koala (Phascolarctos cinereus). The preliminary document fails to recognise the following important factors of this species, that contribute to their fragile population status which emphasises the importance of the Exploratory works habitat. The Greater Glider has the following lifecycle characteristics that impair fecundity: a. Breeding occurs between March and June – relatively small breeding window b. One joey per litter – recruitment is low given only single joey per litter c. Stays with mum in pouch until it’s 9 months old – mum needs to care for the young over a long time period (high risk of mortality) d. Sexual maturity 18 months and live for only 15 years e. Solitary, and some males are monogamous The Greater Glider has a strong home range fidelity, requires habitat of old growth forest ecosystems and will disperse 3km from their selected dens. Greater Gliders need up to 6 dens which are required for daytime shelter and night-time housing of offspring (they do not glide with offspring on their back). McGregor, D, Nordberg, E, Yoon, HJ, Youngentob, K, Schwarzkopf, L & Krockenberger, A 2023, ‘Comparison of home range size, habitat use and the influence of resource variations between two species of greater gliders (Petauroides minor and Petauroides volans)’, PloS one, vol. 18, no. 10, pp. e0286813–e0286813. This occurrence was recently supported by genetic findings from Scat surveys conducted in Tiaro by Noosa Landcare in 2024, where closely related individuals that have the same DNA sequence (called Haplotypes - typically mother-child or sibling relationships) were found over 3.7km apart. apart. 15 | P a g e This has significance for the project’s proposed delayed/ staged rollout of Greater Glider Nest Boxes at the Offset site as detailed in the Exploratory Works Offset Area Management Plan. Nest boxes and other hollow augmentation should all be installed early in the project so that they could be taken up by dispersing individuals that may travel a distance to a new territorial area. Research indicates that species decline due to habitat fragmentation could result in possible extinction within 50 years as a result of population size and inbreeding. Mulley, B, Gracanin, A & Mikac, KM 2024, ‘Population Viability of an Endangered Population of Greater Gliders (Petauroides volans) and Management Implications’, Conservation, vol. 4, no. 4, pp. 871–887. As identified on p.369, this location is prime habitat for the species and there will be 33.9 ha of habitat clearing, coupled with much increased traffic and human interaction causing fragmentation which could assist in species decline to the point of local extinction. Qld Hydro states on p.371 that tracks and disturbance will only be 6m wide. However, the presence of vehicles machinery, humans, light and noise will likely cause broader fragmentation (indirect fragmentation) of these previously high quality habitats, resulting in species decline and possible local extinction. More vehicle and human interaction within this prime habitat could also lead to increased bushfire threat, which is a key threatening process for the species. Research has shown that the impacts of fire and logging on hollow dependent arboreal marsupials significantly reduces the abundance of the Greater Glider through the loss of hollow bearing trees and forest canopy. McLean, CM, Kavanagh, RP, Penman, T & Bradstock, R 2018, ‘The threatened status of the hollow dependent arboreal marsupial, the Greater Glider (Petauroides volans), can be explained by impacts from wildfire and selective logging’, Forest ecology and management, vol. 415–416, pp. 19. The clearing of Greater Glider habitat for new roads/tracks and pipelines will lead to loss of hollow bearing trees (as identified by QH), open the forest canopy and expose the prime habitat to increased fire risk due to presence of greater vehicle and human interaction. It is therefore necessary to have a fire strategy plan developed that is embedded through the construction program and links to Qld Parks and Wildlife, HQPlantations and local fire groups, creating a coordinated approach to fire containment or management. Qld Hydro has identified “likely” impact on these three criteria: 1. Adversely affect habitat critical to the survival of a species. 2. Disrupt the breeding cycle of a population. 3. Interfere with the recovery of the species. [Redacted] contends it is “highly probable” to “Lead to a long-term decrease in the size of the population” through clearing of 33ha of prime habitat compared to fragmentation via roads, tracks, pipelines and greater human disturbance. [Redacted] recommends avoidance of further fragmentation by road/ track construction and pipelines to ensure a viable population of Greater Gliders can be maintained in this largely undisturbed habitat. It is recommended that Qld Hydro further consolidate their road/track network to prevent further fragmentation, avoiding the larger trees that are recognised as providing essential habitat and retain the hollow bearing trees identified (no loss of hollow bearing trees). In the section on impacts to Greater Gliders from clearing vegetation and habitat degradation, the document mentions the preservation of “sap trees” for Greater Gliders, which are folivores feeding on Eucalyptus spp). There seems to be confusion here with the requirements of the Yellow-bellied glider. Further, the statement made regarding the preference of Eucalyptus mollucana for Greater Glider is not correct. In the South East Queensland Bioregion, several other trees species hold much higher significance to the species (Eyre et al 2022).	3.4, 3.5, 3.6
110	Survey Effort: Appendix K - Table M4 identifies the survey methodology and effort for Greater Gliders and other nocturnal species. The document identifies a Victorian Spotlighting Method which is substandard (at 2 observers over 40 minutes and over 1km) compared to the Qld Terrestrial Vertebrate Fauna Guidelines for Spotlighting which is 30 person minutes over a 100m x 100m site. The document mentions that some areas were spotlight surveyed from a moving car which does not align with any accepted survey methodology and would be ineffectual in nature. Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car. The survey results are deficient given the KNOWN inadequacies of spotlight surveys for Greater Glider detection at under 7% effective for transect surveys and 25% for patch surveys (Lindenmayer et al. 2001). No spotlighting surveys occurred in Spring and as such the life-cycle and maternal stages of the species were not covered adequately. Emerging (and known to the project team) best practice methodologies for Greater Gliders including Thermal Drone surveys and Scat Detection Dogs were not employed for identifying the occupation and density of Greater Gliders in the Impact areas. Consequently, the value of the area and the impact of the clearing works on the population can not be feasibly determined.	3.4, 3.5, 3.6
110	The treatment of hollows (replacement and removal) is not clear throughout the document. In some sections there is the statement that salvaged hollows will be prioritised to the Offset sites as opposed to re-installation adjoining the impact site where the actual animals that are using them will remain after translocation. The proposed installation of nest boxes prior to the felling of hollow bearing trees and over 100 hollows lost, rests on the assumption that the translocated animals will take them up, an assumption that is not based in solid science given the early stage of knowledge collectively known on this topic. [Redacted] maintains that all hollows felled should be relocated in close proximity to the felled tree and within the same territory of the animal that resided within it. It is more likely that the animal with take up occupation of the hollow given their familiarity to it than a new nest box. It is therefore necessary to have a fire strategy plan developed that is embedded through the construction program and links to Qld Parks and Wildlife, HQPlantations and local fire groups, creating a coordinated approach to fire containment or management. Qld Hydro has identified “likely” impact on these three criteria: 1. Adversely affect habitat critical to the survival of a species. 2. Disrupt the breeding cycle of a population. 3. Interfere with the recovery of the species. [Redacted] contends it is “highly probable” to “Lead to a long-term decrease in the size of the population” through clearing of 33ha of prime habitat compared to fragmentation via roads, tracks, pipelines and greater human disturbance. [Redacted] recommends avoidance of further fragmentation by road/ track construction and pipelines to ensure a viable population of Greater Gliders can be maintained in this largely undisturbed habitat. It is recommended that Qld Hydro further consolidate their road/track network to prevent further fragmentation, avoiding the larger trees that are recognised as providing essential habitat and retain the hollow bearing trees identified (no loss of hollow bearing trees).	3.4, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
110	Section 7.3.12 p.441 Yellow-bellied glider. Of the 21 records of Yellow-bellied glider detected within the Borumba PHES Survey area, the majority (19 observations) were recorded in the Exploratory Works Survey area indicating that the exploratory works area will have a major impact on the local population. 685 ha of denning habitat and 15 ha of foraging habitat occurs in the Exploratory Works Survey area. 34.1 ha of habitat plans to be cleared by Qld Hydro in the Exploratory project area The Project would result in the clearing of 34 ha of Yellow-bellied glider habitat. Habitat clearing has the potential to result in habitat fragmentation for the species, if patches of suitable habitat become isolated from other areas of suitable habitat. It should be noted that many of the impacts on Greater Gliders detailed previously in this submission also apply to the Yellow-bellied glider ie fragmentation, fire risk due to increased human activity etc. Survey Effort: • Appendix K - Table M4 identifies the survey methodology and effort for Yellow Bellied Glider and other nocturnal species. The document identifies a Victorian Spotlighting Method which is substandard (at 2 observers over 40 minutes and over 1km) compared to the Qld Terrestrial Vertebrate Fauna Guidelines for Spotlighting which is 30 person minutes over a 100m x 100m site. The document mentions that some areas were spotlight surveyed from a moving car which does not align with any accepted survey methodology and would be ineffectual in nature. • Appendix M – Table 2.6.The document identifies the number of survey hours that were conducted over the larger Borumba Hydro site but it does not show nor specify how many transects or surveys and survey hours that were conducted specifically within the impact area subject to the Investigatory Works application nor does it show the areas inadequately surveyed from a moving car. No spotlighting surveys occurred in Spring and as such the life-cycle and maternal stages of the species were not covered adequately. It is unclear if the detections noted within the Survey reports are incidents of glider sightings and / or feed tree locations. Given the large territorial size of the species it is important that both occupation evidence indications are mapped and noted. The Yellowbellied glider has the following lifecycle characteristics that impair fecundity: a) Breeding occurs in Spring – relatively small breeding window b) Young stay in den for 2-3 months – clearing could occur when young are denning in the hollow c) Become dependant 18-24 months – mum needs to care for the young over a long time period (high risk of mortality) d) Sexual maturity when 2 years old, with a short lifespan Within the Construction Environment Management Plan Section 6.1.3, it was concerning to see that reference was made to assessing sap trees using the existence of a 'V' shaped scar. Yellow-bellied glider have a wide variety of sap groove patterns that are often geographic specific. For example, in the Cooloola population, groves are shaped as a mainly horizontal sloping scar up to a foot long. In the Carnarvon population the groove comprises a horizontal dash (- - - -) pattern. Ecologists and Spotter Catchers must have knowledge of this in order to undertake micro-siting adequately. Like the Greater Glider, there is a positive relationship between the number of hollow bearing trees and occurrence of arboreal species given that they cannot persist in areas where hollow bearing trees are absent. Lindenmayer, DB, Blanchard, W, Blair, D, McBurney, L, Taylor, C, Scheele, BC, Westgate, MJ, Robinson, N & Foster, C 2021, 'The response of arboreal marsupials to long-term changes in forest disturbance', Animal conservation, vol. 24, no. 2, pp. 246–258. The hollow wall thickness was the primary determinant of protective value for hollow dependent species such as the Yellow-bellied glider. Therefore larger trees with hollows were extremely valuable to maintaining viable populations of gliders. Zylstra, P 2023, 'Quantifying the direct fire threat to a critically endangered arboreal marsupial using biophysical, mechanistic modelling', Austral ecology, vol. 48, no. 2, pp. 266–288. The treatment of hollows (replacement and removal) is not clear throughout the document. In some sections there is the statement that salvaged hollows will be prioritised to the Offset sites as opposed to re-installation adjoining the impact site where the actual animals that are using them will remain after translocation. The proposed installation of nest boxes prior to the felling of hollow bearing trees and over 100 hollows lost, rests on the assumption that the translocated animals will take them up, an assumption that is not based in solid science given the early stage of knowledge collectively known on this topic. [Redacted] maintains that all hollows felled should be relocated in close proximity to the felled tree and within the same territory of the animal that resided within it. It is more likely that the animal with take up occupation of the hollow given their familiarity to it than a new nest box. Any animal found to be within a nesting hollow during clearing works should have the nesting hollow re-mounted in a tree in close proximity (within 100m) of the original location and the animal placed back within it. This facilitates continuance of habitat within the same territorial area as opposed to hard released without a familiarised hollow at night. This is standard practice in wildlife rehabilitation and rescue for displaced wildlife and should be the case also in this project. Current the documented approach does not stipulate this, only stating that the animal will be released at night. [Redacted] does not agree that the project is unlikely to directly result in the alteration to bushfire regimes, given the scale of vehicle movements and human interaction likely to occur in this relatively inaccessible prime forest habitat for these threatened glider species. Similarly, [redacted] does not agree that the project is unlikely to reduce the area of occupancy of an important population. Since the EPBC listing of gliders, habitat destruction and population decline has continued both directly (deforestation) and indirectly (wildfire facilitated by human induced climate change). Ashman, KR, Watchorn, DJ, Lindenmayer, DB & Taylor, MFJ 2022, 'Is Australia's environmental legislation protecting threatened species? A case study of the national listing of the greater glider', Pacific conservation biology, vol. 28, no. 3, pp. 277–289. Therefore it appears as though this species is exposed to 'death by a 1000 cuts' whereby each project declares only a small proportion of their habitat is being lost (in this instance 34 ha) of a much larger habitat area; but still their habitat is continually declining irrespective of their EPBC listing. Similar to the Greater Glider, [redacted] sees the Exploratory works as having a likely impact on the Yellow-bellied glider, requiring far greater protection measures than detailed in the Preliminary Documentation.	3.4, 3.5, 3.6
110	Within the Construction Environment Management Plan Section 6.1.3, it was concerning to see that reference was made to assessing sap trees using the existence of a 'V' shaped scar. Yellow-bellied glider have a wide variety of sap groove patterns that are often geographic specific. For example, in the Cooloola population, groves are shaped as a mainly horizontal sloping scar up to a foot long. In the Carnarvon population the groove comprises a horizontal dash (- - - -) pattern. Ecologists and Spotter Catchers must have knowledge of this in order to undertake micro-siting adequately. Like the Greater Glider, there is a positive relationship between the number of hollow bearing trees and occurrence of arboreal species given that they cannot persist in areas where hollow bearing trees are absent. Lindenmayer, DB, Blanchard, W, Blair, D, McBurney, L, Taylor, C, Scheele, BC, Westgate, MJ, Robinson, N & Foster, C 2021, 'The response of arboreal marsupials to long-term changes in forest disturbance', Animal conservation, vol. 24, no. 2, pp. 246–258. The hollow wall thickness was the primary determinant of protective value for hollow dependent species such as the Yellow-bellied glider. Therefore larger trees with hollows were extremely valuable to maintaining viable populations of gliders. Zylstra, P 2023, 'Quantifying the direct fire threat to a critically endangered arboreal marsupial using biophysical, mechanistic modelling', Austral ecology, vol. 48, no. 2, pp. 266–288. The treatment of hollows (replacement and removal) is not clear throughout the document. In some sections there is the statement that salvaged hollows will be prioritised to the Offset sites as opposed to re-installation adjoining the impact site where the actual animals that are using them will remain after translocation. The proposed installation of nest boxes prior to the felling of hollow bearing trees and over 100 hollows lost, rests on the assumption that the translocated animals will take them up, an assumption that is not based in solid science given the early stage of knowledge collectively known on this topic. [Redacted] maintains that all hollows felled should be relocated in close proximity to the felled tree and within the same territory of the animal that resided within it. It is more likely that the animal with take up occupation of the hollow given their familiarity to it than a new nest box. Any animal found to be within a nesting hollow during clearing works should have the nesting hollow re-mounted in a tree in close proximity (within 100m) of the original location and the animal placed back within it. This facilitates continuance of habitat within the same territorial area as opposed to hard released without a familiarised hollow at night. This is standard practice in wildlife rehabilitation and rescue for displaced wildlife and should be the case also in this project. Current the documented approach does not stipulate this, only stating that the animal will be released at night.	3.4, 3.5, 3.6
110	Section 1.4.2 Threatened Species Listing p.13 Conservation Status [redacted] notes the changes to the conservation status of threatened fauna since Referral under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC): Mary River turtle (Elusor macrurus) – changed to Critically Endangered 4 September 2024 Coxen's Fig-Parrot (Cyclopsitta diophthalma coxeni) – changed to Critically Endangered 31 March 2023 Conondale Spiny Crayfish (Euastacus hystricosus) – new listing as Endangered 4 September 2024 Diamond Firetail (Stagonopleura guttata) – new listing as Vulnerable 31 March 2023 Brown treecreeper (Climacteris picumnus victoriae) – new listing as Vulnerable 31 March 2023 Although the Borumba PHES Exploratory Works proposal was declared a Controlled Action in 2022, therefore triggering Referral under the EPBC Act 1999 prior to the up-grading and new listing of the above species, [redacted] maintains it is prudent to assess potential impact to these species according to their current EPBC Conservation Status in this and possible future Environmental Impact Statements (EIS) for the Main Works. Upgrading the conservation status and new listings of species indicates greater threats and need for greater protection measures for already threatened species. Upgrading species to Critically Endangered is one step away from 'extinct in the wild'. It is critical to factor in cumulative impacts and impacts from climate change when assessing potential impacts to threatened species. The adoption of the "Precautionary Principle" is also required when faced with threats of serious or irreversible damage and lack of scientific certainty. The application of conservative environmental impact assessment, which includes the upgraded conservation status of threatened species is recommended. [Redacted] recommends this approach be applied now and in any future EIS for the Proposal.	3.3.2
110	Section 2.4, Spoil Disposal p.51 The spoil dump proposed at Borgan (area 4) is of great concern to [redacted]. There are many unknowns about the spoil dump, in particular the size, volumes of dams and sediment detention basins. The volume of spoil can be estimated, but at this point the water ingress from the tunnel is unknown, therefore a water balance study cannot be performed, which will inform the size and volume of detention basins required. Without a water balance study it is very difficult to determine how water will be managed during an extreme rain event (as was predicted with Cyclone Alfred recently). The document states that removal of excess water during an extreme rain event, to be performed by: 1. Trucking offsite. The volume and intensity of water makes this completely unrealistic and if trucked, to where? 2. Irrigation and/or evaporation. This is not an option during an extreme rainfall event. 3. Additional storage at another location. The document does not specify where, in what, and how it gets there. This could be investigated to identify a feasible location for emergency discharge onto a paddock, or like, sited with sufficient buffers to waterways. 4. Release to the environment into Sandy and Yabba Creeks. This is the more likely option, given the other three options won't be feasible during an extreme rainfall event. [Redacted] does not support this option. The topography and terrain of the tunnel and the associated spoil dump area makes the siting and operation extremely difficult and potentially hazardous. To access the portal pad, staging area, spoil dump and tunnel requires three creek crossings. For the spoil to be moved from the tunnel to the spoil dump also requires 3 creek crossings. There can be up to 380 heavy truck movements daily in Area 4, therefore there is a high risk of incidental spillage of spoil into the waterways if there is accident or flood damage. Diverting runoff water from the landscape above the portal pad, staging area and spoil dump will be extremely difficult, but essential to manage potentially uncontrolled discharges of leachate-laden spoil dump water. On page 79 the document states the stormwater management will be based on a 24-hour storm event with an average recurrence interval of 1 in 5 years. [Redacted] recommends a higher level standard should be applied to ensure that there is no discharge to the waterways. This is relevant as there have been more than one such event in the past five years. The Kingaham bypass spoil dump is located across a waterway that discharges directly into Kingaham Creek. The spoil dump is within close proximity to Kingaham Creek itself.	3.2.4
110	Bella Creek Road upgrade (page 16) states that any runoff from the new road will enter Kingaham Creek. However the spoil dump for the Kingaham Creek bypass is not referred too, which is planned to be located adjacent to a waterway that enters directly into Kingaham Creek. The location of this spoil dump could result in WQ contamination of fine sediment directly into Kingaham Creek	3.2.4
110	The tunnelling will generate the largest WQ impact of the exploratory works. At present the rock and its qualities are unknown. The spoil dump site is located on the banks of two creeks – Sandy and Yabba Creeks. To access the spoil dump area from the tunnel requires access via two bridges. The site is confined within steep hills, where controlling water runoff into the staging areas and spoil dump from the surrounding landscape will be extremely difficult, and have a huge impact on the landscape irrespective. These are all high level risks posed by the tunnelling and spoil dump area to water quality, therefore [redacted] does not believe the risk of WQ contamination from the project is low. On page 20 (4.1.7 Spoil disposal area) the report recommends the spoil dump area be surrounded by a silt fence or coir logs. This recommendation is inappropriate to address the potential WQ risk posed by the spoil dump and the blast rock which could be contaminated with nitrates or oxidising materials. [Redacted] recommends that Qld Hydro take the containment of contaminated water/leachate in the spoil dump area seriously with a more robust method (or suite of methods) than just coir logs. Also the testing parameters provided on page 20 are only an example, and do not provide the full suite of parameters planned to be tested. Furthermore, a turn-around for lab results of 12-14 days is not satisfactory. Contaminated material could be tested and remain in-situ during an unprecedented rainfall event leading to uncontrolled runoff before decontamination will have been identified. A spoil dump management plan is required that includes the analytical testing and the response measures and procedures required to pre-emptively manage exceptional events.	3.2.4
110	The final paragraph on page 22 appalled [redacted]. Dilution is not the solution to pollution – not in 2025. This paragraph almost implies that Qld Hydro can avoid pre-emptive mitigation measures because the lake will solve the problem. This statement disregards the substantial impact that contaminants could have to the aquatic environment of Sandy and Yabba Creek (where significant ecological values and processes have been maintained); and assumes this would occur during full supply level (FSL); however this could occur when the lake is at half FSL or even 10% of FSL, which would have a detrimental impact to the WQ and the aquatic ecology.	3.2.4

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110	On page 18 (4.1.3 Tunnelling) there is some discussion on measures to address excess water eg. groundwater discharge, excessive or high rainfall event. It is likely a large rainfall event will occur, in which case, evaporation, irrigation, trucking offsite and storage in tanks are insufficient contingency measures, resulting in few, if any other measures available. This will almost certainly result in uncontrolled discharge of leachate (nitrate and other oxidising minerals) and fine sediment laden water contaminating Sandy and Yabba Creeks. There has been no water balance study conducted to understand the potential water volumes the project will encounter, apart from some basic estimates of water ingress into the tunnel from groundwater.	3.2.2
110	Section 12 Environmental record of the person proposing to take the action The proponent, Queensland Hydro, is a new government-owned corporation created specifically to build pumped hydro projects for the Queensland power grid, and Borumba is their first project. As a corporation, Queensland Hydro has no demonstrated environmental record (good or bad) in building anything, particularly a project of this magnitude and complexity, with such an inherently high level of environmental risk. However, senior Queensland Hydro staff who are responsible for the Borumba project's design, execution and environmental management, (including the CEO mentioned in the preliminary documentation), formerly held similar senior positions on the Snowy 2.0 project, either as employees of Snowy Hydro, or major contractors such as Clough/WeBuild and SMEC. Snowy 2.0 has a well-documented history of environmental breaches and non-compliances on similar issues that are of concern to [redacted] regarding the Borumba project ie:. water quality, sediment and erosion control, development and successful implementation of detailed management plans required as conditions of project approval. These breaches occurred while relevant Queensland Hydro staff were in positions of responsibility on the Snowy 2.0 project. [Redacted] seeks assurance that any aspects of an organizational culture that may have contributed to the environmental breaches on Snowy 2.0 are not transmitted to the Borumba project. Ideally, this would involve the application of relevant approval conditions addressing these risks, timely and independent compliance checks, coupled with regular inspections by the EPBC unit and prompt effective enforcement/remedial action if required. [Redacted] notes that Queensland Hydro has announced an intention to seek independent certification for the Borumba project under the International Hydropower Sustainability Standard and we support this decision, and their plan to meet the guidelines and standards with this project. A reporting framework on their compliance with this standard is recommended to be developed that allows for independent scrutiny and public consultation.	3.9
110	Section 2.5.1.3 Temporary bed level crossings The timing of bed-level stream crossings construction of Area 1 and 4 is not detailed in the document. This is important given the breeding and spawning periods of the threatened aquatic species occur in the Spring to early Summer months, which is likely to coincide with the bed-level crossing construction. Management of all potential impacts to threatened species from the proposed works, including the bed-level crossing and bridge construction are to be detailed in the Sediment and Erosion Plan (SEP). The "as constructed" Exploratory Works Erosion and Sediment Control Plan is not likely to be available for scrutiny by the public to ensure that the water quality and high biodiversity values of Yabba Creek and the adjacent riparian vegetation are not compromised or impacted downstream. The timing of temporary bridge construction is also not detailed. [Redacted] notes that 10-20m3 of rock deposited on the creek bed will lift the crossing out of the creek flow. [Redacted] anticipates that vehicles will not be driving through creek water flowing across the crossing; therefore fish passage will be impeded for the period of time between bed-level stream crossing construction and temporary bridge construction. Given the level of vehicle movements in Area 4 (Borgan creek crossings - 380 heavy vehicle movements per day, p.36), maintaining a crossing that doesn't impede fish passage will be a difficult task. [Redacted] is concerned that bed-level stream construction and/or temporary bridge construction may occur during the spawning period for lungfish and cod and the nesting period for the Mary River turtles. In-stream disturbance during spawning and nesting can be deleterious to individual viability and reproduction and ongoing population survival. Further, intense rainfall events occur during monsoonal activity in the spring to summer months. Any delays incurred during the construction of the waterway crossings would cause the construction period to extend into the storm season, negatively impacting downstream water quality. The Water Quality Risk Assessment (appendix G) discussed bypass channels at the Area 4 bed level crossings. Any details for construction or timing of these bypass channels is not provided in the technical report or discussed in the main document. One Permit to disturb riparian vegetation has already been issued, however the location is not provided. A request for further information for the	3.5
110	6.1.3.1 Refinement of site access Landslips The steep slopes of the Mary Valley are prone to landslips. These are often caused by changes to patterns of water flow and sub-surface moisture conditions following the construction and upgrades to tracks, roadways and associated drainage. This effect is evident in the vicinity of the exploratory works (visible from Butlers Corner Road), where a landslip in forestry land was triggered by disturbance from an access track. Minor drainage modifications to tracks on this landslip-prone land can lead to catastrophic consequences, as evident at Butlers Corner Road, Imbil. Quite often these landslips are associated with an underlying clay layer which loses cohesive strength when hydrated. Once they have occurred, such landslips are usually very difficult to stabilise, contributing high sediment loads to the stream network with each subsequent high rainfall event. Special design and construction attention will be needed to avoid this landslip risk along any new or upgraded access tracks in steep country in the project area.	3.5
110	In the section on impacts to Greater Gliders from clearing vegetation and habitat degradation, the document mentions the preservation of "sap trees" for Greater Gliders, which are folivores feeding on Eucalyptus spp). There seems to be confusion here with the requirements of the Yellow-bellied glider. Further, the statement made regarding the preference of Eucalyptus mollucana for Greater Glider is not correct. In the South East Queensland Bioregion, several other trees species hold much higher significance to the species (Eyre et al 2022).	3.5
110	On page 10 (3.1 Surface water quality) there is reference made to an SKM, 2007 report which is not included in the List of References on page 30.	3.5
110	Page 12 (3.5 Soil Qualities) states there is no evidence of salinization of lands of Yabba, Kandanga and Conondale Ranges. However salt expressions have occurred in the lower Yabba Creek, and dispersive soils are generally associated with high electrical conductivity levels. The Groundwater Impact Assessment (Appendix B) clearly identifies salinity as an issue in the upper reservoir – within the subsoils, p.30; and within the Quaternary alluvium in the lower dam wall area.	3.5
110	Dispersive soils are present immediately below the Borumba Dam, the lower Yabba Creek catchment, and are evident on the Borumba lakeshore. On page 16 (4.1.1 Clearing generally) the report states that "vegetation cleared will be moved to the Spoil disposal area". Does that mean all vegetation cleared from the entire Exploratory works phase will be moved and stored in the spoil disposal area? The spoil disposal area is 8.7 ha in size and is planned to stockpile ~1,000,000 tonnes of tunnel rock, 5m high; will there be room for cleared vegetation too?	3.5
110	On page 22 (5.1 Location) investigations in the upper storage are considered an inherently low WQ risk, but [redacted] recommends that threatened streamfrogs and freshwater crayfish also be considered; which may be located in the gorge section of Cedar Creek immediately below the area planned to be heavily investigated by bore holes for the upper reservoir dam wall. Surveys of this gorge area on Cedar Creek have not occurred although the proposed dam wall and spillway is planned to be upstream of this location.	3.5
110	The [redacted] has identified that the single biggest environmental action to mitigate the impact of the Borumba PHES is to separate the pumped hydropower project from the river system by building two new reservoirs that can work independently of the present Lake Borumba and Yabba Creek. Two new reservoirs that work purely for the production of hydroelectricity will significantly minimise the daily impacts that the current proposal will create, and that cannot be mitigated. The [redacted] is committed to staying engaged with the Borumba Pumped Hydro pro-posal, with the explicit aim of minimising the adverse impacts of the project on the Mary River system and associated landscape. As part of this effort, we have put a proposal to Queensland Hydro and to the relevant Queensland Government ministers, to take the project off-river as much as possible by pumping water between the proposed upper reservoir and a new, purpose-built off-stream lower reservoir, instead of pumping water directly back and forth between the Mary River system via Lake Borumba (Borumba Creek balancing storage proposal). Without this, in our opinion we see no way that a project of the scale currently being considered can be constructed and operated without causing permanent, irreversible damage to the Mary River system, or increase water treatment costs and/or costly water treatment plant upgrades to Gympie's plant at Jones Hill, or Noosa's town water supply at Lake Macdonald. An outline of the off-stream lower storage proposal has also been sent to the Office of the Coordinator General, and to the team assessing the project under the Federal Environment Protection and Biodiversity Conservation (EPBC) Act. [Redacted] would welcome any opportunity to advance this proposal. Changing this project from being a totally on-river open-loop system as it currently stands, to one that almost primarily protects the river system from the adverse effects of the regular pump/discharge cycle would be the single greatest step towards mitigating at least some of the permanent harm that this project will cause to the Mary River system if it proceeds as currently designed.	3.1
110	Section 1, Overview. Project justification and risk In recent years the increasing adverse effects of climate change on the landscape hydrology of the Mary River system have caused concern within the catchment community. These effects are consistent with the long-term climate and hydrological modelling predictions that inform future planning of resource management in the region. The [redacted] has always supported actions to reduce greenhouse gas emissions and sequester atmospheric carbon within the catchment, providing the benefits of these actions outweigh any risks and adverse effects. We recognise the enormous amount of electrical storage required to allow for decarbonisation of the electrical grid. Such storage is particularly appropriate at key sites of generation and consumption and at critical nodes in the transmission network, where the additional footprint on the landscape and need for associated supporting infrastructure (eg roads, powerlines and impact on watercourses) is minimised. We have studied the long term successful (albeit underutilised) operation of the nearby Splityard Creek/Wivenhoe pumped storage system. Appropriately sized and located pumped hydro schemes such as Wivenhoe are not comparable in any way with the scale, inherent risk, landscape footprint, biodiversity, and catchment hydrology impact of the Borumba project as currently proposed. [Redacted] is yet to be convinced that the economic argument for the project is strong enough to justify the inherent risk that the project poses to the Mary River system and surrounding landscape. It seems that during the conception and development of the project in its current form over the last half decade, the inherent risks and costs of such a complex and difficult project of this unprecedented scale were grossly underestimated, as were its likely significant impacts on matters of national environmental significance. Over the last half decade, the affordability and feasibility of competing storage technologies and energy market devices for stabilising the power grid have steadily improved, while the costs, risks and recognised adverse impacts of the Borumba project as currently proposed have steadily ballooned. At the end of 2024, the capital costs of power supply capacity ($9200/kW) and nominal energy storage capacity ($383/kWh) of the Borumba proposal are many times higher than any reasonable benchmark costings for pumped hydro storage projects from reputable sources, such as the recent global review by Blakers et al (2025). A comparison with the figures in the 2024/2025 CSIRO GenCost report illustrates what an outlier the Borumba project is (Table 1) Total capital cost Borumba 24hr 2GW GenCost 24 hr PH GenCost 24 hr battery /Power capacity -$/kW 9200 6431 6840 /Energy capacity $/kWh 383 264 285 Table 1. Borumba is not a cost effective way of building storage into the grid. Furthermore, this energy proposal is intrinsically linked to availability of water in an increasingly evaporative landscape to allow transition to a renewable energy source, however the proposed site poses huge environmental challenges. The [REDACTED] questions how the economic and political drivers behind a project this far outside all reasonable industry economic benchmarks could be allowed to override the environmental and biodiversity risks posed by the project. The Detailed Analytical Report produced by the Qld State Government to justify the funding commitment to the project is protected by cabinet confidentiality, so an answer to this question may not be available for several decades.	3.1
111	3. While we can see mention of vehicle-strike mitigation on-site (speed, signs) the document does not address that extensive heavy vehicle movement and high traffic loads throughout the Mary Valley will result in more koala and wildlife mortality and injuries. The Mary Valley is already the main hotspot for koala mortalities from vehicle strike in our region. (Refer Council's Koala Wildwatch dashboard). This real issue needs to be considered and addressed. Conclusion We reiterate our concern re the quality of the documentation provided re the koala, especially the missing extensive survey work done. It leaves the public to question-why was this withheld? We wish it noted that we have grave concerns re the whole overall project given its footprint over so much koala habitat and important ecosystems. In respect of this project it will have a significant impact on koalas. The works will introduce noise, dust, light and vehicles, not to mention loss of habitat (favourite trees etc) in an otherwise undisturbed area for the resident koalas. Evidence suggests stress impacts health of koalas*. If the exploratory works proceed, best-practice monitoring and care of this endangered species, the koala, is required. This document fails to provide adequate information on the koala population (given missing data) and does not demonstrate best-practice mitigation.	3.4, 3.5

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111	Inadequate/Incomplete documentation We wish to express our concern re the inadequacy of the documentation provide to us on the koala surveys. Your 'survey effort' only refers to using the Spot Assessment Technique (Its limitations for koala detection are widely known). However we were advised at the afore-mentioned meeting with Hydro in July 24 that they had done/were continuing to do drone surveys. We were advised that both the USC Detection Dogs for Conservation Team, and Robotics, were doing further koala survey work, and we felt reassured hearing this. *Our new President has just completed paperwork to join Hydro's environment focus group. This will have provided Borumba Hydro with further quality data on koala locations, density and genetics. Why is this not documented under survey methods, or in Appendix M Survey methodology and results- Field Surveys? Where are the results? Strangely, under Mitigation, it says 'Thermal drones will also be used to understand the local koala population, with this data currently available'. This is poor reporting-if the data IS available, it was not provided to us in the documentation. How can we provide informed comment if we do not have ALL the koala survey results to view in this document? We cannot help but ask-why was this information withheld?	3.3.1
111	Mitigation Our expectation, and we believe the widely held view in respect of an iconic endangered species, is that best practice is used at all stages, from surveys to mitigation. It is disappointing that Mitigation is not referencing evidence-based documented best-practice standards. 1.Thermal Drones are the standard now for pre-clearance and clearance surveying. It is not adequate to read under Clearing 'inspected for koalas with the assistance of drones as required'. Human spotters, as qualified as they may be, miss koalas, and this is now deemed an inadequate method given the availability of more accurate methods of detection. This project has quality State koala monitoring projects to refer to eg. TMR's Moreton Bay Rail Link Project and C2CD projects which incorporated thermal drone surveying. 2.Injury or Mortality to individuals: This section is all about mitigation/prevention. Other that this is an odd comment (under 'Clearing') 'Capture and release those healthy individuals. Any sick, injured animals will be taken to a wildlife carer and/or a vet for treatment'. 'Capture and release' what koalas? Why? When? There is no context to this comment. There are clear Wildlife Codes of Practice that need to be adhered to, but this is not referred to or referenced. This comment is concerning in its lack of clarity and detail. Best practice also would ensure at least a visual health assessment is done of all encountered koalas, by a qualified person to ensure any sick koalas receive treatment. This needs specialized experience. If a koala is handled or moved in any way, we suggest best practice is to use the opportunity for a vet assessment. Clear protocols and procedures need to be in place in case of injury. (please refer to afore-mentioned projects). Please note Wildcare's submission re the paucity of local volunteer wildlife rescuers and transporters (and no facilities) in the Mary Valley, and the need for local Hydro staff to have training and hold equipment to respond to animals in a timely manner. (Koalas requiring treatment need to be transported to wildlife hospitals out of our region, mostly to Australia Zoo Wildlife Hospital at Beerwah).	3.5
112	The drawing below is taken from Page 4 as marked on the page; Page 23 of the document. The tunnels proposed by Qld. Hydro under their Exploration Works document, are shown in "RED". (However the overall design of the project is difficult to make out.) Here is another Queensland Hydro drawing from 2023, which shows the 2 x entry options & the overall design can be more clearly seen. (Below is the link.) https://qldhydro.com.au/wp-content/uploads/2023/11/Stakeholder-Reference-Group-briefing-presentation-October-2023-1.pdf - Page 10	No response required
112	It can be noted there is a change in direction of the Head-race Tunnels when compared to the Tail-race tunnels. A kink of ~25 degrees. Qld. Hydro has not stated this, but the siting of the underground cavern in this position has the advantage of placing it directly beneath a relatively flat piece of ground, a spur, on the surface. This offers many advantages. The first of these is ease of access & set up for drilling from the surface to retrieve down-the-hole core samples & carry out geophysical logging of the strata through which the hole has passed through. The proposed site of the underground cavern can be peppered with drill holes to ascertain the type & strength of the rock above it & around it. The position, direction & magnitude of geological dislocations such as faults, folds, dykes, etc can also be determined. The "RED" circle indicates the flattish area on the surface, above the proposed siting of the underground cavern. (Taken from a government supplied topographical plan with the approximate positions of the Upper Dam Main Wall & one of the Saddle Walls shown. The Qld. Hydro stated requirement for Exploration Tunnels to be driven during the Exploration Works is a fallacy. I am certain that the mining disruptions that have occurred during the tunnelling process of Snowy 2.0 is in the back of everyone's mind. Qld. Hydro will be counting on that to be the case to have the MAT & ECVT camouflage accepted as Exploratory Tunnels, therefore being included in the Exploratory Works. The ground to be mined through @ Borumba is different, but most importantly, the mining method is far removed from that engaged @ Snowy 2.0. Tunnel Boring Machines (TBMs), in use @ Snowy 2.0, are suited for long tunnels in good ground conditions. When challenging ground is encounter, if pre-emptive steps aren't taken to manage the situation, dealing with the result of a poor decision is a major issue. Drill/blast mining offers greater flexibility & direct access to the mining face to deal with any/all conditions.	3.2.3
112	From Page 7 as marked on the page; Page 26 of the PDF document. (I will add comments in "BLACK"). The exploratory tunnel design was also refined from a single tunnel to dual tunnels (and inclusion of an additional short tunnel extension for the alternate alignment option) to improve safety and construction outcomes by: (This was a fool-hardy & ill-conceived proposal in the first place. It displayed a lack of understand & knowledge of the task @ hand, by Qld. Hydro when they suggested it. Once again they are not Exploratory Tunnels. They are the MAT & ECVT.) • Improving egress – connecting the tunnels with cross passages will establish a secondary means of egress if one of the tunnels becomes inaccessible and will provide improved passing opportunities for vehicles during works. (This should have been recognised by Qld. Hydro from the outset.) • Improving ventilation – establishing one of the tunnels as a dedicated return airway will minimise exposure of personnel to contaminants and improve ventilation management options during construction as well as maximising fresh air at the work front. (How else were Qld. Hydro planning to ventilate the working faces @ the outset.) • Improving constructability – smaller tunnels with typical dimensions will allow use of standard equipment and proven construction practices, as well as allowing safer implementation of controls for water management and ground support. (Basic mining principles evaded Qld. Hydro's consideration @ the outset. Make a roadway large enough to allow for safe usage of it, but no bigger.) • Improving geotechnical stability – smaller tunnels are more geotechnically stable. (Any miner with basic experience would have considered this initially.) • Reducing civil work requirements – concrete partition walls will no longer be required to separate cable and ventilation areas. (This should only have been considered if the use of TBM was being considered. It never was. It is extraneous to the topic.) The refinement of the exploratory tunnel design did not result in an increase to potential impacts due to the dual tunnels having a smaller cross-section than the single tunnel, which means a similar volume of spoil will be generated and the portal face will be slightly smaller (64 m2 in total for the dual tunnels compared to 70 m2 for the single tunnel). More information on the exploratory tunnels is provided in Section 2.7. The tunnel design refinement will also potentially assist Main Works infrastructure construction (if approved). The Main Works will repurpose the tunnel as the main access tunnel and the electrical and ventilation tunnel will be collocated at this portal, reducing the extent of construction works in the area. (A reality translation – If the DCCEEW agree to turn a blind-eye to the MAT & ECVT being included in the Exploration Works under the ever-too-transparent guise of Exploratory Tunnels (instead of being classified as Mains Work), it will also give further Main Works a big head start that it would not otherwise had.	3.2.3
112	From Page 71 as marked on the page; Page 90 of the PDF document. 2.7 Exploratory tunnels and supporting infrastructure – RFI item 2.1(e) Exploratory tunnel construction from a portal pad through to the proposed PHES powerhouse cavern location is required to appropriately assess the suitability of the geology for the proposed underground infrastructure that is planned as part of the Main Works. (Qld. Hydro deceptively state the MAT & ECVT (Exploratory Tunnels) are required for geological evaluation for the siting of the cavern.) The exploratory tunnel infrastructure comprises the following components, which are shown in Figure 18: • exploratory tunnels – located west of Walkers Top Road and east of Sandy Creek on Lot 1723L37994, Lot 16LX1925 and Lot 1LX2754, up to approximately 2 km long, with orientation from northeast to southwest (Section 2.7.1) • associated surface infrastructure – portal pad – situated on Lot 1723L37994 and Lot 16LX1925 between the Sandy Creek oxbow and Walkers Top Road (Section 2.7.2) (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works.) – staging pad – situated on Lot 16LX1925 between Yabba State Forest and the Sandy Creek oxbow (Section 2.7.4) – portal access track – from Borgan Road south to the portal pad, with crossings of Yabba Creek and Sandy Creek (Section 2.7.5) – explosives store and access track – situated on 3LX2754 on Borgan Road between Yabba Creek and Sandy Creek and upstream of the Yabba Creek and Sandy Creek confluence (Section 2.7.6). (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works.) The exploratory tunnel infrastructure is proposed be constructed in the following sequence: 1. Excavate and shape the surface infrastructure (portal access track, portal pad, staging pad, explosives magazine and associated access roads). (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works.) 2. Horizontal diamond drilling from the portal location in line with and in advance of the proposed tunnel route. (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works.) 3. Portal and supporting portal pad plant, equipment and facilities establishment. (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works.) 4. Tunnel excavation using drill and blast techniques, installation of ground support and services to permit advancement of the tunnel as well as underground diamond drilling. (Not required as part of the Exploration Works if MAT & ECVT consigned to Main Works. Note – The diamond drill-hole in advance of the working face would also function as a 'ease-hole' to be incorporated in the 'Burn-Cut' when drilling out each face.)	3.2.3
112	Note - The roadways that branch off to the side, ~ one third of the way along the tunnels, then turn left as a single-entry tunnel, are labelled as "Alternate Tunnel Option". This is another act of deception by Qld. Hydro. At the end of the single-entry tunnel, a raise-borer shaft is planned to be developed from there to the surface. On completion, a ventilation fan will be installed on the surface. This will be the return-air extraction route for all the mining ongoing, except for those sections of the water tunnels driven from the Lower Dam.	3.2.3
112	"DEFINITION OF EXPLORATORY WORKS; ' Exploratory Works " Refers to any activity or research conducted to gain initial understanding or insight into a topic or situation where little is already known, often with the goal of developing further research, questions or hypotheses rather than reaching definite conclusions, essentially it's a preliminary investigation to " explore " the subject matter and discover key aspects before diving deeper into specific analysis." I have borrowed this definition because it states want I want to say, but I would otherwise fail in delivering it as clearly. Minister Plibersek, please consider what your response would be to an 'Exploratory Works' –type submission received from a Mining Company that wished to carry out exploration for an Underground Coal Mine. Would you find it acceptable that part of the Exploratory Works proposed by them, included the sinking of a shaft(s) &/or driving of Drifts (5m x 6m in cross-section) to intersect the coal seam, then tunnelling within the seam between the two structures to form a ventilation circuit? I know you would never grant such a proposal for a mine under the umbrella of Exploratory Works. Let's just assume it was granted, all hell would break loose with members of the public showing their disapproval of the decision. The situation between the Mining Company's proposal & that of Qld. Hydro for the exploration of the proposed PHES, are not at all dissimilar. Both should be restricted to the information that can gained by exploration drilling, geophysical means, etc. This should exclude actual invasive mining. Exploration Works for a PHES project, or any other project, should be exclusive of tunnelling, shaft sinking or any other form major invasive mining. What Qld. Hydro are proposing to be included under the definition of Exploratory Works is a bare-faced attempt to - •Avoid the more extensive examination that would befall the tunnelling if it was categorised as Main Works. •Proceed the Project to a more advance stage than should be the case @ the completion of Exploration Works. •Treat you & members of the Public as fools by categorising Mains Work tunnelling under Exploration Work. This typifies the arrogant & brazen attitude that has been displayed by Qld. Hydro. By rebranding the MAT (Mains Access Tunnel) & ECVT (Emergency, Cable, & Ventilation Tunnel) as Exploration Tunnels, they believe they can 'pull-the-wool' over peoples' eyes. •Maximise the expenditure & have the project advanced to a stage where, when further Main Works are considered, the temptation to proceed with the project is greater due to the time & money already invested. •Establish the entry portals, spoil stowage areas & explosives storage as part of the Exploration Works. With categorising all tunnelling as Main Works, as it should be, there is no need for explosive storage nor spoil stowage areas to be included in the Exploration Works. Rest assured, should the tunnelling as proposed by Qld. Hydro as part Exploration Works go ahead, there will be little-to-no additional geological information gained that will assist with mining of the underground cavern for the power station, that can't be gained by exploration drilling from the surface.	3.2.2, 3.2.4
113	The Traveston Crossing Dam was stopped in 2009 under the federal EPBC Act. Federal Environment Minister Peter Garrett rejected the controversial Traveston Crossing Dam on the Mary River, south of Gympie. Mr Garrett said he had made the decision based on science and the "unacceptable impact" it would have on threatened species, including the Mary River turtle and Australian lungfish. Mr Garrett said the economic benefits of the project did not stack up against the "serious and irreversible adverse effects" on endangered species. "The fact is that this proposal in my opinion will have unacceptable impacts. "Australia's environment is of importance to all Australians and those nationally listed species we need to protect to the best possible extent we can". So here we are again defending the MNES in the Mary River Catchment. The offsets proposed fail to address the risks.	No response required
113	Many inconsistencies with cross referencing to Request for Information (RFI) item numbers in the contents table. Table 2 is a more complete for referencing to the Request for Information. General layout of the Preliminary Documentation does not make for simple understanding and checking if all the information requested in the Request for Information is adequately answered.	No response required

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
113	Doesn't clearly address the RFI question and contains inconsistencies. "Similarly, the tunnel excavation works will not change the current and intended land use of the Queensland Hydro-managed land parcels. The current grazing leases on these land parcels have been terminated as a result of the Project. Table 11 lists the current land use not the intended land uses proposed as part of the completed development. Detail unclear between where the list of land parcels in Table 11 are located in Figure 24. What is the current and intended land use of the large parcel of land that Department of Regional Development, Manufacturing and Water – DRDMW manages to the north west of the map?	No response required
113	Figure 11c Using the word "anticipated" in the title gives the impression that the location is not clearly defined and likely to change in the future. Suggest removing "Anticipated". Also a contour overlay needs to be put on the figure to allow the reader to assess erosion risks and drainage lines.	No response required
113	Figure 24. Landowner/Manager map - Unclear where the intended land uses are proposed. Suggest including where the national parks boundaries are and identify lot numbers used in Table 11.Why does the Department of Regional Development, Manufacturing and Water – DRDMW manage so much land in the northwest corner of the map in the Kingham Creek upper catchment? Future dams? Nothing has been made public about plans for future dams in the Kingham creek catchment. The community should be involved in decisions that could put them more at risk of dam failure and water security	No response required
113	Figure 24 Landowner/Manager map - Figure needs fixing. Appears to be errors on the top right hand corner of the map. A few land parcels along Yabba Ck Rd are not shaded. Who owns them? Are theyowned by Qld Hydro? Concern that some may be purchased for the water rights or road upgrades for the proposed Borumba Pumped Hydro Exploratory Works Project.	No response required
113	Figure 49 Exclusion zones - Figure 49a is missing Conondale National Park boundary on west side of Borumba Dam wall area. Figure 49b colour legend incorrect and no legend for 4 dots across Kingham creek. Needs some annotation and text to understand why the "No Go Zones" boundaries are where they are shown on the map... National Park? State Forest? Private land?	No response required
113	The natural beauty of the Borumba Dam area is one of the key attractions for recreational users. If exploration leads to degradation of the landscape or natural features, it could affect the recreational experience, particularly for visitors seeking tranquil, natural settings and businesses in Imbil that rely on tourism. This is very likely at the dam lookout and the boat ramp where Area 1 is proposed for drilling on steep country opposite the Borumba Dam Lookout. The Borumba Dam area is also known for its walking trails, camping grounds, and outdoor recreational facilities. Potential Impacts could be: • Temporary or permanent closures: Certain trails or camping areas may be closed to the public during the works. This could limit access to scenic areas and popular camping spots. • Increased Traffic: The increased traffic of construction vehicles could reduce the accessibility and safety of recreational areas, leading to less enjoyable experiences for visitors. • Noise and Visual Disturbance: Construction activities, including drilling, surveying, and movement of heavy equipment, could create significant noise and visual disturbances, making the area less appealing for outdoor recreation.	3.8.5
113	Borumba Dam is also popular for various water-based recreational activities, such as: • Boating/canoeing • Fishing • Swimming • Water skiing Potential Impacts could be: • Temporary Closure of Recreational Areas: During the exploratory works, certain sections of the dam or surrounding areas might be closed to the public for safety reasons. This could prevent access to popular activities like boating, fishing, or water sports for a period of time. • Changes in Water Quality: Exploration activities could potentially introduce sediments or pollutants into the water, temporarily affecting the quality for recreational users, particularly for activities like swimming and fishing.	3.8.5
113	This EPBC Act assessment must be paused until the project is properly defined. Description of the proposed action in the Preliminary documentation is not clearly defined. The State LNP Government is stating in the media that the Borumba Pumped Hydro Energy Storage Project is too expensive, and it is being downsized. Also there is a discovery of a culturally significant site that has raised environmental and cultural concerns. All options are back on the table. The word "may" is used 658 times in the main Preliminary Documentation even through it was advised in the Request for Information (RFI) not to write in a passive way but to use words like "must" and "will". Use of "may" and "anticipated" gives the impression to the reader that actions are not clearly defined.	3.8.2
113	Similarly there are separate local communities at Yabba Creek rd, Mary Valley Rd, Bella Ck Rd, Little Bella Ck Rd., Coonongibber Rd, Brooloo and the Imbil township that are concerned around uncertainty, not knowing the access roads for the Exploratory Works and how the noise and extra traffic will affect their rural amenity, land values and road safety	3.8.1
113	Figure 11b Needs explanation of why some of the track upgrades are needed when they do not appear to access a drill hole. Using the word "anticipated" in the title gives the impression that the location is not clearly defined and likely to change in the future. Suggest removing "Anticipated". Also a contour overlay needs to be put on the figure to allow the reader to assess erosion risks and drainage lines. Map area does not include all the proposed work are in the north right hand corner of the map.	3.8.1
113	"The Queensland Government's Detailed Surface Geology identifies a range of geological rock units mapped in and around the Project area (Figure 29); these are identified in Table 13. The presence of serpentinite (Table 13) can correlate with the presence of naturally occurring asbestos. Initial testing of soil outside the Project area has found naturally occurring asbestos. Testing will occur within the Project area before activities begin, and naturally occurring asbestos avoided or appropriate management measures implemented." This proposed mitigation measure above is not good detailed. Mount Mia Serpentinite (DCs) are clearly marked on the Geology map and shows that there are a number of Exploratory Works planned in the DCs areas of Mount Mia Serpentinite. What are the "appropriate management measure" proposed to be implemented? "The soil structure in the Project area ranges from moderately stable surface soils over dispersive subsoils to cohesive surface soils over dispersive subsoils. Acid sulphate soils (ASS) are not mapped within the Project area and have a low probability to extremely low probability of occurring, with very low to low confidence respectively. Despite this, the Project area is mapped within the State Planning Policy ASS trigger area." "Soil sampling in accordance with relevant guidelines and procedures is currently being undertaken across the Main Works Project area. The outcomes of the soil sampling will be used to finalise management strategies for the Project (e.g. erosion and sediment control)" Results of soil sampling for the exploration works should be included in the Preliminary Documentation to assess the risk of dispersive soils to water quality from turbidity. Dispersive soils (where gully erosion is common and resultant colloidal clays remain suspended) have been shown to be a serious problem in the Burdekin Falls Dam catchment on granitic (mainly granodiorite) lithologies. Ref: Roth, C.H et al Aug 2003 Reducing sediment export from the Burdekin Catchment. Figure 29: (Geology) shows a large area of granodiorite (Rg/g-SEQ and Tungi Creek granodiorite (Rgt) within the proposed footprint of the Exploratory Works Figure 20: (Groundwater in the vicinity of the exploratory tunnel based on conceptual hydrogeological model) similarly shows the relationship between the proposed tunnel and the granodiorite Rg/g. Include specifically the risk of dispersive colloidal clays from sodic subsoils as highly erosive sodic subsoils will result in fine colloidal sediment in the water body which will not settle. Problem of cumulative and facilitated impacts to downstream MNES including Great Sandy Strait Ramsar wetlands and seagrass meadows/Dugong populations in Hervey Bay. Ref: https://www.jcu.edu.au/news/releases/2022/may/turtles-dugongs-in-danger-fromseagrass-loss	3.6.5
113	In the Overview background of the Terms of Reference for the EIS it is stated "Thepurpose of the Exploratory Works is to undertake and facilitate critical technical investigations to confirm the suitability of the Borumba PHES Project location and design. In the Executive Summary of the Borumba Pumped Hydro Energy Storage Project - Initial Advice Statement (p v111) claims that one of the potential socio economic benefits and opportunities associated with the Project is: "the Project's facilitatory role in enabling upstream renewable energy development and ultimately the coordinated development of the Southern Queensland Renewable Energy Zones." The definition of facilitated impacts is "'facilitated impacts' which result from further actions (including actions by third parties) which are made possible or facilitated by the action.	3.5.8
113	The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing facilitated impacts. The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing cumulative impacts as well.	3.5.8
113	Mitigation works proposed within the site and off-site (e.g. sediment and erosion protection, sediment traps, fencing including materials and methods) to protect downstream water quality and environmental value are not detailed. It should include detail diversions or interception of overland flow, including volumes, at a site and catchment scale. Include maps of suitable scale showing the location of diversions and other water-related infrastructure including the size of any overland flow sediment dams, ensuring that overland flow storage capacity meets the requirements listed under the relevant sediment control manuals. In the assessment of impacts, hydrogeological modelling is to be used to inform the assessment, the general, specific and ecological outcomes of the Plan, indicators and objectives, strategies to meet the outcomes, processes and volumes, downstream users and environment, overland flow provisions and Plan implementation (i.e. water management plan for surface and groundwater)	3.5.5
113	"Some preliminary activities proposed to occur in advance of the Exploratory Works, and required in order to plan for exploratory works, are outside the scope of the referred action and they are therefore excluded from the action and the Preliminary Documentation. These activities are located within previously disturbed, cleared areas." Widening Bella Creek road involved clearing remnant riparian vegetation including mature Bunya Trees, Forest Red Gum and Red Cedars along the road reserve and cutting back steep road batters in the riparian zone within a few meters of the creek (with initially no sediment controls).	3.5, 3.5, 3.6
113	RFI item 4.5(e) requests "Identification of present impacts to MNES as well as the extent of current impacts. This includes baseline surveys for extent of weeds and pests." This section in the Preliminary Documentation does not provide sufficient detail to address the request. Statements like... "Table 21 details the invasive flora species recorded or observed during the field surveys." "All of the invasive terrestrial fauna in Table 22 are widespread in the Borumba PHES Survey area and are anticipated to be an ongoing threat to MNES" and "The above mentioned invasive aquatic species (Guppy, Mosquito fish, Platy, Sword tail and Tilapia) are present in Yabba Creek, Sandy Creek, and Kingaham Creek." Are missing detail about numbers present or map to show where they were seen. Does "Yabba creek" include upstream and downstream of Borumba Dam as this is particularly important information to know about Tilapia, for example, regarding the decision on fish passage for the proposed new Borumba dam wall. Where was Cabomba seen or water hyacinth? Is it small enough area to remove before it becomes a significant problem? Where is the map of where the giant rats tail is? A list of pests is insufficient data. Unless there are maps of the known weeds and pests, a biosecurity plan cannot be effective. Being a grazing property, the landholder (Qld Hydo) has an obligation to already have a biosecurity plan in place and this is missing from the Preliminary Documentation.	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
113	a noise and vibration assessment has been undertaken for the Project with the assessment informing this assessment" Assessment detail is missing from the Preliminary Documentation. Air emissions – although "dust" is mentioned 264 times in the Preliminary Documentation, the detail of the air quality assessment is missing from the Preliminary Documentation. There is only one mention of "air quality assessment" in section 11.1.4 Conservation of biological diversity and ecological integrity "Detailed ecological assessments (aquatic and terrestrial) have been undertaken within the Project footprint and broader surrounds to identify and manage potential impacts on biodiversity and ecological processes. Other technical assessments also informed the conservation of these factors including but not limited to groundwater assessment, surface water assessments and noise and air quality assessments. It is also stated in the Stakeholder Reference Group Notes that "Air quality – Meteorological modelling and background air quality analysis completed. Sensitive receptors for the area being collated." https://qldhydro.com.au/wp-content/uploads/2024/12/Borumba-SRG Meeting-Presentation-November-2024.pdf page 27 In addition there is risk of asbestos in the serpentinite rock where some of the Exploratory Works is planned. Although the risk is usually looked at from the human health point of view, it could well impact on threatened species. Noise – although "noise" is mentioned 132 times in the Preliminary Documentation, and under 4.1.2 Other assessments "a noise and vibration assessment has been undertaken for the Project with the assessment informing this assessment" the detail of the noise and vibration assessment is missing from the Preliminary Documentation. It is also stated in the Stakeholder Reference Group Notes that " Noise and vibration – Background noise and vibration monitoring complete. Existing levels are consistent with remote rural location. Have established the assessment methodology and goals for construction and operation. Sensitive receivers determined through aerial photography, Geoscapes data and ground-truthing. Noise modelling still to occur." https://qldhydro.com.au/wp-content/uploads/2024/12/Borumba-SRG-Meeting-Presentation November-2024.pdf page 27	3.5, 3.5, 3.6
113	"The potential risk of the Exploratory Works Project activities spreading invasive weeds into habitat around the footprint and into previously unaffected areas is considered low as weeds are currently widespread in and surrounding the Project area in varying densities. In this regard, the Project is unlikely to introduce new weeds to the Project area and is unlikely to further the spread of weeds into areas which currently are host to only low density weeds." We disagree with this conclusion. Qld Hydro has allowed Giant Rats tail to spread and dominate on the lower area used for grazing. There is high risk that Giant Rats Tail will be spread up into the forested areas with the increased tracks, vehicles and drills and invade the surrounding national parks.	3.5, 3.5, 3.6
113	Koala retrovirus (KoRV) and chlamydia (Chlamydia percorum): pathogens which are specific to koalas and varies across their range in Australia. A number of koalas were observed during the surveys; however, the health of the population is unknown as diagnosis is limited outside of a laboratory setting. There are currently no vaccines nor confirmation of vectors for transmission." We question that some assessment of health couldn't have been done when finding the koalas as basic observations of messy backsides and weepy eyes are an easy observation. Similarly collecting scats and testing them for pathogens would have been relatively easy. How can impact on a population of koalas be assessed if one of the biggest threats to their survival is ignored in a survey	3.5, 3.5, 3.6
113	"These exclusion zones will also assist with preventing the spread of Myrtle Rust from infected native guava and scrub turpentine plants to uninfected plants" Myrtle Rust – A major biosecurity risk is not shown on a map. Where is Myrtle Rust in the project area? How can the risk be assessed if data of presence is not surveyed. What is the evidence that 30m buffer is adequate for Myrtle Rust	3.5, 3.5, 3.6
113	The Exploratory Works could lead to temporary habitat disturbances for local wildlife through increased noise, dust and traffic near the dam recreation area. If these works are near sensitive ecosystems, there could be long-term effects on the area's wildlife populations, impacting wildlife watching and nature-based recreation. Local populations of wallabies and platypus are regularly seen at the dam wall area.	3.5, 3.5, 3.6
113	"Detailed ecological assessments (aquatic and terrestrial) have been undertaken within the Project footprint and broader surrounds to identify and manage potential impacts on biodiversity and ecological processes. Other technical assessments also informed the conservation of these factors including but not limited to groundwater assessment, surface water assessments and noise and air quality assessments." This is the only mention of "air quality assessments" in the Preliminary Documentation and details of what air quality assessments were made are missing from the Preliminary Documentation. Not only is dust assessment missing but there are only 3 references to asbestos. In section 3.5 Geology it states "The Queensland Government's Detailed Surface Geology identifies a range of geological rock units mapped in and around the Project area (Figure 29); these are identified in Table 13. The presence of serpentinite (Table 13) can correlate with the presence of naturally occurring asbestos. Initial testing of soil outside the Project area has found naturally occurring asbestos. Testing will occur within the Project area before activities begin, and naturally occurring asbestos avoided, or appropriate management measures implemented." We do not believe that this is management measure is adequate and there are many procedures that need to be followed under state legislation before disturbing these areas of high risk to contain asbestos eg https://www.asbestos.qld.gov.au/general information/legislation-and-codes-practice. In Figure 9 Geology, Mount Mia Serpentinite (DCs) is present where the Kingaham Ck bypass is proposed, the drilling for a bridge across Kingaham Ck, access track to the Kingaham Creek spoil disposal area, the geotechnical drilling across Yabba Ck near the proposed water extraction point. There could also be long term asbestos risks to animals including threatened species, migratory species and threatened ecological communities.	3.5, 3.5, 3.6
113	No appendices for any species or migratory species are referenced in this section 13. What migratory species were surveyed? Migratory species are not mentioned in the executive summary. The section appears to be missing data and discussion	3.5, 3.5, 3.6
113	"Quaternary and secondary vegetation surveys: Quaternary and secondary surveys were undertaken in accordance with the Methodology for Surveying and Mapping Regional Ecosystems and Vegetation Communities in Queensland (Nelder, et al., 2023). The surveys were completed to assess the vegetation communities present and confirm the distribution and extent of REs mapped within the Exploratory Works Survey area, including the Project footprint." Under definition of quaternary (4.1.3 Quaternary P42) the methodology states "These (quaternary) sites normally take less than one minute and are often collected without stopping the vehicle. The reliability and comprehensiveness of the information collected is therefore reduced." Under definition of secondary (4.1.1 Secondary p 41): "Secondary sites are used for classification and detailed descriptions of regional ecosystems and vegetation communities. Secondary sites generally take between 40 and 60 minutes to complete, depending on the familiarity of the recorders with the flora, the complexity of the vegetation, the site terrain and the condition of the vegetation—in particular the ground layer." "Targeted flora searches Protected plant survey: Protected plant meanders were undertaken in accordance with the Flora Survey Guidelines – Protected Plants (DES, 2020). Timed 30-minute meanders were undertaken within areas of suitable habitat where the Project footprint (and 100 m buffer) and the protected plant trigger mapping intersected." It appears when looking at the Table M-1 Flora Survey Methods, that there has been poor survey effort based on the number of surveys done for the time taken to ground truth the RE boundaries and accuracy would have to be low given 95% of the boundary points, the Quaternary Method required less than a minute of observation was used. Similarly in search of protected plants, 230 surveys of 30 min wandering in an area appears very limited given the area that had to be searched. No information is provided as to what percentage of the area was searched so no accuracy of not being present could be deduced. Absence of detection does not equate to absence of the species. In Appendix M it is stated: "Limitations (Flora surveys) While the field surveys are spatially and temporally comprehensive and have been conducted in accordance with relevant guidelines, there remain some limitations, including: • Limited access due to steep terrain, lack of adequate access tracks, thick vegetation, boat access required and private property. • Areas which were mostly cleared and therefore less likely to contain suitable habitat for threatened species were not surveyed. • Cryptic species can be difficult to detect. Absence of detection does not equate to absence of the species. • Surveys involving acoustic devices rely on the target species vocalising while the devices were deployed. • Species with expansive home ranges may not occur on site during survey periods." 2 years baseline data does not cover all the variations in season and from year to year.	3.5, 3.5, 3.6
113	Fleay's barred frog (Mixophyes fleayi) Cascade tree frog (Litoria pearsoniana) Tusked frog (Adelotus brevis)" These frogs surveyed but no data presented	3.5, 3.5, 3.6
113	Subtropical Eucalypt Floodplain Forest of the New South Wales North Coast and South East Queensland "A total of 4.6 ha of the field validated TEC is present within the Exploratory Works Survey area, while 14 ha is present within the Borumba PHES Survey area. The Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions TEC is not present within the Project footprint." The above conclusion seems to be contradictory.	3.5, 3.5, 3.6
113	No figure to illustrate what area was searched for Protected Matters. Noise impacts can carry a large distance down a valley. What criteria used to define the search area is not detailed. No explanation as to why all of these were not assessed. World Heritage Properties: None National Heritage Places: None Wetlands of International Importance (Ramsar 1 Great Barrier Reef Marine Park: None Commonwealth Marine Area: None Listed Threatened Ecological Communities: 4 Listed Threatened Species: 69 Listed Migratory Species: 15	3.5, 3.5, 3.6
113	Figure 10a: Needs explanation of why some of the track upgrades are needed when they do not appear to access a drill hole. Using the word "anticipated" in the title gives the impression that the location is not clearly defined and likely to change in the future. Suggest removing "Anticipated". In area 1 (Borumba dam wall) replace solid pink colour with cross hatching so the vegetation can be seen like all the other maps.Also a contour overlay needs to be put on the figure to allow the reader to assess erosion risks and drainage lines. Explain the small squares on the map in the legend and the text. Why does area 1 not have the drilling dots showing where the drilling is proposed to take place.	3.5, 3.5, 3.6
113	Figure 10b Using the word "anticipated" in the title gives the impression that the location is not clearly defined and likely to change in the future. Suggest removing "Anticipated". Map area does not include all the proposed Kingaham Creek access road works to the west of the figure. Suggest using slightly higher scale so it covers all the proposed site disturbance in that area. Also a contour overlay needs to be put on the figure to allow the reader to assess erosion risks and drainage lines. Legend colour appears incorrect.	3.5, 3.5, 3.6
113	Figure 11a Using the word "anticipated" in the title gives the impression that the location is not clearly defined and likely to change in the future. Suggest removing "Anticipated". Legend not complete. Missing label for purple dots with white circles around it. Needs explanation of why some of the track upgrades are needed when they do not appear to access a drill hole. Map area does not include all the proposed work are in the north west and western extent of the work area. Also a contour overlay needs to be put on the figure to allow the reader to assess erosion risks and drainage lines	3.5, 3.5, 3.6
113	Table 34 Edge effect depth of influence - Table 34 presents " the depth of influence of edge effects into the dominant habitat types based on theliterature available, the depth of edge effects experienced on site are anticipated to be influenced by the type of machinery and equipment used, the vegetation clearing methods, and the density of vegetation along the edge."We are concerned that the minimum distance of 15m for subtropical rainforest and 25m for Eucalypt Woodland & Open Forest has been chosen to estimate the estimated total area of edge effect impact, when in the literature examples of 100m for subtropical rainforest and 200m for the Eucalypt Woodland & Open Forest. No rational is given as to why the minimum was chosen and as a 24 hr 7 day a week operation is being proposed, and the steep topography of the site, the maximum distance should be chosen, not the minimum.	3.5, 3.5, 3.6
113	Table 44: Assessment of potential impacts, and mitigation options for Floydia praealta of weeds, pB of due to increased human activity "Decontamination Washdown facilities will be installed at the two entrances to Queensland Hydro land so all vehicles will be washed prior to entry and existing? site." Does not address risk of spreading weeds, pest and disease within the project site. Where are maps of known weed areas on the project area so risks are assessed and controls proposed for locations of the washdown stations.	3.5, 3.5, 3.6
113	Table 38 Assessment of potential impacts and mitigation options for Lowland Rainforest of Subtropical Australia TEC Changes to habitat quality as a result of erosion and sedimentation – No maps of sodic subsoils"Dispersive soils have been identified as likely to occur throughout the Project footprint and particular attention to soil erosion control measures is required in these soils." How big is the problem – which areas are at risk? Where is a map to show where the dispersive soils are?	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
113	Table 44 Assessment of potential impacts, and mitigation options for Floydia praealta Sodic subsoils – no maps included in Preliminary Documentation "Most of the Exploratory Works Project is located in areas that may contain soilswith sodic subsoils that are highly erodible if exposed. Particular attention to soil erosion control measures is required in these areas.Soil assessments have been undertaken across the site and analysis of the soil is currently in progress with mapping outputs to be used to microsite infrastructure and to confirm appropriate treatment for the works and post the works." Sodic subsoils – no maps included in Preliminary Documentation. How can the risk be assessed without this baseline data.	3.5, 3.5, 3.6
113	Table 44 Assessment of "The Project is anticipated to clear 2.7 ha of potential habitat for the Floydia praealta in Area 1 – Borumba Dam for geotechnical works and access tracks. The Project will not clear any known habitat where individuals have been identified. potential impacts, and mitigation options for Floydia praealta Clearing in this location is unavoidable, as geotechnical works are required for the new Borumba Dam wall and topography in the area requires some levelling and stabilisation to allow the works to proceed." The statement above appears to be a contradictory statement about clearing Floydia praealta	3.5, 3.5, 3.6
113	In addition, there is no mention of the fact that parts of a National Park were revoked for the geotechnical studies (Exploratory Works). Sections of the Conondale National Park were excised out to gain the right to access for the Exploratory Works of the lower dam reservoir west wall and subsurface infrastructure installed for the tunnels and waterways. As stated by Hon Meagan Scanlan in the record of proceedings 10 Nov 2022 Motion : Revocation and Dedication of Protected Areas and State Forest Areas (Cognate Debate)https://documents.parliament.qld.gov.au/speeches/spk2022/Meaghan_Scanlon Gaven-20221110-479964196588.pdf pages 3 and 4 "One of the initial steps in achieving this is to investigate the feasibility of constructing two large-scale pumped hydro scheme projects—the first proposal being the Pioneer-Burdekin pumped hydro project, our own battery of the north, and the second being the Borumba Dam pumped hydro project south of Gympie. In order for engineers to conduct onsite investigations at the Borumba site, some of the areas of national park will need to be revoked. The proposal is to change the class of about 41 hectares of Conondale National Park and dedicate it as part of the Conondale Resources Reserve. This is a necessary step for the Department of Environment and Science to then assess and authorise the proposed geotechnical activities associated with the project. The geotechnical works are temporary, and they are not expected to cause permanent or irreversible impacts to the protected area estate. The intention is that these areas would be rededicated as national park when the investigation is complete, and these areas are rehabilitated." Permits, works regulations, declaration of a State Development Area under the State Development and Public Works Organisation Act 1971 are not all [unfinished sentence].	3.3.3
113	Big difference between what was identified in the Appendix N Protected Matters Search Tool why? Only 9 Threatened Flora listed and 12 Threatened fauna listed when the results from Appendix N are : World Heritage Properties: None National Heritage Places: None Wetlands of International Importance (Ramsar 1 Great Barrier Reef Marine Park: None Commonwealth Marine Area: None Listed Threatened Ecological Communities: 4 Listed Threatened Species: 69 Listed Migratory Species: 15. The following species were listed in the Section 3 of Attachment A Request for additional information and not included: Austral Toadflax (Thesium australe)– vulnerable (Table 28 rated as possible), Regent Honeyeater (Anthochaera Phrygia) – critically endangered (missing from Table 29), Spotted-tail Quoll (Dasyurus maculatus maculatus (SE mainland population)) – vulnerable. In addition, the following species should be included in the executive summary list: Flora: Still to be checked Fauna: Australian Painted Snipe Rostratula australis endangered (Table 29 – rated as possible), Northern Quoll Dasyurus hallucatus endangered (Table 29 rated as possible), Spotted-tail quoll (SE mainland population) Dasyurus maculatus maculatus endangered (Table 29 – rated as possible), Coxen's Fig Parrot Cyclopsitta diophthalma coxeni – critically endangered (Table 29 – rated as possible),	3.3.2
113	"The design includes an additional spoil disposal area to ensure sufficient space to stockpile excess materials and to minimise potential social and environmental impacts associated with transporting materials from the Kingaham Creek bypass construction. Its location is in a previously disturbed area used for cattle grazing, more than 100 m from Kingaham Creek, and was selected to avoid additional impacts to MNES. The site was also preferred as it is collocated with a proposed camp location for the Main Works reducing the risk of unnecessary clearing and potentially reducing the Main Works footprint and impacts." Figure 28 (Topography) shows the additional spoil disposal area, although being 100m from Kingaham Creek, is located across a drainage line that runs directly into the creek and increases the risk of polluting the creek. Figure 29 (Geology) shows the proposed Kingaham Creek bypass being constructed through the Mount Mia Serpentinite (DCs) geological area so it is highly likely that there will be naturally occurring asbestos in the spoil material. It would appear to be a human health	3.2.4, 3.6.5
113	"The (tunnel) spoil area is also collocated within the inundation area for the Main Works to reduce the risk of unnecessary clearing." Placing the tunnel spoil within the proposed inundation area of the Main Works is highly risky given the potential risk of acid generating materials and heavy metals leaching into the Borumba Dam and affecting water quality.	3.2.4, 3.5.5
113	Needs more detail explanation and Figure 12 needs detail on the where the water treatment plant, spoil stockpile locations including the contaminated spoil location, sediment basins, vehicle washdown and hard stand area is located and sized. This is a high risk of polluting 2 creek systems, Yabba and Sandy creek and directly impacting the water quality for MNES and Borumba Dam urban and irrigation use. Where is the concrete batching plant going? there is no mention of it in the text either. Runoff from the batching plant area is highly likely to be high ph – how it will be captured and treated.	3.2.4
113	More details needed to assess impacts particularly with noise. (sledge hammer?)	3.2.3
113	Backpack drilling: More details needed to assess impacts and needs a photo	3.2.3
113	Heli-drilling: More details needed to assess impacts and needs a photo	3.2.6
113	Areas to be investigated for proposed quarries not shown on any figures. Missing details of what sand and gravel will be brought to the site for batching plant, where will it come from and possible facilitated impacts. Missing information also includes details about known fault lines – are these going to be investigated? Local knowledge is that springs to the north in the Bella Creek Rd area start flowing when the existing Borumba Dam is full. Surely that needs to be investigated given a new dam wall is proposed to be build 20 m higher. "Final location of each geotechnical site will be determined in the field". We are concerned that this statement is too inaccurate and in some figures no drill holes are located at all.	3.2.3
113	Areas to be investigated for proposed quarries not shown on any figures. Missing details of what sand and gravel will be brought to the site for batching plant, where will it come from and possible facilitated impacts. Missing information also includes details about known fault lines – are these going to be investigated? Local knowledge is that springs to the north in the Bella Creek Rd area start flowing when the existing Borumba Dam is full. Surely that needs to be investigated given a new dam wall is proposed to be build 20 m higher. "Final location of each geotechnical site will be determined in the field". We are concerned that this statement is too inaccurate and in some figures no drill holes are located at all.	3.2.6
113	The staging pad will comprise an approximately 150 m x 195 m flat pad plus three water storage tanks (approximately 60 m diameter by 3 m tall, 18 ML volume capacity), in an area that is largely flat and cleared, with a setback distance of 50 m from Sandy Creek…. A catch drain will be constructed at the high side of the pad to capture and divert runoff around the pad. Erosion and sediment control devices will also be installed around the perimeter of the pad to control sediment and water from the pad. Exposed fill surfaces will be covered (e.g. topsoil and re-grassed)." The concern is that 50m is insufficient to provide adequate buffer to protect the creek as this 3 Ha pad area will have major pollution risk of the batching plant (high ph water runoff), and oils and greases from maintenance of tunnelling plant and equipment. There is insufficient room to build the required containment and sediment sumps to control sediment and water from that pad and treat it as well. We are concerned that Qld Hydro will not be able to contain the runoff and water to be treated. Details of proposed sediment and erosion control measures or pad layout are missing from the Preliminary Documentation. The staging pad will operate 24 hours a day, seven days a week for the duration of the exploratory tunnelling operations. A facility for the maintenance of tunnelling plant and equipment will be installed on the staging pad (e.g. an undercover igloo structure with container storage). A batching plant for the production of shotcrete and grout is also proposed to be situated at the pad, alongside stockpiles of raw feed materials (coarse aggregate, medium aggregate and sand), silos for cementitious materials (cement and fly-ash) and polyethylene tanks for storage of water."	3.2.2
113	"Figure 4 illustrates the relationship between the Borumba PHES Project phases in the context of the EPBC assessment." Figure 4 (Borumba PHES Project definition) shows that the Borumba PHES Project includes two Project phases, the Exploratory and the Main Works. We disagree that there are only 2 phases. There is a third phase and that is the Transmission lines from Borumba Dam to Halys and Borumba Dam to Woolooga. Transmission lines are essential to this project and will have facilitated/cumulative impacts on Matters of National Significance. In the Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999 https://www.dcceew.gov.au/sites/default/files/documents/nes-guidelines_1.pdf Section 2 p5 " 2. Considering the proposed action at its broadest scope, is there potential for impacts on matters of national environmental significance? If there are matters of national environmental significance in the vicinity of your proposed action, you need to consider whether there is potential for your proposed action to impact upon those matters. The proposed action should be considered at its broadest possible scope. This includes all stages and components of the action, all related activities, and all related infrastructure such as roads and powerlines, if applicable. If the action consists of a series of activities or a number of related activities, you should consider the impacts of each activity, and then consider the combined impacts of those activities. It is also necessary and important to consider off-site and indirect impacts of your proposed action on matters of national environmental significance From the shaded Box on p6 "c. 'facilitated impacts' which result from further actions (including actions by third parties) which are made possible or facilitated by the action" And p34 "Local Government Widening an existing road would not normally be expected to be significant under the EPBC Act where the road verge has previously been cleared or the vegetation beside the road has been heavily modified. However, if road widening would require removal of native vegetation that contains critically endangered or endangered plant species or ecological communities, it is likely to have a significant impact and should be referred to the minister."	3.2.1
113	Although Qld Hydro have no committed offences under State or Commonwealth Law, there does appear to be a lack of transparency and deception that was revealed by the release to the public of the Detailed Analytical Report (DAR) of the Pioneer Burdekin Hydro Project released to the public after the change in government in 2024 and the project stopped by the new LNP government. The Detailed Analytical Report for the Borumba Pumped Hydro Energy Storage Project has never been released to the public. Qld Hydro was only formed in 2022, and at least 3 senior staff in charge of the Borumba project currently including the CEO, oversaw Snowy Hydro 2 construction at the time of many environmental breaches, while either working for Snowy Hydro or Cloughs/WeBuild (the major construction partner). A summary report of the environmental breaches of Snowy Hydro 2.0 project during construction can be found at https://npansw.org.au/wp content/uploads/2024/04/NPA-Review-of-S2.0-environmental-performance 120424-1.pdf This includes evidence that Snowy Hydro and its contractors were falling short of the Conditions of Approval and community expectations for construction in such an environmentally sensitive location. This information has been obtained from: 1. the results of the most recent Independent Environmental Audit (IEA), revealing an increasing number of findings; 2. the failure to complete mandatory site management plans within the specified timeframes, up to three years late; and 3. the continuing occurrence of environmental breaches resulting in formal enforcement actions. The failure of enforcement actions to curb repeated non-compliances suggests that a more rigorous regulatory approach is required and proposing to address issues with a management plan or strategy to be completed at a later date after approval is not meeting approval conditions or community expectations.	3.9
113	Although the Offset Area Management Plan is quite detailed, it has a fundamental flaw in that no where is there a cost estimate of the management actions over time. Being involved with restoration of areas for over 20 years on my own property, the costs, labour and chemical use of what is being proposed must be estimated and budgeted for and included in the Offset Area Management Plan. This will highlight that there is insufficient data on weed mapping, type, extent and location in the offset areas to adequately cost what is proposed here.	3.7

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
113	That decommissioning include potential risks of impacts on MNES from dispersive sediment, heavy metal sediments and methyl mercury accumulation in the aquatic food chain from the spoil heap and the tunnels. Already there are elevated levels of nickel and manganese in the sediments of Borumba Dam. Sodic dispersive soils are known to occur in the proposed project area. Colloidal sediment from the Mary River during flooding in 1992 and 2022 was shown to have massive impacts on seagrass and Dugong populations in Hervey Bay and the Ramsar Wetlands. It is important to identify risks to MNES from decommissioning and have them considered in the assessment of impacts now and not left to be planned for closer to the end of the Project's life.	3.5
113	The Borumba Pumped Hydro Project's footprint is within the Conondale National Park and borders Wrattens National Park. Imbil and Yabba State Forest also border the project footprint. The project footprint is also at the top of the Mary River catchment, an important river with matters of national environmental significance including threatened species, and the [unfinished sentence] We call on Minister (Commonwealth Minister for the Environment and Water) to say no to this project on the grounds that much of the Exploratory Works would be located, unavoidably, in vegetated areas that provide habitat for many listed threatened species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The potential impacts cannot be mitigated or offset. Reasons will be detailed under each section of the Preliminary Documentation.	3.1
113	The cost is high risk and poorly explained in the Preliminary Documentation. The Detailed Analytical Report (DAR), justifying the Borumba Pumped Hydro Energy Storage Project, has never been released to the public. All that is stated is a 2GW, 24 hr energy storage (48 GWh) proposal costing $18 Billion, with no detail of costings or assumptions. The DAR must be made public to assess the economic cost and assumptions. Latest studies are showing that there are viable alternatives to the Borumba pumped Hydro Energy Storage project. The CSIRO GenCost report are showing while Pumped Hydro construction costs and transmission line costs are increasing, longer term storage batteries are decreasing and before this project could be commissioned, battery storage would be a cheaper alternative. The Borumba PUMPED HYDRO Similarly the costings per GWh are extraordinary expensive compared with other similar pumped hydro projects around the world. This project has to be stopped. The Queensland Government are wasting our taxpayers money. For the first time, the latest CSIRO GenCost estimates capital 24 hr batteries with cost of $400/kWh with costs going down while Pumped hydro capital costs of $383/kWh and going up. Within a year, they will be comparative and alternatives to safer options than Lithium Batteries are starting to be used. The Australian Energy Market Operator, AEMO uses $200/kWh for Pumped Hydro in their Integrated Systems Plan estimates. Energy Experts have publicly questioned the Borumba proposal, saying that Battery Energy Storage System (BESS) would be available quicker, more efficient, and less risky for energy storage. Why eight-hour batteries are smarter choice than pumped hydro for Queensland | RenewEconomy Queensland's giant Borumba storage plan will cost double early estimates: Batteries are cheaper | RenewEconomy Questions are being raised over Queensland's pumped hydro plans. What is it and are there alternative options? - ABC News Of note from the above link, Professor Bartlett said "[Australian Energy Market Operator] AEMO's own report shows that 8-hour batteries are about half the cost of an 8-hour pump storage scheme. "Pumped storage is expensive because of the civil engineering, the concrete, the steel, the labour ... and while pumped storage has getting dearer, batteries are getting cheaper." Off-river PHES has several major advantages over river-based PHES systems: vastly more sites are available; no new dams need to be constructed on rivers which avoids most of the environmental costs associated with PHES which minimizes social opposition; and the high cost of building dams that must survive major floods both during and after construction is avoided. A significant advantage of off-river PHES is that clean, sediment-free water is available for pump turbines. Because the reservoirs are small and can be lined, they generally have low inflows of sediment-laden runoff water that can be filtered. This reduces the maintenance and refurbishment requirements Ref: Pumped hydro energy storage to support 100% renewable energy Andrew Blakers* , Timothy Weber and David Silalahi. Published 30 January 2025 • The transmission line corridor impacts would only occur because of the current proposed Borumba Pumped Hydro Energy Storage project and there are many MNES that will be impacted along the transmission corridors. These are already known by the 3rd Party, Powerlink through their community consultation. This brings the transmission line corridors under the EPBC Act referral as causing facilitated impacts. The piece meal approach to the Borumba PHES project has already had social impacts from the poor consultation process for the proposed connecting infrastructure Transmission lines and access roads. There are now many landholders impacted with uncertainty of how to manage access by Powerlink, drops in land values, impacts on health, increased biosecurity risks, difficulties with getting finance from banks, insurance increases to manage additional risks. There are proposed alignments that cut properties in half, alignments proposed to go over houses and farming facilities, old aerial photos being used, potential loss of visual amenity for the landholder, neighbors and the community. If the proposed transmission lines go ahead there will be increased risk of bushfire, health risks of EMF, loss of biodiversity, significant impacts on MNES. Clearly there is no social license for the construction of any of the proposed transmission line routes connected to the Borumba Pumped Hydro Project. Facilitated and cumulative social impacts of the entire have to be considered, assessed at the beginning and be revised as more information comes available if necessary.	3.1
113	Although Qld Hydro have no committed offences under State or Commonwealth Law, there does appear to be a lack of transparency and deception that was revealed by the release to the public of the Detailed Analytical Report (DAR) of the Pioneer Burdekin Hydro Project released to the public after the change in government in 2024 and the project stopped by the new LNP government. The Detailed Analytical Report for the Borumba Pumped Hydro Energy Storage Project has never been released to the public. Qld Hydro was only formed in 2022, and at least 3 senior staff in charge of the Borumba project currently including the CEO, oversaw Snowy Hydro 2 construction at the time of many environmental breaches, while either working for Snowy Hydro or Cloughs/WeBuild (the major construction partner). A summary report of the environmental breaches of Snowy Hydro 2.0 project during construction can be found at https://npansw.org.au/wp content/uploads/2024/04/NPA-Review-of-S2.0-environmental-performance 120424-1.pdf This includes evidence that Snowy Hydro and its contractors were falling short of the Conditions of Approval and community expectations for construction in such an environmentally sensitive location. This information has been obtained from: 1. the results of the most recent Independent Environmental Audit (IEA), revealing an increasing number of findings; 2. the failure to complete mandatory site management plans within the specified timeframes, up to three years late; and 3. the continuing occurrence of environmental breaches resulting in formal enforcement actions. The failure of enforcement actions to curb repeated non-compliances suggests that a more rigorous regulatory approach is required and proposing to address issues with a management plan or strategy to be completed at a later date after approval is not meeting approval conditions or community expectations.	3.1
114	Figure 24 LAND OWNER / MANAGER It is interesting that there are several properties along Yabba Creek Road with Creek frontage that have been left white and according to the map they do not belong to anyone. Local residents have suggested that possibly someone related to the project owns these properties and that they have water allocations which may be involved with the project. The Department of Regional Development, Manufacturing and Water – DRDMW also owns a large property close to this project.	No response required
114	Figure 26 LAND USE Does not quite match up with Figure 24	No response required
114	2.There is insufficient data to convince me that this project is economically viable	No response required
114	3.The unfortunate impacts on the local community and economy have the potential to destroy the place that locals and tourists love.	No response required
114	5.I would rather the Qld Government invested our taxpayer's money into things which benefit the individuals and local communities rather than nameless corporations intent on making money while trashing the environment	No response required
114	After preparing for the recent "weather event" which fortunately did not impact me, I have now spent several days reading the very lengthy documents about the proposed Exploratory Works. I would like to say that the documents are unfortunately rather poorly organised and appear to be missing many essential pieces of information	3.8.3
114	The responsibility for Air Quality management has been given to the contractor in charge of the operation. There is no suggestion that asbestos fibres and dust can impact air quality	3.6.5
114	1.4 Facilitated Impacts must be considered as part of the project These include impacts to the waterways on the project site and downstream from the site all the way to the Great Sandy Strait. It is expected that the project will also adversely affect the aquatic life and the birds and animals which live in the quiet forests which are currently on the project site. The project traffic will have a significant impact on all the people who currently use the roads which will be used to access the site. There will be social impacts as the character of the area will change from being a quiet relaxing destination for local residents and tourists to a place with a massive number of heavy vehicles on the local roads and considerable noise impacts in the centre of Imbil. If access to Lake Borumba is stopped during the construction phase for several years – then the tourist industry will be severely affected. Electrical Substations and Transmission lines are other facilitated impacts which extend for a considerable distance from the proposed project site.	3.5.8
114	The follow up to this was assigning all responsibility for bushfire mitigation to contractors. This is a totally inadequate answer. The reason for requesting a bushfire management procedure was to get Qld Hydro to commit to purchasing their own fire fighting equipment so that they could put out any fires they created. The local rural fire brigade at Yabba Creek is seriously understaffed and under resourced. There have been major bushfires in the state forest a few years ago which had required deployment of rural fire brigades from many local stations. None of them will be too happy about putting out fires caused by Qld Hydro contractors/employees.	3.5.7
114	Unfortunately, this comment has not been backed up by a noise transmission study to see how far sound would travel down a valley with particular reference to sound coming from construction of a new lower dam in a location much closer to local human residents The reality is that drilling, blasting and concrete batching are all noisy processes which require employees to wear hearing protection. The responsibility for Noise and Vibration management has been given to the contractor in charge of the operation. There is no suggestion that noise and vibration could affect local residents (refered to as sensitive receptors)	3.5.3
114	4.The environmental devastation and the effect on the local flora, fauna, aquatic life would be huge	3.5, 3.5, 3.6
114	1.More boreholes are required to ascertain the underlying rock structures, types and locations before any serious money should be invested in a tunnelling project	3.2.6
114	Figure 17 CIVIL CONSTRUCTION COMPOUND (AREA 4 - BORGAN ROAD) This will be located on a bend in Sandy Creek. Should there be a major rain event there is a high probability that this may be flooded. What could be in this compound is listed later in the document and many of the stored items should probably not get wet. Figure 23 EXPLOSIVE STORE AND ACCESS TRACK (AREA 4 - BORGAN) This also appears to be on a floodplain and there is no indication of the height above Yabba Creek. The text suggests that the contractor who is providing the explosives will design the storage.	3.2.5

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
114	Figure 29 GEOLOGY (with particular reference to naturally occurring Asbestos) I am very concerned about Asbestos being present in the Serpentinite Rock which is around Kingaham Creek and around the proposed new lower Dam site (It is just under the surface in places there). I have been unable to locate a comprehensive asbestos management plan in the literature submitted by Qld Hydro. I have read the Qld Workplace Health and Safety Requirements for managing and handling asbestos in the workplace and the EPA legislation Qld Gov't policy - notification of environmental harm (14 pages) related to asbestos etc https://www.des.qld.gov.au/policies?a=272936:policy_registry/cm-gl-duty-notify-environmental-harm.pdf Respiratory protective equipment for use in asbestos handling – https://www.worksafe.qld.gov.au/safety-and-prevention/creating-safe-work/managing-risks/personal-protective-equipment-ppe/respiratory-protective- EPA act 1994 Link to EPA legislation and subsets relating to asbestos https://www.legislation.qld.gov.au/view/html/inforce/current/act-1994-062#sec.66 I have been to visit a friend who worked for the DNR when the Spillway at the Borumba Dam was altered some years ago. He has copies of the Gympie Special 1:100,000 and Nambour Special 1:100,000 geologic maps which cover this area. The legend on these maps is far more detailed. (1) We discussed a couple of the Borehole results provided by AGE consultants – specifically Boreholes YD01 MB001 and YD01 MB002 which were near the caravan park below Borumba Dam and downstream along Yabba Creek. Borehole log BR-GW-YU01-MB002 showed that there was Serpentinite present from 14m, at around 20m the driller lost water (but there are underground fault lines in this area). (2) My friend showed me a sample of white asbestos which he had picked up on the site when he was working there. His comment was that there was serpentinite under the surface in that area and that it was quite hard and that there were known fractures in the rock which they had to take into account when designing the changes to the spillway. He also mentioned that SEQ water had sighting points located along the top of the dam wall to monitor the dam alignment using lasers (3) We looked at AGE Borehole logs KC01 MB001 and KC01 MB002 located at Lot 131 Bella Creek Road. Both Borehole logs showed that serpentinite was present. The residents at this address had shown me a seam of exposed serpentinite when I had visited them on a previous occasion. There is also serpentinite present in Kingaham Creek which can be accessed by a track across from their driveway. (4) My friend said there was also exposed serpentinite along Borgan Road – He has hiked through much of the area when he had been doing bushfire risk assessments, looking at the old Gold mines and Manganese mines, and exploring Yabba Creek and Kingaham Creek 4.1.3 Asbestos results A total of six samples at the lower and upper dam sites were analysed for asbestos-present identification (ENGEO, 2023). The presence of serpentinite, which is mapped in the Exploratory Works Project area, can correlate with the presence of naturally occurring asbestos. Initial testing of soil outside the Project area has found naturally occurring asbestos. Additional analysis for asbestos will be undertaken within the Project area before activities begin and as the works progress.	3.2.4, 3.6.5
114	Figure 12 TUNNEL SPOIL DISPOSAL AREA (AREA 4 - BORGAN) Is it really a good idea to put this on a Floodplain? The management plan will be discussed later but basically if there is a major rain event and subsequent flooding – there is a high probability there would be contaminated run off into the creek	3.2.4
114	Unfortunately since the Spoil Pile is in an Unacceptable location due to the high risk of flooding – all the comments from the proponent become meaningless	3.2.4
114	1.3 Project Timeline It seems highly inappropriate to include excavating an “exploratory tunnel” before the geology of the area has been properly assessed by drilling more core samples to examine the underlying rock strata.	3.2.3
114	Figure 11c ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 3 (WALKERS TOP) BUT this is actually the Lake Borumba Shoreline. (Old maps of the area appear to show this as the location of a Manganese mine)	3.2.6
114	Item 12. Environmental record of the person proposing to take the action Queensland Hydro is the proponent proposing to take the action. Neither Queensland Hydro or the Chief Executive Officer, Kieran Cusack, has committed offences under Commonwealth and/or State law for the protection of the environment or the conservation and sustainable use of natural resources. Unfortunately, this statement is quite probably incorrect. Qld Hydro was only formed in 2022, and at least 3 senior staff in charge of the Borumba project currently including the CEO, oversaw Snowy Hydro 2 construction at the time of many environmental breaches, while either working for Snowy Hydro or Cloughs/WeBuild (the major construction partner). A summary report of the environmental breaches of Snowy Hydro 2.0 project during construction can be found at https://npansw.org.au/wp-content/uploads/2024/04/NPA-Review-of-S2.0-environmental-performance-120424-1.pdf This includes evidence that Snowy Hydro and its contractors were falling short of the Conditions of Approval and community expectations for construction in such an environmentally sensitive location.	3.9
114	1.1 Project Costs The LNP Government inherited this proposed project from the previous Labor government. It is currently predicted to cost 18.5 billion dollars and would not be operational until 2035. Given the cost blowouts on other Hydro projects which have involved tunnelling – it is entirely likely that the final cost would be much higher. (The Snowy 2.0 scheme cost went from 2 billion to 12 billion and the completion time from 2021 to 2028) There are additional costs associated with this project such as the construction of electrical substations and transmission lines which must also be considered. 1.2 Other Major Projects requiring Government Funding The Qld Government has many other expensive items on its current agenda. These include: Repairing the damage from the 2 recent cyclones which have impacted large areas of Queensland and millions of residents, Infrastructure projects for the 2032 Olympic Games, Upgrades to the SE Qld Rail Network, Repairs to roads and bridges	3.1
115	Potential cumulative impacts There are multiple large-scale renewable energy projects in the vicinity of the Borumba project that may have the potential to create/exert significant impacts on MNES. These collectively pose cumulative impacts arising from the broader changes being planned for the transmission network of which Borumba is one component. Should the exploratory works for Borumba not proceed, it is presumed that the wider impacts of these other proposals would still occur given energy storage and grid services would likely be derived from other sources other than Borumba PHES. However, there is an exception with the Powerlink project for two transmission lines to connect Borumba PHES site to Halys and Woolooga substations. This project in itself will have major impacts on MNES and therefore we strongly submit its impacts should not be assessed separately from the Borumba Exploratory Works (BEW) and Main Works (MW). That is, all three projects and associated referrals are integrally interconnected parts of the same project and should not be divided into separate assessments. At a smaller scale, there are multiple actions currently underway or planned in the Mary River Catchment with the specific purpose of enabling the BEW to proceed which have not been referred for assessment under the EPBC Act. We contend these actions will have impacts on the same controlling provisions being assessed for the Borumba Exploratory Works– namely threatened ecological communities and threatened species. Considered individually, these actions may or may not constitute significant residual impacts. However, as they would not be occurring if the BEW were not proceeding, their impacts should be considered as cumulative impacts of the exploratory works. Given these actions will also support the Borumba MW it can be argued that as they are being built and planned for the exploratory works, their impact and any offset requirement should be assessed as part of the exploratory works referral.	3.5.9
115	Along with [redacted], [redacted] recognises there are concerns for the planned access route to the exploratory works site along Old Forest Drive, Casey’s Gully Road, and Western Creek Road (in conjunction with Gympie Regional Council) and plans for bridge upgrades across Yabba Creek on Yabba Creek Road between Imbil and Borumba (in conjunction with Qld Main Roads). Vegetation mapping shapefiles provided by Qld Hydro as part of the draft preliminary documentation shows patches of remnant Lowland Rainforest of Subtropical Australia along the planned access route via Old Forest Drive out to the Gympie Brooloo Road. Significant roadworks in these locations will have the effect of driving further fragmentation of important remnant patches of this community. Notably these areas were consciously kept intact by early 20th century foresters when clearing for plantations. Overlaying the impact of a 50m buffer on either side of this access route, would seriously fragment this important connected network of remnant patches. ● It is not clear from the documentation whether this impact has been accounted for in the development of the draft OAMP for the exploratory works. There are 6 bridges across Yabba Creek on Yabba Creek Road between Imbil and Borumba Dam, several of them one lane timber bridges not suitable for heavy transport of the size required for the exploratory works. This stretch of Yabba Creek has high ecological value, providing habitat for Mary River cod, Lungfish, Mary River turtle and White throated snapping turtle. In many places the riparian vegetation is Qld RE 12.3.1, which is very likely to contain the EPBC Lowland Rainforest TEC and individually listed flora species. We note Queensland Hydro plans to upgrade/rebuild these bridges in conjunction with Main Roads. ● The impacts of these upgrades should be considered and assessed as part of the cumulative impacts of the Borumba PH exploratory works, and incorporated into the OAMP for the exploratory works.	3.5.9
115	Failure to assess indirect, cumulative and facilitated impacts to MNES Under the Terms of Reference (TOR) for the Main Works Environmental Impact Statement (EIS), along with assessing the direct impacts to MNES the proponent is also required to assess the indirect, cumulative and facilitated impacts to MNES from the proposed action. Despite the requirement for the proponent to assess the indirect, cumulative and facilitated impacts that will potentially occur to MNES by the main works, the proponent has not assessed the indirect, cumulative and facilitated impacts that could potentially occur to MNES by the exploratory works. 2 Recommendation: In accordance with the TOR for the Main Works EIS, the proponent must be required to assess the indirect, cumulative and facilitated impacts that could potentially occur to MNES by the exploratory works.	3.5.8
115	4. Failure to assess risk to MNES from deterioration and failure of spoil dumps Under the Queensland mine site rehabilitation framework, it’s recognised that the materials used to cover mine spoil dumps will deteriorate over time. This poses a significant future risk to MNES and other environmental values from the toxic substances that could potentially be released to the environment when mine spoil dumps deteriorate and fail over time. Despite the risk of it occurring, the proponent has not assessed the potential adverse impacts that could occur to MNES, particularly before detectable and preventable levels become evident, and additionally to other environmental values from deterioration and failure of the spoil dumps for the exploratory works. Recommendation: ● Require the proponent to assess the potential risk to MNES and other environmental values from the deterioration and failure of the exploratory works spoil dumps	3.5, 3.5, 3.6, 3.2.4
115	3. Section 1.4.2 Threatened Species Listing Conservation Status [redacted] notes the changes to the Conservation status of threatened fauna since Referral under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC): ● Mary River turtle (Elusor macrurus) – uplisted to Critically Endangered 4 September 2024 ● Coxen’s Fig-Parrot (Cyclopsitta diophthalma coxeni)– uplisted to Critically Endangered 31 March 2023 ● Conondale Spiny Crayfish (Euastacus hystricosus) – new listing as Endangered 4 September 2024 ● Diamond Firetail (Stagonopleura guttata) – new listing as Vulnerable 31 March 2023 ● Brown treecreeper (Climacteris picumnus victoriae) – new listing as Vulnerable 31 March 2023 It is acknowledged the Borumba PHES Exploratory Works proposal was declared a Controlled Action on 30 March 2023 under the EPBC Act 1999. While this decision pre-dates (by one day in the case of a number of species listing per above), [redacted] considers it is beholden on the proponent to assess the likelihood of potential impact to these species according to their current EPBC Conservation Status in the context of this draft Preliminary Documentation (PD) and potentially for a future EIS and Main Works referral assessment. These uplistings cannot be ignored given it is a clear scientific indicator of the alarming and declining trajectory of these already threatened species (and their habitats) demanding greater protection. The perilous status of Critically Endangered species puts them one tenuous step away from being ‘extinct in the wild’. This must be avoided. Recommendation: ● Include cumulative impacts and impacts from climate change when assessing likely and potential impacts to threatened species ● Adopt the Precautionary Principle due to the potential threats of serious or irreversible damage and lack of scientific certainty. ● Assess impacts on species for the current conservation status in the draft PD and apply in any future EIS	3.5, 3.5, 3.6

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115	3. Section 1.4.2 Threatened Species Listing Conservation Status [redacted] notes the changes to the Conservation status of threatened fauna since Referral under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC): ● Mary River turtle (Elusor macrurus) – uplisted to Critically Endangered 4 September 2024 ● Coxen's Fig-Parrot (Cyclopsitta diophthalma coxeni)– uplisted to Critically Endangered 31 March 2023 ● Conondale Spiny Crayfish (Euastacus hystricosus) – new listing as Endangered 4 September 2024 ● Diamond Firetail (Stagonopleura guttata) – new listing as Vulnerable 31 March 2023 ● Brown treecreeper (Climacteris picumnus victoriae) – new listing as Vulnerable 31 March 2023 It is acknowledged the Borumba PHES Exploratory Works proposal was declared a Controlled Action on 30 March 2023 under the EPBC Act 1999. While this decision pre-dates (by one day in the case of a number of species listing per above), [redacted] considers it is beholden on the proponent to assess the likelihood of potential impact to these species according to their current EPBC Conservation Status in the context of this draft Preliminary Documentation (PD) and potentially for a future EIS and Main Works referral assessment. These uplistings cannot be ignored given it is a clear scientific indicator of the alarming and declining trajectory of these already threatened species (and their habitats) demanding greater protection. The perilous status of Critically Endangered species puts them one tenuous step away from being 'extinct in the wild'. This must be avoided. Recommendation: ● Include cumulative impacts and impacts from climate change when assessing likely and potential impacts to threatened species ● Adopt the Precautionary Principle due to the potential threats of serious or irreversible damage and lack of scientific certainty. ● Assess impacts on species for the current conservation status in the draft PD and apply in any future EIS	3.5, 3.5, 3.6
115	5. 3.10.1 Invasive species and disease [redacted] understands Qld Hydro has prepared a Biosecurity Management Plan, however it hasn't been provided in the package of documents meaning there can be no review. This is disappointing and an oversight in [redacted's] view as there are obvious and concerning biosecurity risks to the environment that have been identified. These include, but not limited to Myrtle Rust, chytrid fungus, Bunya Pine dieback associated with phytophthora species, and now fire ants. Weedy Sporobolus grasses that must also be addressed: The introduced rat's tail (Sporobolus) grasses are invasive grasses that reduce pasture productivity, out-compete native pasture plants, and cause significant degradation of natural areas. They are broadly referred to as weedy Sporobolus grasses (WSG). Four species of introduced Sporobolus grasses are invasive plants in Queensland: ● giant rat's tail grass (Sporobolus pyramidalis and S. natalensis) ● American rat's tail grass (S. jacquemontii) ● giant Parramatta grass (S. fertilis)	3.5, 3.5, 3.6
115	6. Section 7 - Significant impact assessment 7.1 Threatened ecological communities 7.1.1 Subtropical lowland rainforest – critically endangered Threatened Ecological Community [redacted] applauds MRCCCs long history (over 30 years) and dedication to working with private landholders to rehabilitate and restore the subtropical lowland rainforest vegetation community, primarily in riparian zones. These riparian zones tend to have a high edge to remnant area ratio, and are therefore exposed to transformational environmental weed incursions. [Redacted] understands the importance of maintaining ecologically functional edges and preventing fragmentation to maintain condition. Doing so reduces issues and costs involved in restoration and rehabilitation of this vegetation community, where it can be done. [Redacted] reinforces the importance of regular surveillance and vigilance to maintain and encourage expansion of these important, insitu and enhanced rainforest patches which is far more cost-effective than attempted restoration efforts. MRCCCs experience has demonstrated that at least a 25-30 year program is required to rehabilitate this vegetation community to restore functionality for key species to return eg. Giant barred frog. Table 38: Assessment of potential impacts and mitigation options for Lowland Rainforest of Subtropical Australia TEC	3.5, 3.5, 3.6
115	Changes to habitat quality as a result of erosion and sedimentation Dispersive soils are likely to occur throughout the exploratory works areas, and Area 1 will involve clearing of vegetation (and TEC fragmentation) on steep slopes. Qld Hydro has understandably identified this is likely to be an impact. [Redacted] acknowledges an Erosion & Sediment Control (ESC) plan has been developed, but sodic and dispersive soils require specific treatments and erosion control measures. Mitigation strategies need to be developed beyond the ESC Plan that include gully erosion control measures. Ideally, avoidance of exposure of dispersive soils should be the first priority, and if there has to be disturbance, contractors need to have demonstrated experience working in dispersive soils, whereby they understand the importance and how to create minimal disturbance, not exposing the dispersive, sodic subsoils that create the fine sediment plume and severe erosion issues. The document also states that TEC located outside and downslope of the project footprint could be at risk of erosion. However, often sheet wash and subsequent gully erosion moves up-slope thus creating issues with loss of surface (including potentially TEC) via gully erosion, once the dispersive sub-soil is exposed so this needs to be addressed.	3.5, 3.5, 3.6
115	Changes to the local bushfire regime The risk assessment underestimates that more vehicles and human activity is likely to create a higher fire risk to areas that were previously inaccessible. Increased fire risk is a consequence of creating further fragmentation. Recommendation: ● Prepare and implement a Fire Management Plan which considers the protection the Glider species and its habitat (including its range)	3.5, 3.5, 3.6
115	Spread of weeds, pests and disease due to increased human activity The risk assessment clearly identifies that the TEC currently has minimal weed threat at present as only lantana, corky passion vine and noogurra burr have been identified as weed threats. These weeds are relatively easily controlled compared to STLR transformer weeds such as cats claw vine and Madeira vine. As a consequence of minimal weed threat at present, higher levels of vigilance are required as fragmentation will allow easier pathways for new 'transformer' weed incursions to occur. To minimise the incursion of these weeds requires greater attention to the threat posed by edge effects (section 5.3.2). It is recognised that the Mary River catchment has numerous environmental weeds that are introduced through wind-blown sources and establish themselves via TEC edges initially. Once established they are near impossible to eradicate. Recommendation: ● Develop a weed control plan with a regular i.e. less than 6 monthly intervals which includes comprehensive monitoring and surveillance for early detection and rapid response actions	3.5, 3.5, 3.6
115	Impacts to surface and groundwater flows (pdf page 241 of 510) "…The assessment table notes changes in surface and groundwater flows may influence the species composition of a TEC and a community's resilience to disturbance and continued viability…" In the corresponding Mitigation Options we refer to the statement "The Project will improve the hydrology of Borgan Road which is surrounded by TEC". ● An explanation which demonstrates the veracity of this statement is required	3.5, 3.5, 3.6
115	Impact criteria, table 39 "Cause a substantial change in the species composition of an occurrence of an ecological community" Assessment: Unlikely The quantum of what Queensland Hydro considers a "substantial change" does not appear to have been quantified. ● Quantify QH 'definition' of 'substantial" ● Note we submit it is likely fragmentation of STRL via new or upgraded roads/tracks will change the species composition of the ecological community through increased edge effects favouring specific species or potentially transformational environmental weed species. "Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community" Assessment: " The Project is unlikely to facilitate the further spread of weeds and pests into areas where they are not." [Redacted] considers the project is actually likely to cause a reduction in the quality of the TEC. The introduction through increased edge effect of transformational environmental weeds such as Cats claw vine, Madeira vine, ochna, privet and some grass species can cause a substantial reduction in the quality of the Lowland Rainforest of Subtropical Australia TEC These weed species are known to be present within the sub-catchment and are currently suppressed through resilient vegetation communities and isolation from vehicles and humans. As it is, these remnant patches are buffered to some extent from weed encroachment. However the exploratory works opens these remnant patches to greater exposure to threats that can transform and degrade the TEC which not only erodes the integrity of the TEC but creates costly long-term and consistent weed control activities and surveillance.	3.5, 3.5, 3.6
115	Section 7.3.3 Giant barred frog (Mixophyes iteratus-M. iteratus) p.366 Recommendation ● assess the potential external impacts to the Giant barred frog from increased human, vehicle and threats eg. potentially increased pig threat due to more human disturbance, and chytrid fungus spread at higher elevations Issues ● There are known populations in adjacent Coonoongibber Creek sub-catchment. Therefore, it is very likely that M. iteratus occurs at least in upper Yabba catchment ● Records demonstrate there is/was a connection in a north/south direction for this species in upper catchments and to the east and west of the main trunk of the Mary River (i.e. Six Mile sub-catchment with Tinana Creek sub-catchment, and Little Yabba with Coonoongibber Creek (Yabba) system). There has been a historical connection between the Mary River catchment and the Burrum River system (i.e. record of M. iteratus on Doongul Creek). ● Dams cause impenetrable barriers laterally and longitudinally in these vital upper regions of sub-catchments for movement of adults, juveniles and tadpoles. The main trunk of the Mary River is not a good conduit for movement of this species. ● Profile: 'The Conservation Advice for the giant barred frog states that the species is a large, ground-dwelling frog, often found in lowland open wet forests….' (extract PD pg 347) o The DCCEE Conservation advice1 also states that '…the species is showing some signs of recovery at mid-elevations, with small numbers of individuals recorded at sites at 500 m in the Conondale Range and Lamington National Park'. o The area of direct impact of the project is between 150 and 500m and therefore likely to create barriers to movement (e.g roads, tracks, water pipes, infrastructure). Distribution is information deficient north of Coonoongibber Creek o According to the Conservation Advice: 'The Giant Barred Frog is predominantly found in a limited range of wet forest types. This specialisation, together with the noted fragmentation of the population, the low number of individuals at localities (particularly within the south of the species range), its sensitivity to disturbance, and its low dispersal ability, increases the susceptibility of M. iteratus to local extinction.' ▪ Therefore further fragmentation (via the exploratory works stage) of key habitat i.e. subtropical lowland rainforest may prevent potential recolonization of the species from adjacent populations or could lead to further risk of localised extinction based on the Conservation Advice. o Populations within the footprint and surrounding upper catchment streams could have declined or become locally extinct and may be currently recovering, as they are in the Conondale and Blackall ranges at altitude. Known declines elsewhere have been likely caused by infection from the Batrachochytrium dendrobatidis (i.e. Chytrid) fungus and may be the reason for apparent absence of M. iteratus within the survey area. o The headwaters of the streams impacted by the project are adjacent to the upper catchments of Little Yabba and Coonoongibber Creeks (both with populations of M. iteratus). ▪ Landscape connection is possible through the upper Borumba Creek system. Recommendation: ● Create more and robust corridors not further barriers or fragmentation to distribution movement and genetic pathways. ● The Conservation Advice for M. iteratus provides the following Conservation and Management Priorities – 'Identify and conserve landscape characteristics that facilitate movement between subpopulations.' and 'Investigate options for linking, enhancing or establishing additional subpopulations' and should be upheld ● This project has the potential to restrict movements, against the recommendations of the Conservation Advice priorities by habitat clearing, fragmentation and barrier creation. ● Recent observations of the species (in 2023 and 2024) have been made in Imbil State Forest and near Yabba Creek (iNaturalist, 2023), less than 10 km from the Exploratory Works Project footprint. However, as these observations were lodged through a secondary source, they are subject to confirmation (continuation of table on page 347) o This record is verified having been confirmed by Eva Ford (MRCCC) and Harry Hines (DETSI). Location information is blurred in iNaturalist but may be in Coonoongibber Creek, or possibly Derriere Creek. o M. iteratus records WildNet (2 specimens) collected within 3km of point on map below. Recommendation o Include these records and recognise the possible recovery of species that may be occurring or has the potential to occur with rehabilitation effort in disturbed areas. o Document the project is a threat to what may be the last remaining small populations of M. iteratus through clearing and replacement of habitat with barriers for connections between sub-catchments and the proponent's responsibilities arising from this impact ● Habitat Critical to the Survival of the Species: o 'While the Project area is near the Conondale Ranges in the Mary River catchment, as the species was not detected within the Borumba PHES Survey Area despite extensive survey effort, and no records of the species have been recorded in the Exploratory Works Survey area, it is considered unlikely the Exploratory Works Survey area supports habitat critical to the survival of the species.' ● Recommendation: o [Redacted] submits the survey area does contain habitat that could support the M. iteratus and therefore the area should be identified as 'possible' habitat not 'unlikely' habitat. ● Survey effort ▪ Amphibian targeted surveys only between 11 to 21 December 2022 at only 7 sites. ▪ 2022 is remembered as a mostly wet year in the Mary River catchment, however, the last few months of 2022 were drier than usual. ▪ December 2022 mean rainfall for Upper Kandanga (Oakwood rainfall station) is 124mm, however December 2022 only recorded 73mm	3.5, 3.5, 3.6
115	Section 7.3.9 Mary River cod (Maccullochella mariensis) p.410 ● Reference sources are considered generally out-of-date in general ● The document does not refer to any other Maccullochella species as a potential reference for some of the unknown aspects of the Mary River Cod. Table 94: ● Spawning habitat: No mention of undercut banks. M. peeli (Murray Cod) recorded use of undercuts. ● Distribution: the 2016 data used only mentions "Tinana-Coondoo Creek, Six Mile Creek, and upper Obi Obi Creek". ● Note QH recognises that Yabba, Lake Borumba has previous records of Mary River Cod. o Yabba Creek is a key cod habitat. Recommendation ● Clarify o "Surveys involved visual observations of the Mary River cod via kayaking in the Kingaham, Yabba and Sandy creeks, eDNA surveys, fyke netting, cathedral trapping, electrofishing (backpack and boat-based electrofishing), snorkelling, angling, and box trapping (Hydrobiology, 2023)." Table 95: To address: ● Bed level crossings: the constructed bed level may be designed to not restrict fish passage but the level of traffic will, especially at times of higher activity for cod (dusk & dawn) ● Light pollution is considered, but not vehicles headlights while crossing. Contamination via petroleum based oils while vehicles crossing is a potential risk that is likely to impede fish passage. Table 96: ● Due to the project's "temporary nature" the impacts are deemed "unlikely to lead to a long-term decrease in the size of a population". ● However, there are likely to be significant localised effects.	3.5, 3.5, 3.6

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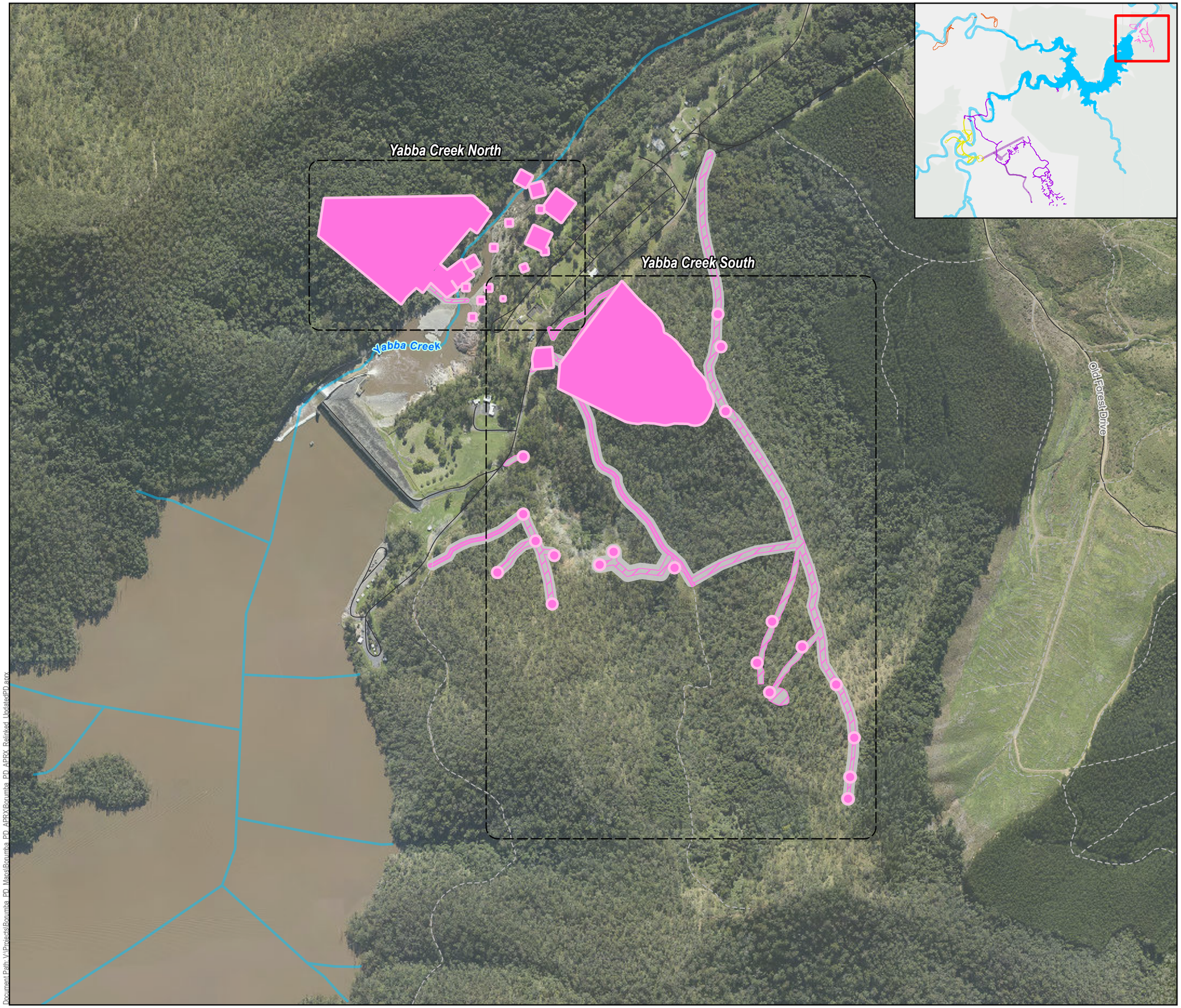
115	Section 7.3.1 Lungfish (Neoceratodus forsteri) p. 335 Table 72, Impact Criteria: Disrupt the Breeding cycle of an important population: "Unlike Australian lungfish in the Burnett catchment, the Mary River catchment population is not known to undertake spawning migrations (Kind, 2003) p.335" – This information is provided from one publication by Peter Kind (2003) where he states that Australian lungfish spawning migration in the Mary River catchment was not detected. The Burnett catchment is more highly modified than the Mary River catchment. Lungfish are known to spawn in the Brisbane River (Kemp, 2017). The population of lungfish sampled from the Brisbane River were actively spawning and recruiting young to the population (Kemp, 1996 & Kemp, 2005 in Kemp, 2017). Research suggests that populations of lungfish in riverine systems are reproductively viable (Kemp, 1996 & Kemp, 2005 in Kemp, 2017). In contrast, lungfish sampled from Enoggera Reservoir were all advanced age with no recruitment occurring from 1974. All samples taken from water impoundments during fish kills have been adults, with no sub-adults or juveniles (Kemp, 2017). Recommendation: ● Further research into the current spawning population of lungfish in Yabba Creek and the Mary River system is required. Lungfish spawn on dense macrophyte beds such as Eelgrass or Ribbon plant (Vallisneria nana and/or V. annua). Lungfish spawn seasonally in early to mid-spring during low-flow events where water temperature ranges between 18 and 28 C. (Espinoza et al, 2013). Oviposition may occur on short, dense macrophytes in shallow water (Espinoza et al, 2013). The impoundment of riverine habitats changes water depths and impedes establishment and development and therefore the growth and distribution of macrophytes (Marshall et al., 2015). This information emphasizes the importance of riverine lungfish populations. The viability of fish eggs and recruitment success is greater than populations found in aquatic impoundments. ● All efforts to sustain and protect populations of lungfish in riverine systems such as the Sandy and Yabba Creek confluence in the vicinity of Area 4, Borgan, in particular the potential impact to this important riverine habitat by uncontrolled discharge of leachate-laden from the spoil dump, is of the highest importance. ● This also applies to Exploratory works Area 1 – the reach of Yabba Creek downstream of Borumba Dam, where Lungfish occur.	3.5, 3.5, 3.6
115	7.3.7 Koala (Phascolarctos cinereus) - Table 88 The continued destruction, degradation and fragmentation of habitat is driving this threatened species closer to extinction. [Redacted] considers this unacceptable Assessment: clearing of 34.1ha of breeding and foraging habitat, to 48.4ha of sheltering and dispersal habitat has the potential to adversely impact koala as it could potential pout pressure on the remaining available habitat able to be utilised by individuals ● Impact pathways include: vegetation clearing of suitable habitat to establish access tracks and facilitate geotechnical investigations Survey effort: Recommendation: ● koala detection dogs must be deployed for the Exploratory works Habitat fragmentation: Mitigation Recommendation: ● Specify what the extent and functionality of "suitable habitat will be retained for the 'connectivity' around the proposed works is Injury or mortality Recommendations: ● Pre-clearing surveys should be conducted with the aid of koala detection dogs and resurveying with thermal drones ● Koalas may venture onto tracks, particularly on dusk so greater restrictions must be placed on driving ● Clearing: the 3ha extent for staged clearing is a relatively large area of habitat and should be undertaken in more than one stage with subsequent extents broken up even further ● A qualified person in koala rescue and conservation should be onsite at all times, not just a FSC or environment officer Habitat degradation through air, noise and vibration and light emissions Noise/vibration Recommendations ● Works must be undertaken outside breeding periods - not just 'where possible' ● 200m range is inadequate and should apply outside breeding periods as well Table 90 Assessments - collective Issues: [Redacted] disagrees with the assessment of 'Unlikely' as every patch of habitat and connectivity in the landscape is vital for the persistence of koalas in the wild. There has also been no assessment of the potential for increase in disease from stress, loss of range and habitats. The project represents prolonged and intensive activities which are directly linked to the health and viability of koala	3.5, 3.5, 3.6
115	7.3.10 Mary River Turtle, p.419 The Mary River Turtle is now listed as critically endangered. Table 97 Habitat: Primarily quotes Sam Flakus research. Considerable number of papers published since Sam Flakus research released that has improved our knowledge of Mary River Turtle habitat Previous records: Col & Duncan Limpus & Sam Flakus did surveys around Borumba dam wall and caught Mary River Turtle, post 1999 floods – suggests that the turtles were washed down from Lake above in 1999 flood. It is noted that it is undetermined if any Mary River Turtle were caught above the wall in this event In the Survey area: "Nesting habitat for the Mary River turtle includes unconsolidated sediments, particularly alluvial sand banks, within 100m of pool habitat." ● Predated nests have been observed on suitable sandbanks in the upper reaches and fringing habitat of Lake Borumba. Recommendation ● Substantiate the "within 100m of pool habitat" with research evidence Threats: Dingo predation and weed incursions are considered minor compared to increased human activity and presence exacerbated by the creation of road/track networks which will encourage foxes which will directly impact upon the long-term turtle population. Table 98 Instream earthworks - Mitigation Options: Issues: It is unclear what the actions would be should suitable breeding places be found and/or identified Recommendation ● Clarify what would be done and where an 'alternative' suitable breeding place may be established and protected for the entire duration of the incubation period of the turtle eggs – minimum 55 days which can extend to over 80 days if cloudy or cooler weather conditions occur. Issues: Bed level crossings will be used for the initial 6 months of the project before the Bailey bridges are constructed. These bed level crossings will be used extensively during construction of the Bailey bridges and to access the tunnel area (up to 380 truck movements each day p.36), and will need to have regular (daily) maintenance with the risk that large rock material will be washed downstream impacting upon potential turtle nest banks. The temporary bed level crossings are planned to be constructed in April 2025 for use until Spring 2025 (maybe later if delays are incurred building the bridges) meaning these crossings could be in place during turtle nesting when they move distances to nest. The amount of truck movements creates the potential for consistent downstream turbidity. Further, if the crossing is required to be maintained regularly, there is the risk the structure will be constructed above bed level thereby impeding passage. While a low rock structure will likely have a low impact on turtles moving upstream (or downstream) that impact coupled with regular traffic and turbidity will likely result in the turtle abandoning potential nesting habitat upstream and downstream of the crossing. Changes to habitat quality This is a critical issue with robust erosion and sediment control imperative. There is a risk the spoil dump could uncontrollably release leachate-laden fine sediment rich water into Sandy and Yabba Creeks during high rainfall events which visually appear (aerial photography analysis) to have suitable nesting habitat before entering Lake Borumba. Depending upon the leachate content of the release water and fine sediment content this could significantly impact directly upon the turtle and its nesting habitat. While the actions identified broadly address the impacts, there are still many unknown elements eg. leachate discharge from spoil dump, impact of three creek crossings from high traffic loads for a 6 month or longer duration. Recommendation ● Stabilise and rehabilitate exposed areas as quickly as possible ● Detail what stabilisation and rehabilitation measures would be undertaken and in what timeframe/s Injury and mortality ● reference is made to identifying nesting habitat and pre-clearance checks prior to activity Recommendations: ● If a nest/s is identified in the construction area or near creek crossings, these nests should be relocated to safer, more appropriate locations by an experienced and trained freshwater turtle expert. ● Given the extreme difficulty in detecting a turtle nest site, an expert with the necessary experience in nest relocation must be engaged to undertake any proposed relocations. Note there are such experts from within the Mary River Catchment Impacts to surface water quality and other elements from construction… Issue: This is a real risk to species such as the Mary River turtle. [Redacted] notes there is no reference made of the potential contamination of surface water quality to Sandy and Yabba Creeks from an uncontrolled release of leachate-laden spoil dump runoff if a high rainfall event overwhelms the systems built into the spoil dump location. The Water Quality Risk assessment (Appendix G) tends to underestimate the potential for this scenario to occur, and simply recommends that 'coir logs' or like could be used to bund the spoil dump area which is likely to contain 1,000,000 tonnes of rock blasted using nitrate-based explosives up to 5 metres high (potentially 7m high). Recommendation: ● This area plus a reasonable and effective buffer area should be bunded with significantly more substantial materials than coconut coir logs ● The contamination risk should be treated more seriously with lessons from the Snowy 2.0 project use of nitrate-based explosives resulting in water quality breaches of nitrate-laden releases into sensitive waterways heeded Areas Light impacts to turtles Issues: Natural light=dark cycle is vital to the survival of a vast number of species, essential for the correct synchronization of periodic behaviours. Light pollution at nesting beaches is detrimental to sea turtles because it alters critical nocturnal behaviours namely: 1. How sea turtles choose nesting sites 2. How they return to the sea after nesting 3. How hatchlings find the sea after emerging from their nests 4. Swimming hatchlings may orient towards light cues and can be lured to shore again Section 2.2.2.1 (p.35) Hours of Work states "Geotechnical drilling 24 hrs a day, 7 days a week for boreholes equal to or more than 200m deep and shallower boreholes by exception. Underground construction activities (including blasting) and associated enabling works -24 hours a day, 7 days a week. Works outside of the above listed construction hours may occur during the Project. Within the Construction Environment Management Plan, Table 11: General flora and fauna management measures identifies light emissions impacts. Management: Artificial light to be very low intensity during breeding season for both turtle species (specifically during nesting and hatching). Although no studies have been conducted on these species, guidelines can be drawn from marine turtle studies (same taxa) as Elusor and Elseya are generally nocturnal breeders. Marine turtles are particularly sensitive between wide and green wavelengths (400 to 500 nm) (Kamrowski, Limpus, Moloney, & Hamann 2012 Coastal light pollution and marine turtles: assessing the magnitude of the problem. Endangered Species Research. Vol 19:85-98). Very little light is necessary to disrupt orientation of hatchlings. Recommendations: ● Lights must be installed and directed away from potential turtle breeding locations ● Any lights that are considered necessary that throw any light onto or in the vicinity of breeding areas should be installed on a separate circuit so they can be switched off during breeding season ● Light levels should be monitored around potential nesting beaches during nesting and hatching for both turtle species ● Trigger for corrective action ○ If light levels higher than 500 nm at potential turtle breeding locations, actions must be taken immediately to reduce light level to within acceptable range. Mary River Turtle - Table 99 Impact criteria: Lead to long-term decrease in the size of a population Recommendation: ● Include Marilyn Connell paper from 2018 Table 1 clearly shows species abundance as currently only Sam Flakus and Departmental research referenced. "The disturbance or temporary loss of 0.4 ha of foraging habitat and 0.1 ha of nesting habitat within the Project footprint is unlikely to reduce available breeding, foraging, or dispersal resources such that this loss would likely lead to a long-term decrease in the size of the population". Issue: The use of these figures tends to be irrelevant to the Mary River turtle and could be seen to deliberately imply the impact is relatively small. By comparison, total nesting habitat used by the turtle across the Mary River catchment is likely to total only approximately 1 to 2 hectares given the small turtle population and their high site fidelity for specific nesting sand banks (Mary River Turtle Conservation Advice pg 10). If 0.1 ha of nest habitat is likely to be affected, that is a relatively large area of nesting habitat in the catchment. A typical nest bank is only 10m x 5m (0.005ha), and throughout the catchment there are 12 to 15 nest banks. The loss of any nest bank habitat is a significant impact to this species given there are so few breeding pairs. Reduce area of occupancy: Issue As above Historical records suggest that the Mary River turtle demonstrates nest-site fidelity and returns to the same nesting sites each year. Nesting is concentrated on a small number of sand banks. Not all females show nest-site fidelity, given that fewer than half of the females recorded nesting during 2009 at sites along the Mary River were recorded as returning to the same nesting bank in 2010 and 2011 (Micheli-Campbell 2012; Micheli-Campbell et al. 2013a). While the turtle is known to occur across 200km of the Mary River, its nesting habitat is extremely specific within that 200km distribution. As described above, there are specific nesting sand banks the turtle utilises, with high site fidelity, therefore there is not 200km of habitat available. The site specificity and value of core habitat such as nest banks cannot be under-estimated as it appears to have been by the proponent. Fragment an existing population: quotes species occurs from Conondale to Tidal barrage at Tiaro, whereas previous paragraph says Kenilworth to Tiaro; somewhat inconsistent. The Mary River turtle within the Lake Borumba has now been potentially isolated from the rest of the Mary River catchment for the past 60 years.	3.5, 3.5, 3.6
115	7.3.11 White Throated Snapping Turtle, p.429 Many of the actions detailed by [redacted] for the Mary River turtle also apply for the White throated snapping turtle. Nesting season differs from the Mary River turtle as they nest in the Autumn to winter months. Table 100 Profile: Threats: Qld Hydro has referenced Conservation Advice 2014 when Recovery Plan supersedes it in 2016. Changes to habitat quality…: Same as notes as for the Mary River Turtle. Injury and Mortality: Qld Hydro states March – August breeding season. Recovery Plan (pg 12) states May – June. Impacts to surface water quality et al from construction… This is a real risk to species such as the White throated snapping turtle and the Mary River turtle. There is no reference made of the potential contamination of surface water quality to Sandy and Yabba Creeks from an uncontrolled release of leachate-laden spoil dump runoff if a high rainfall event overwhelms the systems built into the spoil dump location. Refer to comments made in the Mary River turtle section. In conclusion, we suggest that the impact to these turtle species has been underestimated. The nesting habitat for the White throated snapping turtle seems to be broader than that of the Mary River turtle with nesting occurring on sand banks closer to the water's edge and higher on the streambank in places with heavier soil content. Predicting White throated snapping turtle nesting habitat can be difficult.	3.5, 3.5, 3.6
115	7.3.2 Black-breasted button-quail (Turnix melanogaster) p.337 Discrepancies were found regarding the breeding season of BBBQ in the document. The breeding season is 9 months (September to May). The document states, "To mitigate the impacts of clearing on breeding, the clearing of potential habitat will be timed to avoid the species breeding period (May – June), where possible," which is incorrect. Mitigation of airborne particles includes "regular wetting down" p.344. Wetting down could eliminate platelets and therefore evidence of BBBQ presence in the area. Recommendation ● Investigate areas for platelets before "wetting down" occurs	3.5, 3.5, 3.6

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
115	7.3.4 Glossy black-cockatoo (south-eastern) (Calyptorhynchus lathami lathami) p.359 Important populations, p.358.. Glossy black cockatoo populations are known from within the Conondale Ranges, and the properties that adjoin these ranges. Given the extensive prime habitat of she-oak and large eucalypt trees throughout the Conondales it could be considered an important population. The majority of Glossy black cockatoos were identified near Area 4, Borgan which will be highly impacted by workers, vehicles and tunnelling operations. Table 80, p.359 Vegetation clearing 1. Assess for location of nesting hollows, identify location and dimensions. And record loss of hollows due to clearing. 2. Install purpose-designed nesting boxes – WWF call them 'cockatubes'. Recommended monitoring as per "Habitat survey for Bushfire Recovery for Wildlife and Habitat Community Grants Program, GLENRAC, 2020" https://landcare.nsw.gov.au/groups/glenrac/providing-homes-and-habitat-for-gliders-glossy-black-cockatoos/ A study on the natural nest hollows, and the strategic placement of artificial hollows is recommended. This recommendation is based upon findings by the Glossy Black Conservancy, Qld that "Strategic placement of hollows requires a better understanding of the status and supply of natural nest hollows in the landscape. A study of hollow-bearing trees in urban forest fragments on the Gold Coast revealed that while there was a relatively high availability of hollows compared to other regions, many of these hollows were small (10cm) and trees with larger hollows may be limiting (Treby and Castley 2015). Treby, D.L. and Castley, J.G. (2015). Distribution and abundance of hollow-bearing trees in urban forest fragments. Urban Forestry and Urban Greening, 14: 655-663. https://doi.org/10.1016/j.ufug.2015.06.004 Quoted from Glossy Black-Cockatoo Conservation Guidelines for south-eastern Queensland and far North-eastern New South Wales 2022. Glossy Black Conservancy, Cleveland, Qld.	3.5, 3.5, 3.6
115	Section 7.3.5 p.368 Greater Glider Greater Glider – Petauroides volans, Endangered [redacted] notes: ● 33.9 ha of habitat to be cleared in Exploratory works project. ● A total of five records of Greater Glider (southern and central) were detected within the Borumba PHES Survey Area. ● One observation was recorded in the Exploratory Works Survey area along Walkers Top Road in Area 3 – Walkers Top. ● 33.9 ha of habitat occurs in the Exploratory Works survey area and will be cleared. The plans by QH to undertake vegetation clearing of prime habitat to establish roads, access tracks and facilitate the geotechnical investigations will fragment high quality habitat and involve the clearing up to 11 hollow-bearing trees for supporting infrastructure in Area 4 – Borgan, and clearing up to 16 hollow-bearing trees for temporary water infrastructure, access tracks and geotechnical investigations in Area 3 – Walkers Top. As quoted on p.369 "the Borumba PHES Survey area supports large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees, it is considered to support habitat critical to the survival of the species". Disturbance to Greater Gliders has detrimental impacts to this endangered species as they are slow to recover due to their life history traits, their high site fidelity, low fecundity, and limited dispersal ability. Greater Gliders are unlikely to move from their home range. Greater Glider prefers mature, relatively undisturbed forests with significant importance placed on mature habitat to provide refuge during and in the aftermath of a disturbance event. Tree cover and mature trees are especially significant as feed trees and den trees. Cally, JG, Macak, PV, Chick, MP, Blake, B, Wagner, B & Ramsey, DSL 2025, 'Mature forest habitat mitigates the decline of an endangered greater glider population through a widespread Greater Gliders will use hollows from 10cm in diameter and larger. Every hollow is important for the future survival of the species; the species is known to use upward of 18+ hollows. Peer-reviewed literature on the ecology and behaviour of the Greater Glider includes extreme sensitivity to disturbance, often resulting in death and reduced population numbers. These include reduced population numbers within a 1km radius of previous land clearing, fire, or logging activities. The species will often not move on during activities and will likely perish (similar behaviour to Koala (Phascolarctos cinereus). [Redacted] shares concerns with [redacted] that the preliminary document fails to recognise these following important factors of this species that contribute to their fragile population status. This emphasises the importance of the habitat contained within exploratory works footprints. The Greater Glider has the following lifecycle characteristics that impair fecundity: ○ Breeding occurs between March and June – relatively small breeding window ○ One joey per litter – recruitment is low given only single joey per litter ○ Stays with mum in pouch until its 9 months old – mum needs to care for the young over a long time period (high risk of mortality) ○ Sexual maturity 18 months and live for only 15 years ○ Solitary, and some males are monogamous The Greater Glider has a strong home range fidelity, requires habitat of old growth forest ecosystems and will disperse 3km from their selected dens. Greater Gliders need up to 6 dens which are required for daytime shelter and night-time housing of offspring (they do not glide with offspring on their back). McGregor, D, Nordberg, E, Yoon, HJ, Youngentob, K, Schwarzkopf, L & Krockenberger, A 2023, 'Comparison of home range size, habitat use and the influence of resource variations between two species of greater gliders (Petauroides minor and Petauroides volans)', PloS one, vol. 18, no. 10, pp. e0286813–e0286813. Research indicates that species decline due to habitat fragmentation could result in possible extinction within 50 years as a result of population size and inbreeding. Mulley, B, Gracanin, A & Mikac, KM 2024, 'Population Viability of an Endangered Population of Greater Gliders (Petauroides volans) and Management Implications', Conservation, vol. 4, no. 4, pp. 871–887. As identified on p.369 this location is prime habitat for the species and there will be 33.9 ha of habitat clearing, coupled with much increased traffic and human interaction causing fragmentation which could propel species decline to the point of local extinction. We note on p.371 that tracks and disturbance will "only"be 6m wide. However the presence of vehicles, machinery, humans, light and noise (at various decibels) will likely cause broader fragmentation (indirect fragmentation) and unnatural 'dispersal' of the species to retreat from these previously high quality habitats. These impacts, effects and influences potentially lead to species decline (and distress) and possible local extinction. More vehicle and human interaction with this prime habitat could also lead to increased bushfire threat, which is a key threatening process for the species. Research has shown that impacts of fire and logging on hollow dependent arboreal marsupials significantly reduces the abundance of the Greater Glider through the loss of hollow bearing trees and forest canopy. McLean, CM, Kavanagh, RP, Penman, T & Bradstock, R 2018, 'The threatened status of the hollow dependent arboreal marsupial, the Greater Glider (Petauroides volans), can be explained by impacts from wildfire and selective logging', Forest ecology and management, vol. 415–416, pp. 19. The clearing of Greater Glider habitat for new roads/tracks and pipelines will lead to loss of hollow bearing trees (as identified by QH), open the forest canopy and expose the prime habitat to increased fire risk due to presence of greater vehicle and human interaction. Recommendation: ● Prepare and implement a fire strategy plan that is embedded through the construction program with linkages to QPWS, HQP and local fire groups, creating a coordinated approach to fire containment or management. Qld Hydro have identified "likely" impact on these three criteria: 1. Adversely affect habitat critical to the survival of a species. 2. Disrupt the breeding cycle of a population. 3. Interfere with the recovery of the species. [Redacted] concurs with [redacted] that it is "likely" to "Lead to a long-term decrease in the size of a population" through clearing 33ha of prime habitat causing fragmentation via roads, tracks, pipelines and greater human disturbance. This is not just 'ground-level fragmentation up to and across canopy heights Recommendations ● Avoid further fragmentation by road/ track construction and pipelines to ensure a viable population of Greater Glider can be maintained in this largely undisturbed habitat. ● Further consolidate the road/track network to prevent further fragmentation, avoiding the larger trees that are recognised as providing essential habitat and retain the hollow bearing trees identified ● No loss of hollow bearing trees Greater Gliders are sensitive to heat, natural hollows in trees are much cooler than surrogate hollows; extreme heat inside surrogate hollows and incorrect placement will lead to Greater Glider's spending time outside the hollow to regulate body temperature, which could lead to mortality and increased predation events. In the section on impacts to Greater Gliders from clearing vegetation and habitat degradation, there is reference to the preservation of "sap trees" for Greater Gliders, which are folivores feeding on Eucalyptus spp). ● Clarify requirements for Greater Glider and those of the Yellow Bellied Glider	3.4, 3.5, 3.6
115	Section 7.3.12 Yellow-bellied Glider ● While 21 records of yellow-bellied gliders were detected within the Borumba PHES Survey area, most of these (19 observations) were recorded in the Exploratory Works Survey area. ● The exploratory works area will have a major impact on the local population. ● 685 ha of denning habitat and 15 ha of foraging habitat occurs in the Exploratory Works Survey area. ● 34.1 ha of habitat is proposed to be cleared in the Exploratory project area ● The Project would result in the clearing of 34 ha of habitat for the yellow-bellied glider. Habitat clearing has the potential to result in habitat fragmentation for species, if patches of suitable habitat become isolated from other areas of suitable habitat. It should be noted that many of the factors detailed in the Greater Glider section of this submission apply to the Yellow-bellied Glider i.e. fragmentation, fire risk due to increased human activity etc. The Yellow-bellied Glider has the following lifecycle characteristics that impair fecundity: ○ Breeding occurs in Spring – relatively small breeding window ○ Young stay in den for 2-3 months – clearing could occur when young are denning in the hollow ○ Become dependant 18-24 months – mum needs to care for the young over a long time period (high risk of mortality) ○ Sexual maturity when 2 years old, with a short lifespan Like the Greater Glider there is a positive relationship between the number of hollow bearing trees and occurrence of arboreal species given that they cannot persist in areas where hollow bearing trees are absent. Lindenmayer, DB, Blanchard, W, Blair, D, McBurney, L, Taylor, C, Scheele, BC, Westgate, MJ, Robinson, N & Foster, C 2021, 'The response of arboreal marsupials to long-term changes in forest disturbance', Animal conservation, vol. 24, no. 2, pp. 246–258. The hollow wall thickness was the primary determinant of protective value for hollow dependent species such as the Yellow bellied glider. Therefore larger trees with hollows were extremely valuable to maintaining viable populations of gliders. Zylstra, P 2023, 'Quantifying the direct fire threat to a critically endangered arboreal marsupial using biophysical, mechanistic modelling', Austral ecology, vol. 48, no. 2, pp. 266–288. ● [Redacted] agrees with [redacted] that the project is unlikely to directly result in the alteration to bushfire regimes given the scale of vehicle movements and human interaction likely to occur in this relatively inaccessible prime forest habitat for these threatened glider species. ● Similarly, the [redacted] does not agree that the project is unlikely to reduce the area of occupancy of an important population. Since the EPBC listing of gliders habitat destruction and population decline has continued both directly (deforestation) and indirectly (wildfire facilitated by human induced climate change) Ashman, KR, Watchorn, DJ, Lindenmayer, DB & Taylor, MFJ 2022, 'Is Australia's environmental legislation protecting threatened species? A case study of the national listing of the greater glider', Pacific conservation biology, vol. 28, no. 3, pp. 277–289. Therefore it appears as though this species is again subjected to 'death by a 1000 cuts' whereby each project declares only a small proportion of their habitat is being lost (in this instance 34 ha) of a much larger habitat area. This perpetuates continued destruction of habitat regardless of their EPBC listing. Similar to the Greater Glider, [redacted] considers the Exploratory works as having a likely impact on the Yellow bellied glider, requiring higher protection measures than detailed in the Preliminary Documentation.	3.4, 3.5, 3.6
115	The proponent, Queensland Hydro, is a new government-owned corporation created specifically to build pumped hydro projects for the Queensland power grid - Borumba PHES is the first project. As a corporation, Queensland Hydro has no demonstrated environmental record in building anything, particularly a project of this magnitude and complexity, with such an inherently high level of environmental risk. It is noted that Queensland Hydro staff who are responsible for the Borumba project's design, execution and environmental management, (including the CEO mentioned in the preliminary documentation), formerly held similar senior positions on the Snowy 2.0 project, either as employees of Snowy Hydro, or major contractors such as Clough/WeBuild and SMEC. While it is acknowledged that Snowy 2.0 is a complex project, it unfortunately (and unacceptably) has a well-documented history of environmental breaches and non-compliances on similar issues that are of concern to both [redacted] and [redacted] regarding the Borumba project ie:. water quality, sediment and erosion control, development and successful implementation of detailed management plans required as conditions of project approval. These breaches apparently occurred while relevant Queensland Hydro staff were in positions of responsibility on the Snowy 2.0 project. [Redacted] seeks assurance that any aspects of an organisational culture that may have contributed to the environmental breaches on Snowy 2.0 are not brought into the Borumba project and indeed lessons learned have been heeded. Ideally, this would involve the application of relevant approval conditions addressing these risks, timely and independent compliance checks, coupled with regular inspections by the EPBC unit and prompt effective enforcement/remedial action if required. [Redacted] notes Queensland Hydro has announced an intention to seek independent certification for the Borumba project under the International Hydropower Sustainability Standard and we support this intention, including the plan to meet the guidelines and standards with this project. A reporting framework on their compliance with this standard is recommended to be developed that allows for independent scrutiny and public consultation.	3.9
115	1. Avoiding and mitigating environmental impact of Borumba PHES The most significant and impactful mitigation identified by the [redacted] and supported by [redacted] is to separate the pumped hydropower project from the river system by building two new reservoirs that can work independently of the present Lake Borumba and Yabba Creek. Two new reservoirs that work purely for the production of hydro-electricity will significantly minimise the daily impacts inherent in the proposal to date and which cannot be mitigated. Together with the [redacted], [redacted] is committed to remaning engaged with the Borumba PHES proposal to ensure the adverse impacts of the project on the Mary River catchment, its system and surrounding landscape are avoided and/or considerably minimised. [Redacted] supports the [redacted] efforts in advancing their proposal to Queensland Hydro and relevant Queensland government Ministers to take the project off-river as much as possible by pumping water between the proposed upper reservoir and a new, purpose-built off-stream lower reservoir, instead of pumping water directly back and forth between the Mary River system via Lake Borumba. Without this, it is considered that a project of the scale currently being considered cannot be constructed and operated without causing permanent and extensive damage to the Mary River system. We note an outline of the off-stream lower storage proposal has also been sent to the Office of the Coordinator General, and to the team assessing the project under the Federal EPBC Act. [Redacted] urges due consideration of opportunities to progress this alternative, far less impactful proposal. [Redacted] agrees with the [redacted] that changing this project from being a totally on-river open-loop system as it currently stands, to one that almost primarily protects the river system from the adverse effects of the regular pump/discharge cycle would be the key step towards mitigating some of the permanent harm this project will cause to the Mary River system if it proceeds as currently designed.	3.1

SUBMISSION NUMBER	COMMENT	RESPONSE REPORT SECTION WHERE ADDRESSED
115	2. Offsets Area Management Plan (OAMP) Under the proposed OAMP, the proponent has stated they anticipate that the ecological benefit (future habitat quality score) of the provided offsets will be realised after 20 years of active management, monitoring and adaptive management, and as such their obligation to actively manage the proposed offset areas including any required corrective actions will cease after 20 years. Due to the physical challenges associated with restoring the affected ecological communities, we do not agree with the proponents' claim that the ecological benefits the offsets must provide will be fully achieved within 20 years. As it's highly unlikely the ecological benefits the offsets must provide can be achieved within 20 years, we strongly recommend that the proponent is required to actively manage the proposed offset areas for a minimum of 50 years in order to ensure the offsets provide the required ecological benefits. Recommendation ● Require the proponent to actively manage the proposed offset areas for a minimum of 50 years ● refer to [Redacted's] comments and recommendations	3.7

Appendix B – Selected updated figures from the Preliminary Documentation



Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

- Watercourses
- Local Roads
- Tracks

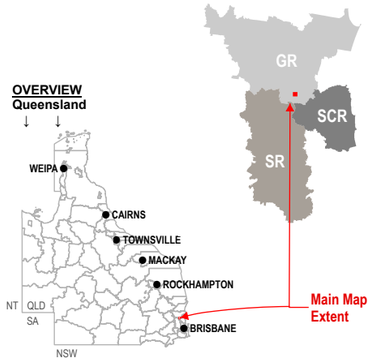
Exploratory Works Project

- Project Area

Project Footprint by Work Area

- Area 1 - Geotechnical Investigations
- Area 1 - Other Activities

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



OVERVIEW
Queensland

Data Sources:
1. State controlled roads - Queensland © State of Queensland (Department of Transport and Main Roads) 2020
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Exploratory Works Project
Preliminary Documentation

ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 1 (BORUMBA DAM)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 1/10/2025
REVISION:	A

FIGURE 10a

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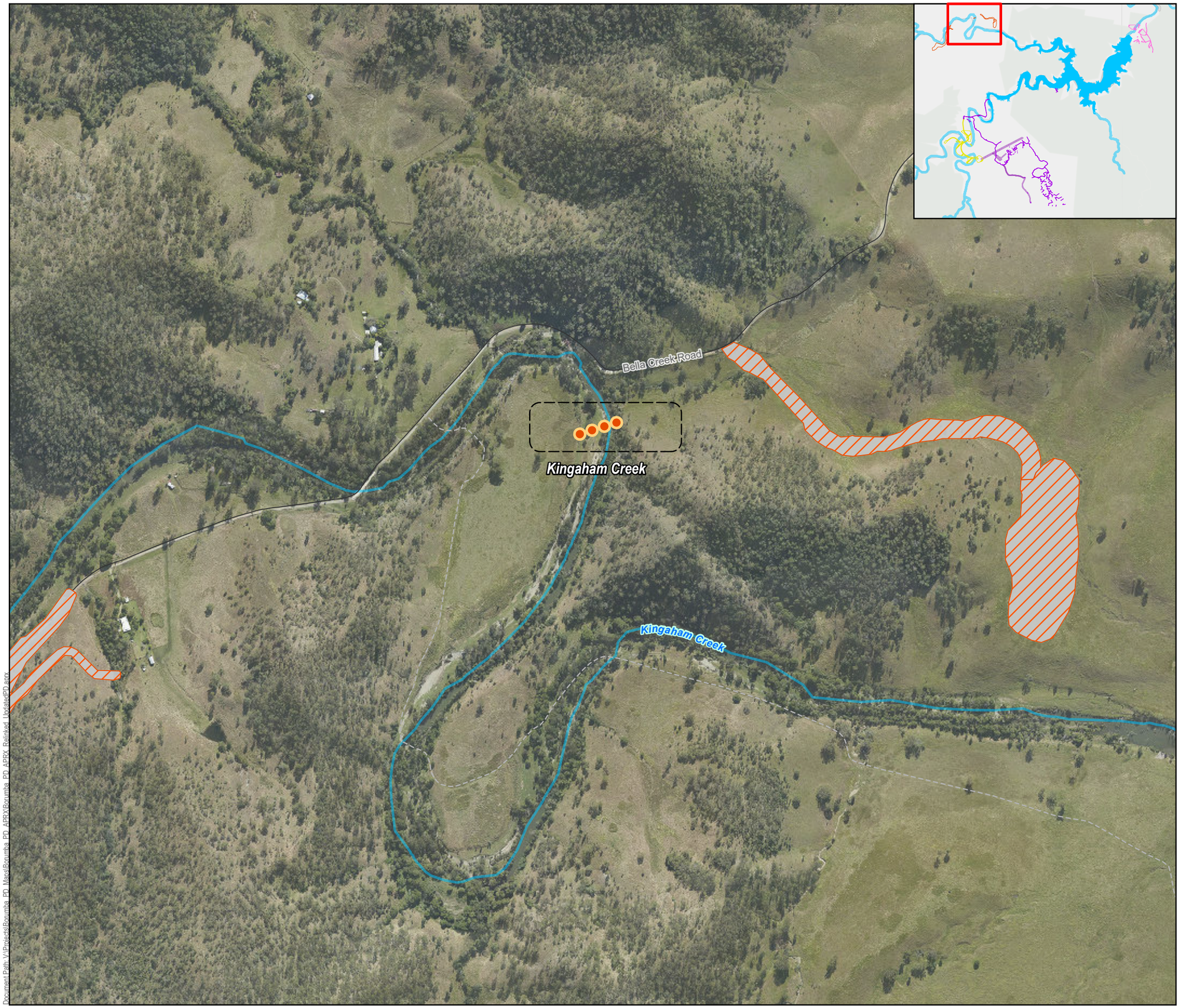

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

- Watercourses
- Local Roads
- Tracks

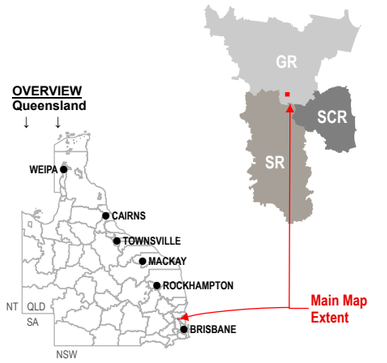
Exploratory Works Project

- Project Area

Project Footprint by Work Area

- Area 2 - Geotechnical Investigations
- Area 2 - Other Activities

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



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Exploratory Works Project
Preliminary Documentation

ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 2 (KINGAHAM CREEK)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 1/10/2025
REVISION:	A

FIGURE 10b

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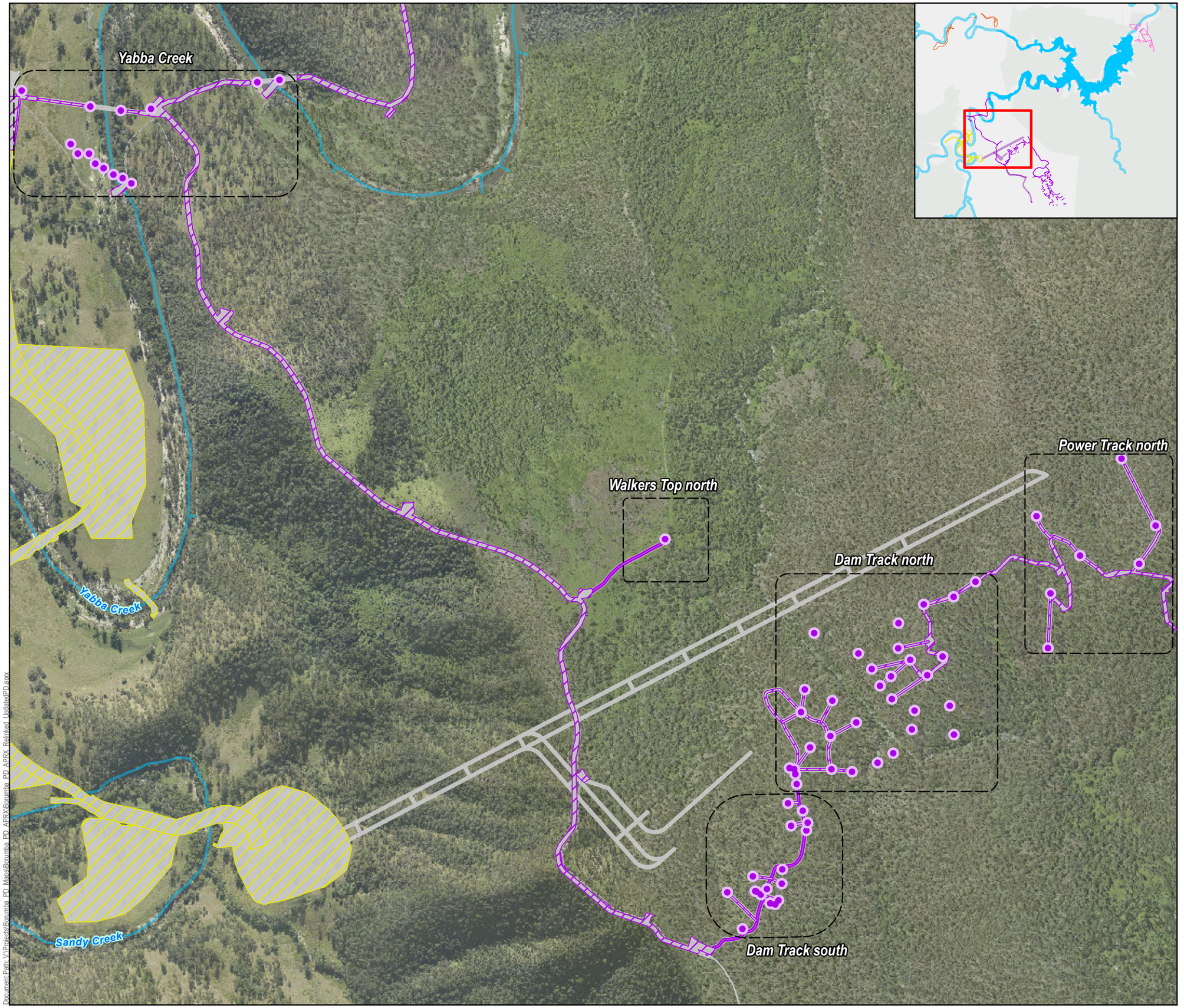

Queensland Hydro

GDA2020 MGA Zone 56

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LEGEND

- Watercourses
- Tracks

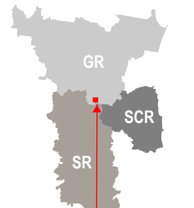
Exploratory Works Project

- Project Area

Project Footprint by Work Area

- Area 3 - Geotechnical Investigations
- Area 3 - Other Activities
- Area 4 - Other Activities

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



OVERVIEW
Queensland



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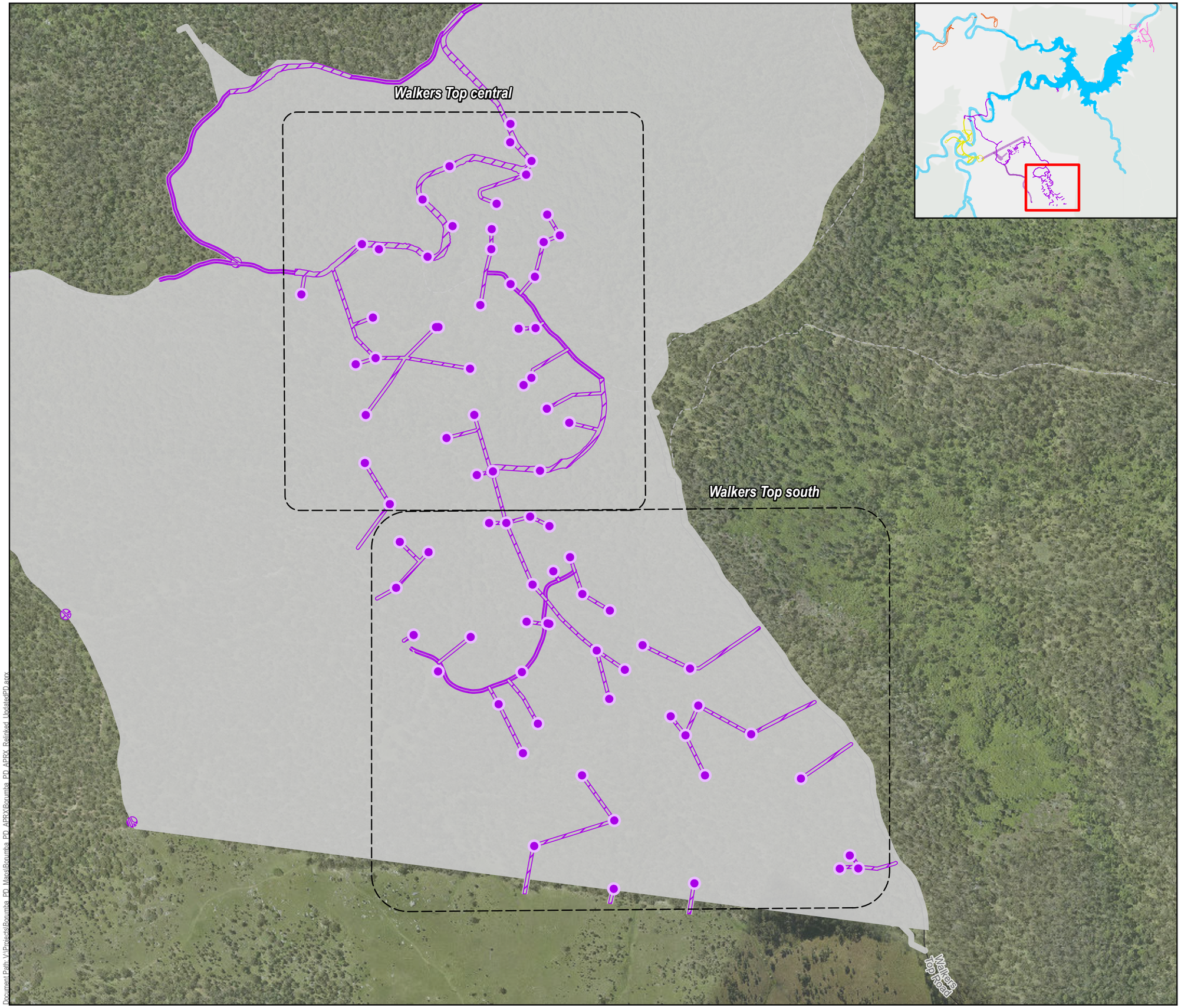
Exploratory Works Project
Preliminary Documentation

ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 3 (WALKERS TOP)

PROJECT #:	30032677/30032772
CREATED BY:	BM
LAST MODIFIED:	NC17428, 1/10/2025
REVISION:	A

FIGURE 11a

Document Path: V:\Projects\Boomba_PD_Mana\Boomba_PD_APRX\Boomba_PD_APRX_Relinked_UpdatedPD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

0 50 100 200 200 300 m

1:7,000 (when printed @ A3)

LEGEND

- Local Roads
- Tracks

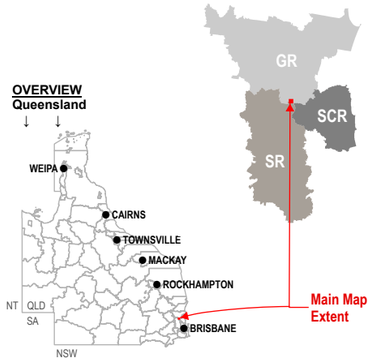
Exploratory Works Project

- Project Area

Project Footprint by Work Area

- Area 3 - Geotechnical Investigations
- Area 3 - Other Activities

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



Data Sources:
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Exploratory Works Project
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ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 3 (WALKERS TOP)

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FIGURE 11b

Document Path: V:\Projects\Roma\Roma_PD_Maps\Roma_PD_ARPX\Roma_PD_ARPX_Relinked_Updated\PD.aprx



Queensland Hydro

GDA2020 MGA Zone 56

0 30 60 90 100 200 m

1:5,000 (when printed @ A3)

LEGEND

Watercourses

Exploratory Works Project

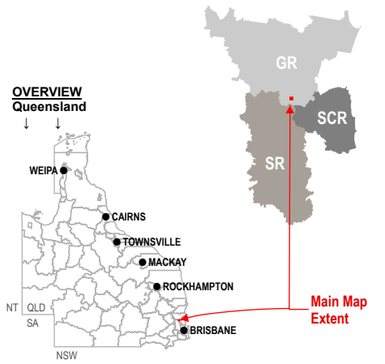
Project Area

Project Footprint by Work Area

Area 3 - Geotechnical Investigations

Area 3 - Other Activities

OVERVIEW
Gympie Regional, Somerset Regional, Sunshine Coast Regional



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Exploratory Works Project
Preliminary Documentation

ANTICIPATED GEOTECHNICAL INVESTIGATION SITES IN AREA 3 (WALKERS TOP)

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FIGURE 11c

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Queensland Hydro

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