Mt Rawdon Pumped Hydro Project

Application Number: 01221

Commencement Date: 17/05/2022

Status: Locked

1. About the project

1.1 Project details

1.1.1 Project title *

Mt Rawdon Pumped Hydro Project

1.1.2 Project industry type *

Energy Generation and Supply (renewable)

1.1.3 Project industry sub-type

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1.1.4 Estimated start date *

30/09/2023

1.1.4 Estimated end date *

30/09/2028

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Overview

The Mt Rawdon Pumped Hydro Project (the Project) is a joint venture between Mt Rawdon Operations Pty Ltd (a wholly owned subsidiary of Evolution Mining Ltd), as the current owner and operator of the Mt Rawdon gold mine, and ICA Investment Services Pty Ltd as trustee for the Mt Rawdon Energy Trust, a wholly owned subsidiary of ICA Partners Pty Ltd.

The Project is located 75 km southwest of Bundaberg and approximately 20 km southeast of Mount Perry (see Att C - Mt Rawdon Pumped Hydro Project - figures, Figure 1, page 2).

The Project involves the creation of a pumped hydro electricity generation plant through the repurposing of the pit created by the existing Mt Rawdon gold mine. The Project will store electricity generated by variable forms of renewable generation (such as solar photovoltaic and wind power), by using it to pump water to the upper storage and releasing it back into the grid (by release to the lower storage) at times of high electricity demand or low renewable electricity generation. The Project will facilitate increased renewable energy generation in Queensland, while also offering ancillary services to assist with grid stability and will provide a portion of the 9 to 16GW of dispatchable electricity the Australian Energy Market Operator has forecast as likely to be needed by 2040.

The proposed facility is likely to have an energy storage capacity of up to 20,000 MWh, allowing for up to 40 hours of continuous generation at 500 MW/hr, 20 hours of continuous generation at 1,000 MW/hr or 10 hours of generation at 2,000MW/hr. The final configuration and staging of capacity will be driven by market demand.

Key Components

The Project involves the re-use of the Mt Rawdon gold mine which is nearing the end of its life.

The main components of the Mt Rawdon Pumped Hydro Project include the following (see Att C - Mt Rawdon Pumped Hydro Project - figures, Figure 2, page 3):

- A pumped hydro **Generation Facility**, comprising a lower storage (formed by the existing mine pit), a purpose-built upper storage, waterway tunnels linking the two storages, an underground power station, switchyard, associated access works and related facilities.
- An upgraded or duplicated **Water Pipeline** which is likely to comprise of a pump, pipes and power supply to enable the first fill of the Generation Facility (most likely from nearby Paradise Dam).
- **Temporary facilities** required for construction which are likely to include a construction camp to accommodate 300 to 500 people (including associated water and wastewater systems), a temporary concrete batching plant, quarry (potentially within the upper storage site), construction lay down area/s, portable power generation and a location for storage of excavated material from upper storage construction. The locations of temporary facilities have not yet been finally determined; the need to avoid and minimise environmental impacts will be a key input into the engineering design of these facilities.

The Project does not include mining or mineral processing activities undertaken under the current (or any amended) Environmental Authority and Mining Leases, rehabilitation works which are not directed towards the construction of the Project or preliminary works such as geotechnical investigations and other prefeasibility works.

Further information about the proposed action can be found in Attachment #1 (Att A - Additional Background Information, whole document).

The Mt Rawdon pumped hydro project has a related transmission line, which is the subject of a separate referral.

Potential Impacts

The construction phase of the project has the potential to have impacts on listed threatened species and communities and migratory species, primarily limited to the green-field parts of the project site.

While placement of infrastructure has prioritised areas of previous disturbance, the project will result in the clearing of approximately 60ha for the upper storage, 6.4ha for an access road to the upper storage, 19.9ha and 11.7ha for the storage of waste rock from the upper storage and the tunnel and 57.8ha for other infrastructure including accommodation facilities, workshops, storage and laydown areas. The final location and dimensions of the access road, upper storage and temporary facilities has not yet been finalised and may be adjusted based on the findings of flora and fauna surveys.

The project area shown in section 2 of this application comprises approximately 1160ha, of which approximately 156ha will be disturbed for the project.

Please see Attachment #2 (Att B-1.2.1 Proposed Action, whole document) for further discussion of the potential impacts of the project.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

Yes

1.2.5 Provide information about the staged development (or relevant larger project).

The Project detailed in this EPBC referral is associated with a Transmission Line project addressed in a separate referral (#01222). The Transmission Line will link the Generation Facility to Powerlink's existing high-voltage transmission network. This will entail the installation of high-voltage transmission lines and a new cut-in substation onto the 275kV network between the existing Gin Gin and Woolooga substations. The transmission line will traverse areas within both the North Burnett Regional Council's local government area and the Bundaberg Regional Council's local government area. The proposed action is likely to be 'code assessable development' under the Planning Act 2016 (Qld) (Planning Act) and both Councils' planning schemes. This proposed action could be approved either by way of a development application or infrastructure designation under the Planning Act. Any vegetation clearing associated with the transmission line could be approved either by way of a development application or infrastructure designation or infrastructure designation under the Planning Act 1999 (Qld) (VMA) or through compliance with an Accepted Development Vegetation Clearing code made under the VMA.

The two projects have been submitted as separate referrals to allow for the Transmission Line project to be transferred to Powerlink at the appropriate time. As Powerlink owns and operates the majority of the high-voltage electricity transmission network in Queensland it is appropriate that this project be transferred in the future.

Both projects are the subject of a single Initial Advice Statement under the *State Development and Public Works Organisation Act* 1971 (*Qld*) and, if they become a coordinated project under that Act, will be assessed together under a single EIS or IAR.

The Mt Rawdon Pumped Hydro Project may be delivered as a single-stage or as two or more stages, depending upon market demand for electricity storage and the timing of coal generation retirement in Queensland. The majority of the Project's environmental impacts are likely to occur during the first stage when the above-ground facilities are constructed and vegetation clearing works (including the upper storage) are undertaken, while subsequent stages are likely to predominantly involve underground works. Under any staging scenario, the first stage of the Project would include delivery of the upper and lower storage, access roads, waterway tunnel and power station and water pipeline (as well as temporary construction facilities). As a consequence, the Project's full storage capacity would be delivered in the first stage. Subsequent stages would involve either the installation of additional generation units into the underground powerhouse delivered in

stage 1 or the construction of a new tunnel and powerhouse for additional generation units. Under any scenario, all of the surface disturbance and a large proportion of the underground disturbance would occur during the first stage. The final design and proposed staging scenario will be addressed in the environmental assessment.

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The Project falls within Queensland jurisdiction. The primary policy frameworks relevant to the Project are the planning framework in effect under the *Planning Act 2016* and the framework for the rehabilitation of mined land in effect under the *Environmental Protection Act 1994*.

The Generation Facility site is located within the area of the North Burnett Regional Planning Scheme and within the Wide Bay Burnett Regional Plan.

The Strategic Outcomes identified in the *North Burnett Planning Scheme* include the intention that North Burnett make good use of potential renewable energy sources within its region and minimises consumption of energy from non-renewable resources.

The policies contained in the *Wide Bay Burnett Regional Plan* include improved public access to renewable energy options and that, upon cessation of mining, former mining areas are rehabilitated to facilitate multiple end-uses of sites, ensuring their continuing contribution to the economic, social and environmental values of the region.

The intent of the rehabilitation framework contained in the *Environmental Protection Act 1994* is to ensure that land disturbed by mining activities is rehabilitated to a safe and stable landform that does not cause environmental harm and can sustain an approved post-mining use of land.

The proposed Generation Facility will be a 'renewable energy facility' under the *Planning Act 2016* and the *North Burnett Shire Planning Scheme*. A material change of use of premises for a renewable energy facility in the Rural Zone is impact assessable development (i.e., development for which a publicly notifiable development application must be made) under the *North Burnett Regional Planning Scheme 2014*.

The following Commonwealth and State approvals and consents will, or are likely to be required, pending finalisation of the Project design and route selection:

Commonwealth

• Referral under the EPBC Act for a decision whether the Project is a controlled action requiring approval under the EPBC Act.

State

- Referral to the Coordinator-General under the *State Development and Public Works Organisation Act 1971 (Qld)* to request that the project be declared a 'coordinated project' and determine if an Environmental Impact Statement (EIS) or Impact Assessment Report (IAS) is required.
- Assessment by way of EIS or IAS and endorsement by Coordinator General's Office under the State Development and Public Works Organisation Act 1971 (Qld).
- Progressive Rehabilitation and Closure Plan (PRC Plan) and PRCP schedule under the *Environmental Protection Act 1994* (*Qld*) for the rehabilitation of the mine.
- Possibly an EA amendment application under the *Environmental Protection Act 1994 (Qld)* to allow project construction and mineral processing to occur on the site at the same time.
- Development permit for a material change of use for a renewable energy facility and non-resident workforce accommodation and a development permit for operational works under the planning scheme. This is in accordance with the *Planning Act 2016 (Qld)*, *Planning Regulation 2017* and the North Burnett *Regional Planning Scheme 2014*.
- Development permit for other assessable development for the clearing of vegetation, operational works for taking of water, material change of use for a referrable dam and material change or use for a prescribed environmentally relevant activity (ERA) under the *Planning Act 2016 (Qld)*.
- Compliance with an Accepted Development Vegetation Clearing Code under the Vegetation Management Act 1999 (Qld).
- Failure Impact Assessment under the Water Supply (Safety and Reliability) Act.
- Compliance with the cultural heritage duty of care, possibly by way of a cultural heritage management plan, under the *Aboriginal Cultural Heritage Act 2003 (Qld)*.
- Generation Authority under the Electricity Act 1994 (Qld).
- Water licence under the Water Act 2000 (Qld) and Water Plan (Burnett Basin) 2014.
- Permit to take timber under the Forestry Act 1959 (Qld).
- Protected plant permit/damage mitigation permit under the Nature Conservation Act 1992 (Qld), Nature Conservation (Plants) Regulation 2020, Nature Conservation (Koala) Conservation Plan 2017 and Nature Conservation (Animals) Regulation 2020.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

A comprehensive Stakeholder Engagement and Consultation Plan (SECP) has been developed for the project and will continue to be implemented throughout the Environmental Impact Statement (EIS) or Impact Assessment Report (IAR) process and during the construction and operational phases of the project.

The SECP builds upon the community engagement currently undertaken by Evolution Mining, as the operator of the mine and a current member of the local community. Evolution's current community engagement includes regular communication with the Port Curtis Coral Coast Native Title holders (as representatives of the Byellee, Gooreng Gooreng, Gurang and Taribelang Bunda people), members of the Mt Perry, Gin Gin, Biggenden and Gayndah communities and representatives of the North Burnett and Bundaberg Regional Councils.

The Proponent has also undertaken preliminary consultation regarding the project with representatives of relevant government agencies including the Department of Regional Development, Manufacturing and Water (in relation to access to a temporary water entitlement for the initial filling of the facility), Powerlink (in relation to connection to the transmission network and transmission line construction), the Office of the Coordinator-General, the Department of Environment and Science and both the North Burnett and the Bundaberg Regional Councils. The proponent will continue to engage closely with relevant government agencies throughout the EIS/IAR process and the construction and operational phases of the project.

An Open Day for the Mount Perry community was held on 5 October 2021 during which residents and local business owners were given the opportunity to learn about the Project and provide initial feedback. A Project Newsletter (Att D-Mount Rawdon Newsletter) which explained the project was also circulated during the Open Day and through the local post-office. The feedback received from the community at the Open Day was generally positive with interest shown in employment opportunities, project timeframes (as an input into business planning by local business owners), the source of water for the first fill and the potential for recreational opportunities.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

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Confirm that you have read and understand this Privacy Notice *

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details	
ABN	28155087362
Organisation name	ERIAS GROUP PTY LTD
Organisation address	13-25 Church Street, Hawthorn, Victoria, 3122
Referring party details	

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Name	David Browne
Job title	Director
Phone	0419012698
Email	rod.conroy@eriasgroup.com
Address	Level 20 / 307 Queen Street

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details		
ABN	69631031742	
Organisation name	ICA Investment Services Pty Ltd	
Organisation address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney, NSW 2000	
Person proposing to take the ac	tion details	
Name	Michael Siede	
Job title	Director	
Phone	0417392065	
Email	MSiede@icapartners.com.au	
Address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney NSW 2000	

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

Yes

Joint Venture Name	Business Address	ABN/ACN	Responsible Person	Email
ICA Investment Services Pty Ltd	'Governor Macquarie Tower' level 25, 1 Farrer Place, Sydney NSW 2000	631031742	Mark Thompson	Mark Thompson
Mt Rawdon Operations Pty Ltd	level 24, 175 Liverpool Street, Sydney NSW 2000	152727663	Paul Radford	Paul.Radford@evolutionmining.com

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

The two organisations proposing to undertake this project, being ICA Partners Pty and Evolution Mining Ltd and Mt Rawdon Operations Pty Ltd, have not been prosecuted for an offence, or subject to civil enforcement proceedings or an enforceable undertaking under any Commonwealth, State or Territory law relating to the protection of the environment or the conservation and sustainable use of natural resources. Mt Rawdon Operations Pty Ltd has recently completed an environmental evaluation with the Queensland Department of Environment and Science, in relation to groundwater quality at the Mt Rawdon site, which resulted in a report accepted by the Department of Environment and Science and the issue of an Environmental Authority with amended conditions. ICA Partners, as the parent company of ICA Investment Services, has extensive development and operational experience in utility-scale renewable energy projects, and the capability to manage the entire development of a renewable energy facility in accordance with all environmental statutory requirements.

Mt Rawdon Operations Pty Ltd has previously referred an action given the reference 2013/6886, which was the stage 4 pit cutback and western rock dump at the Mt Rawdon gold mine. ICA Investment Services Pty Ltd has not previously referred an action under the *Environment Protection and Biodiversity Conservation Act* 1999.

The joint venture will involve the development of environmental management systems, in accordance with statutory requirements, to mitigate and manage potential environmental impacts as a result of both the construction and operation of the project. ICA Partners and Evolution Mining will draw on their depth of knowledge and experience to develop these systems and ensure implementation.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details		
ABN	69631031742	
Organisation name	ICA Investment Services Pty Ltd	
Organisation address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney, NSW 2000	
Proposed designated proponent details		
Name	Michael Siede	
Job title	Director	
Phone	0417392065	
Email	MSiede@icapartners.com.au	
Address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney NSW 2000	

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN	28155087362
Organisation name	ERIAS GROUP PTY LTD
Organisation address	13-25 Church Street, Hawthorn, Victoria, 3122
Representative's name	David Browne
Representative's job title	Director
Phone	0419012698
Email	rod.conroy@eriasgroup.com
Address	Level 20 / 307 Queen Street

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	69631031742
Organisation name	ICA Investment Services Pty Ltd
Organisation address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney, NSW 2000
Representative's name	Michael Siede
Representative's job title	Director
Phone	0417392065
Email	MSiede@icapartners.com.au
Address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney NSW 2000

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Has the department issued you with a credit note? *

No

1.4.5 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.7 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A? *

No

1.4.8 Would you like to add a purchase order number to your invoice? *

No

1.4 Payment details: Payment allocation

1.4.10 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint



2.2 Footprint details

2.2.1 What is the address of the proposed action? *

Lot 2, Swindon Road, Mount Perry, QLD, 4671, Australia

2.2.2 Where is the primary jurisdiction of the proposed action? *

Queensland

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The current tenure of the land containing the main project components, which includes Generation Facility and Water Pipeline, is comprised of freehold title. Relevant purchase, lease, easement or license arrangements will be made with private landholders to secure tenure for the project components not located on land currently owned by Mt Rawdon Operations Pty Ltd.
The main project components will be located on the following land (Please see Attachment #3 to section 1.2.1: Att C-Mt Rawdon Pumped Hydro Project - figures, Figure 3, page 4):

Generation Facility:
Lot 3 / BN37400 – Part of the lower storage (current mine site).
Lot 2 / SP138073 – Underground power station, access tunnels, underground waterway tunnels and access track (current mine site).
Lot 38 / BON 559 – Upper storage, potential quarry site, part of the lower storage, underground power station, access tunnels, underground waterway tunnels and access track.

Water Pipeline:

Lot 3 / BN37400.
Lot 3 / BN37400.
Lot 4 / SP163281.
Lot 48 / SP163281.
Lot 48 / SP163281.

- Lot 40 / SP163281.
- Lot 5 / SP163281.
- Kallwa Road.
- Temporary facilities will be preferentially located on areas within the mine site and on land owned by Mt Rawdon Operations Pty Ltd and, if necessary, on other adjacent land.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The Project primarily lies within the North Burnett Region in the vicinity of the town of Mount Perry, approximately 30 km southeast of the Burnett Range. The Project is situated within the Southeast Queensland Bioregion. The area is characterised by undulating to rugged ranges and alluvial plains, with the most common vegetation being eucalypt woodlands dominated by *Corymbia citridora* (spotted gum) and *Eucalyptus crebra* (narrow-leaved ironbark). The Project is set within the Burnett drainage basin, which features drainage lines that drain into several eastern-flowing rivers. (DEWHA, 2008).

The proposed site for the upper storage is within a densely wooded forest, interspersed with latticing watercourses that are home to a variety of native fauna species (DNRME, 2022), while the Water Pipeline corridor are primarily cleared grazing land interspersed with smaller patches of native vegetation. The lower storage (current mine pit) falls within the disturbed footprint of mining operations.

The Project area is located in a lattice of riverine wetland ecosystem watercourses (DNRME, 2022) that connect the Perry River and the Burnett River. The Water Pipeline corridor intersects the lacustrine wetland located on the Burnett River, at Paradise Dam.

3.1.2 Describe any existing or proposed uses for the project area.

The project referral area is in a relatively isolated location. Aside from the Mount Rawdon Gold Mine, there are no significant existing or proposed uses of the land within, or in close proximity to, the proposed project footprint. The area is largely surrounded by grazing farmland. The closest existing relevant use of land is Paradise Dam. Paradise Dam is currently earmarked to undergo improvement project works. This is expected to commence in 2023 and will return the dam to its original height as part of significant safety improvement works. These works will strengthen and stabilise the dam wall in order to meet the stringent safety criteria required of all Australian dams.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

The nearest protected areas outside of the project area are the Goodnight Scrub National Park, approximately 8 km east-southeast of the existing mine and the Mount Blandy Conservation Park to the south, neither of which are likely to be affected by the project. There are no National or World Heritage Listed Properties, Ramsar Wetlands, Commonwealth marine areas, Commonwealth Land or Commonwealth heritage places within the project area. There are no other outstanding natural features in or around the project area.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

Satellite imagery indicates the Project is located in an area comprising of vast rugged ranges and mountainous terrain amongst a mosaic of alluvial plains and grazing fields. The existing mine is situated in the moderate relief slopes of the Burnett Range at approximately 170 m asl and is surrounded by increasing elevations of surrounding ridges reaching up to 440 m asl, which provide the elevation change necessary for the upper storage site. The ridges are several hundred metres higher than the interspersed grazing plains which sit at an average elevation of 120 m asl.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

The majority of the existing mine site is mapped as Category X vegetation (Department of Natural Resources, Mines and Energy (DNRME, 2022). Category X areas are areas not regulated by the state vegetation management laws. The lots proposed to contain the upper storage, lower storage, underground waterway tunnels and underground power station (lot 38 on BON 559 and part of lot 2 on SP138073) contain areas mapped under the Queensland *Vegetation Management Act 1999* as Category B remnant vegetation (Attachment #3 to section 1.2.1: Att C-Mt Rawdon Pumped Hydro Project - figures, Figure 5, page 6). These areas are mapped on the regional ecosystem database as being sub-dominant 'of concern' regional ecosystem, while the water pipeline contains scattered areas mapped as Category C 'endangered' vegetation. These areas will be impacted by the Project construction activities and mitigation and management measures including field surveys and an environmental management plan (EMP) will be implemented to mitigate these risks.

No part of the Generation Facility site or Water Pipeline Corridor is mapped as high-risk on the protected plants flora survey trigger map under the *Nature Conservation Act 1992 (Qld)*, indicating that threatened flora is less likely to be found in these areas. The Generation Facility site, however, is located within 5 km of areas mapped as high-risk in the protected plants flora survey trigger map, (DNRME, 2022) which are more likely to contain endangered, vulnerable or near threatened native plants. Ecological field surveys will be undertaken to determine whether protected plant species are found in any part of the Project site.

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A recent pre-clearance survey undertaken by RedAsh Consulting (2021) identified several Cycas megacarpa plants within the upper storage area. A previous survey undertaken in 2013 for the current mine site identified species of native flora that occurred within the project area such as Spotted gum (Corymbia citriodora), Narrow-leaved ironbark (Eucalyptus crebra) and Forest red gum (Eucalyptus tereticornis).

Several ecological surveys have been completed in recent years, within and around the project area. An aquatic survey was completed in 2020 targeting surface waters, sediments and macroinvertebrate bioindicators at fourteen sites within a 5-km-radius of the mine site to analyse the impacts of the receiving environment from mining activities (Att F-SLR, 2020). During the campaign, 48 macroinvertebrate taxa were sampled within the project area. Water Fleas (*Cladocera*) were the most abundant taxa, with more than 1,300 individuals being collected. Copepods (*Copopoda*) and Seed Shrimp (*Ostracota*) were also highly abundant compared to other taxa, with 342 and 351 individuals collected, respectively. Predaceous water beetles (*Dytiscidae*), Non-biting midges (*Chironominae* and *Tanypodinae*), Small Mayflies (*Baetidae*), mites (*Acarina*), Long-horned Caddisflies (*Leptoceridae*), and Skimmers (*Cordulid libellulid*) were all moderately abundant.

The majority of watercourse around the project area are ephemeral, however a field survey undertaken in 2013 indicated several aquatic species were present at the time of survey (Att E-NRC, 2013). Five amphibian species were observed during the fauna survey, including four native species and the introduced Cane Toad (*Rhinella marina*). The Desert Tree Frog (Litoria rubella) and the Broad-palmed Frog (*Litoria latopalmata*) were observed at numerous locations to the north of the mine site, while the Smooth Toadlet (*Uperoleia laevigata*) and the Northern Banjo Frog (*Limnodynastes terraereginae*) were both captured in the south of the Generation Facility.

In and around the project area several introduced weeds, of national significance, have been reported, including climbing Asparagus Fern (*Asparagus setaceus*), Rubber Vine (*Cryptostegia grandiflora*), Cat's Claw (*Uncaria tomentosa*), Lantana (*Lantana camara*), Prickly Pear (*Opuntia humifusa*) and Parthenium (*Parthenium hysterophorus*). Invasive fauna species have also been sited, which include, goats, cats, house mice, rats, rabbits, feral pigs and red foxes (Vulpes vulpes). Cattle grazing in the surrounding areas is considered to have a slight to moderately impact on local watercourses.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Geological mapping shows the project is primarily situated on a surface geology formation of volcanic and metamorphic rock. The soils of the bioregion are described as plains of dermosols and clay deposits, basalt and alluvium scattered with undulating and hilly terrain (DNRME, 2022). The surface geological groups present within the project site, as per geological mapping (1:100,000), include Andesitic to rhyolitic flow and volcaniclastics (Ra), Quartzose sandstone, mudstone; local quartz-muscovite-biotite schist (Ccs) and Aphyric or sparsely phyric basalt lava (Ra/b) (DNRME, 2022).

The Project area is situated within the Southeast Queensland Bioregion and is characterised by undulating to rugged ranges and alluvial plains, with the most common vegetation being eucalypt woodlands dominated by Corymbia citridora (spotted gum) and Eucalyptus crebra (narrow-leaved ironbark).

The native vegetation present within the referral area is described below per Lot area and project footprint (DNRME, 2022).

- Generation Facility:
 - Lot 3 / BN37400 Part of the lower storage (current mine site). Predominantly comprised of the highly disturbed mine site with sparse patches of remnant vegetation 'of concern' regional ecosystems comprised of Araucarian complex microphyll vine forest or *Eucalyptus melanophloia*, *E. crebra* woodland on metamorphic or interbedded volcanic.
 - Lot 2 / SP138073 Underground power station, access tunnels, underground waterway tunnels and access track (current mine site). Comprised of both the highly disturbed mine site and remnant vegetation 'of concern' regional ecosystems. Reported ecosystems are comprised of Araucarian complex microphyll vine forest, *Eucalyptus melanophloia, E. crebra* woodland and *Corymbia citriodora* subsp. variegata, *Eucalyptus crebra* woodland on metamorphic or interbedded volcanic.
 - Lot 38 / BON 559 Upper storage, potential quarry site, part of the lower storage, underground power station, access tunnels, underground waterway tunnels and access track. Predominantly covered by remnant vegetation 'of concern' regional ecosystems comprised of Araucarian complex microphyll vine forest, *Eucalyptus melanophloia, E. crebra* woodland and *Corymbia citriodora* subsp. variegata, *Eucalyptus crebra* woodland on metamorphic or interbedded volcanic. Patches of 'endangered' regional ecosystems, comprised of Araucarian complex microphyll vine forest, are located south of the project area along the southeast corner of the Lot boundary. A section of highly disturbed land comprising the mine site and project areas falls within this Lot.
- Water Pipeline:
 - Lot 3 / BN37400, Lot 53, 48 and 5 / SP163281, and Kallwa Road. Predominantly comprised of regional ecosystems of 'no concern' with sparse patches of 'endangered' regrowth ecosystems consisting of *Eucalyptus tereticornis* woodland on Quaternary alluvium. These endangered ecosystems are located around watercourses and drainage features.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values

that apply to the project area.

No commonwealth heritage places are relevant to the Project.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

In Queensland cultural heritage is governed at the state level by the Queensland Heritage Act 1992 (Qld) (QHA), the Aboriginal Cultural Heritage Act 2003 (Qld) (ACHA) and the Torres Strait Islander Cultural Heritage Act 2003 (Qld). Places of local heritage significance are also protected by local governments under the QHA/Planning Act 2016 (Qld).

Aboriginal cultural heritage is protected under the ACHA which establishes a cultural heritage duty of care to take all reasonable and practicable measures to ensure the activity does not harm aboriginal cultural heritage. There are a number of different ways of complying with the cultural heritage duty of care, however, if the Project requires an EIS then compliance must be by way of a Cultural Heritage Management Plan.

Limited information on aboriginal cultural heritage is available for the Project area, with the exception of an area west of the open pit. A previous cultural heritage study was undertaken adjacent to the mine area, between the open pit and proposed upper storage, by Archaeo in 2013 (Att G-Archaeo, 2013) and reported a low probability of cultural artefacts and aboriginal heritage within the study area. A cultural heritage survey will be undertaken within the Generation Facility site and Water Pipeline corridor to identify any cultural heritage sites or artefacts.

The Project is within the area which is the subject of a consent determination by the National Native Title Tribunal that native title exists over certain land within the area, the determination was made on 28 November 2017 and came into effect on 3 May 2018.

The native title holders are the Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda people, represented by the Port Curtis Coral Coast Trust Limited (PCCC) (Tribunal file number QDC2017/010; Federal Court File number QUD6026/2001). The site of the Generation Facility and Water Pipeline contain only freehold land, however, the native title determination indicates that non-exclusive native title exists over Lot 38 on BON559.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

The Project is located within Lower Burnett sub-catchment of the Burnett Basin Catchment. Swindon Creek and Twelve Mile Creek (Attachment #3 to section 1.2.1: Mt Rawdon Pumped Hydro Project - figures, Figure 6, page 7) are ephemeral creeks adjacent to the current mined area that flow to the northeast and discharge to the Perry River. Mingham Creek and Outside Creek are adjacent to the proposed upper storage site and course generally to the south to discharge into the Burnett River and eventually the Coral Sea.

There are no wetlands of high ecological significance in proximity to the upper storage, waterway tunnels, power station, lower storage and water pipeline (DNRME, 2022). The Water Pipeline corridor (Attachment #3 to section 1.2.1: Att A-Mt Rawdon Pumped Hydro Project - figures, Figure 2, page 3) connects the Generation Facility site to Paradise Dam.

Studies undertaken by Northern Resource Consultants (Att H-NRC, 2015) for the existing mine indicate that groundwater aquifers at the existing mine site are believed to be highly localised and discontinuous, with depth to groundwater varying widely. A search of Queensland Globe database (DNRME, 2022) of registered groundwater bores within the entire Project area (generation facility and water pipeline corridor) indicated that the only registered groundwater bores were those encompassing Mt Rawdon mine site used for mine water monitoring.

Drilling records for monitoring bores within the mine site indicate the presence of three main hydrogeological units:

- Regolith: This layer comprises an organic-rich topsoil layer less than a metre thick, underlain by a gravel, sand or clay layer from 1 to 4m thick and highly decomposed igneous rocks up to 15m in thickness. The regolith is only permanently saturated near mine water storages and elsewhere all recharge occurs due to rainfall.
- Fractured rock aquifer: Most groundwater bores intercept groundwater in joints and isolated fractures with low storativity. Groundwater bearing zones in fractured rock are mainly aquicludes and isolated or semi-isolated compartments of fractured rock surrounded by competent rock.
- Basement unit: This unit comprises of fresh granite, dacite, rhyolite or granodiorite generally at depths of more than 30m, but close to the surface in some areas. Fracturing intensity in this unit is very low and therefore accounts for very little groundwater flow.

The open pit is currently the main discharge area for groundwater within the mine site, owing to a steep hydraulic gradient and can require dewatering following rain events.

The EIS/IAR will comprehensively model the potential impacts on groundwater movement and water quality under the more dynamic pit water levels that will occur as a consequence of the operation of the pumped hydro facility.

The area can be subject to flooding events (DNRME, 2022) during which drainage channels can distribute fast flowing flood waters within the vicinity of the Project (Attachment #3 to section 1.2.1: Att A-Mt Rawdon Pumped Hydro Project - figures, Figure 7, page 8), however, the Generation Facility site should remain unaffected by flooding due to the amount of freeboard likely to be available in the lower storage, the small catchment areas of both storages and additional storage inherent in the system. The water pipeline corridor may be subject to flooding due to the proximity to Paradise Dam (DNRME, 2022).

Surface water within the Generation Facility site and Water Pipeline Corridor flows predominantly to the east. Latticed watercourses flow into the Perry River 1 km to the northeast of the Project and the Burnett River 8 km to the southeast of the project (Attachment #3 to section 1.2.1: Att A-Mt Rawdon Pumped Hydro Project - figures, Figure 6, page 7). The Perry River flows east for approximately 32 km before joining the east-flowing Burnett River, which eventually discharges to the Coral Sea approximately 88 km northeast of the project site.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any World Heritage Properties, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on World Heritage properties as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any World Heritage properties.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any National Heritage Places, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on National Heritage Places as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any National Heritage Places.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any wetlands of international importance, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on wetlands of international importance as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any wetlands of international importance.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	Yes	Acacia gracilifolia
Yes	No	Arthraxon hispidus
Yes	No	Bosistoa transversa
Yes	No	Bulbophyllum globuliforme
Yes	No	Cadellia pentastylis
Yes	No	Calidris ferruginea
Yes	No	Chalinolobus dwyeri
Yes	No	Cossinia australiana
Yes	No	Cupaniopsis
Yes	No	Cycas megacarpa
No	Yes	Cyclopsitta diophthalma coxeni
Yes	No	Dasyurus hallucatus
No	Yes	Dasyurus maculatus
Yes	No	Delma torquata
Yes	No	Dichanthium setosum
Yes	No	Egernia rugosa
Yes	No	Elseya albagula
Yes	No	Erythrotriorchis radiatus

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Direct impact	Indirect impact	Species
Yes	No	Eucalyptus raveretiana
Yes	No	Falco hypoleucos
Yes	No	Furina dunmalli
Yes	No	Geophaps scripta scripta
Yes	No	Grantiella picta
Yes	No	Hirundapus caudacutus
Yes	No	Macadamia integrifolia
Yes	No	Macroderma gigas
Yes	No	Neoceratodus forsteri
Yes	No	Neochmia ruficauda ruficauda
Yes	No	Numenius madagascariensis
Yes	No	Nyctophilus corbeni
Yes	No	Petauroides volans
Yes	No	Petaurus australis australis
Yes	No	Phascolarctos cinereus
No	Yes	Phebalium distans
No	Yes	Potorous tridactylus tridactylus
Yes	No	Pteropus poliocephalus
Yes	No	Rostratula benghalensis australis
Yes	No	Samadera bidwillii
No	Yes	Sophora fraseri
Yes	No	Turnix melanogaster

Ecological communities

Direct impact	Indirect impact	Ecological community
Yes	Yes	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community
Yes	Yes	Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland
Yes	Yes	Lowland Rainforest of Subtropical Australia
Yes	Yes	Poplar Box Grassy Woodland on Alluvial Plains

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The species and communities listed in section 4.1.4 were identified as having the potential to occur within 10km of project site (see Attachment #2: Att I-Protected Matters - MNES Layers - March 21st 2022, whole document).

The vegetation clearing and earthworks required for the proposed action have the potential to have direct and indirect impacts on listed threatened species. The attached document (Attachment #1: Att J-Threatened Species and Ecological Communities, whole document) identifies the potential for the project to have impacts on listed threatened species and communities.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

Please see attached document (Attachment #1: Att K-Significant Impact Considerations, whole document).

Based on a preliminary desktop assessment it is not anticipated that any listed ecological communities will be within the project footprint. While four listed ecological communities have been identified as possibly occurring within 10km of the project site, the location and elevation of the project site is unlikely to be suitable for any of those communities. For further discussion, please see Att K-Significant Impact Considerations, whole document.

While a search of the protected matters search tool identified that a number of listed threatened species have the potential to occur within 10km of the project site, a significant number of those species are unlikely to be affected by the project due to the low likelihood that they will occur within the project footprint. The remaining listed species have some potential to occur in the project area and have the potential to be impacted by vegetation clearing, earthworks, the accidental introduction of weed species or accidental fire. Flora and fauna baseline assessments are currently underway to identify listed threatened species present, or potentially present, within the project area or other areas likely to be affected by the project. These surveys will inform avoidance and mitigation measures designed to avoid or reduce potential impacts on listed threatened species.

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

The national electricity grid will require significant changes in order to allow Australia to deliver on its commitments under the Paris Agreement and achieve net zero emissions by 2050. Those changes will necessarily include the construction of new renewable energy generation facilities, primarily wind and solar photovoltaic, supported by energy storage primarily in the form of batteries or pumped hydro. The Mt Rawdon pumped hydro project represents an opportunity to delivery this necessary infrastructure at a location where significant avoidance of impacts is already inherent in project design through its off-stream location, re-use of an existing mine pit, re-use of an existing water pipeline easement and opportunity to locate the waterway tunnels and powerhouse underground. The project is also, as part of Australia's broader approach to climate change, a step towards mitigating climate change which is a threatening process for many listed threatened species.

The proposed action has the potential to have impacts on listed threatened species during the construction phase through construction works - primarily vegetation clearing - required within the greenfield parts of the project site (primarily the upper storage, haul roads, temporary facilities and the decline to the underground power station). During the operational phase the project has much less potential for impacts on listed threatened species. The one-off nature of the potential impacts, together with the proposed avoidance and mitigation measures (see Attachment #1 to section 4.1.4.10: Att L-Avoidance and Mitigation Measures, whole document), will mean that the impact is unlikely to be significant.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Initial design decisions represent the greatest opportunity to minimise environmental impacts and is the first stage in the mitigation hierarchy of avoid, minimise, rehabilitation and offset. The site selection and design of this project has been used as an opportunity to avoid or minimise impacts on listed threatened species and communities, including through:

- the re-use of a mine pit at a gold mine that is approaching its end of life;
- the re-use of existing infrastructure such as existing roads to the site and the existing water pipeline easement; and
- undertaking baseline flora and fauna surveys and using that information to locate project components in a way that avoids sensitive habitats where possible.

More detailed mitigation measures that will be implemented during construction of the project are outlined in the attached document (Attachment #1 Att L-Avoidance and Mitigation Measures, whole document).

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

Offsets will be provided following the completion of a detailed EIS or IAR and will be in accordance with the *Environmental Offsets Act 2014* (*Qld*) and the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy.*

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
Yes	No	Actitis hypoleucos
Yes	No	Apus pacificus
Yes	No	Calidris acuminata
Yes	No	Calidris ferruginea
Yes	No	Calidris melanotos
Yes	No	Crocodylus porosus
Yes	No	Cuculus optatus
Yes	No	Gallinago hardwickii
Yes	No	Hirundapus caudacutus
Yes	No	Monarcha melanopsis
Yes	No	Myiagra cyanoleuca
Yes	No	Numenius madagascariensis
Yes	No	Pandion haliaetus
Yes	No	Rhipidura rufifrons

Direct impact	Indirect impact	Species
Yes	No	Symposiachrus trivirgatus
Yes	No	Tringa nebularia

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Species or threatened ecological community

An EPBC search, conducted 21 March 2022, identified 15 EPBC-listed migratory species that have the potential to occur within the referral area or a 10 km radius of the project components:

- Fork-tailed Swift Apus pacificus
- Oriental Cuckoo, Horsfield's Cuckoo Cuculus optatus
- White-throated Needletail Hirundapus caudacutus
- Black-faced Monarch Monarcha melanopsis
- Satin Flycatcher Myiagra cyanoleuca
- Rufous Fantail Rhipidura rufifrons
- Spectacled Monarch Symposiachrus trivirgatus
- Common Sandpiper Actitis hypoleucos
- Sharp-tailed Sandpiper Calidris acuminata
- Curlew Sandpiper Calidris ferruginea
- Pectoral Sandpiper Calidris melanotos
- Latham's Snipe, Japanese Snipe Gallinago hardwickii
- Eastern Curlew, Far Eastern Curlew Numenius madagascariensis
- Osprey Pandion haliaetus
- Common Greenshank Tringa nebularia

Impact

Potential impacts to EPBC-listed migratory species from the Project will primarily relate to the construction of the upper storage and access road.

Key potential impacts to migratory avifauna include:

- Temporary or permanent loss of habitat as a result of vegetation clearing.
- · Fragmentation of habitat resulting in isolation of threatened terrestrial populations.
- Degradation of habitat as a result of excavation an vegetation clearing, resulting in increased sedimentation and turbidity and decreased water quality in local waterways.
- · Direct injury/mortality as a result of vehicle strikes or machinery use during construction and vegetation clearing.
- Introduction of new and/or spread of existing invasive species including introduced predators such as cats and foxes.

Further studies and project definition are required to more accurately assess the presence/occurrence of threatened migratory fauna, and to assess the potential impacts and design appropriate avoidance and mitigation measures.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

The national electricity grid will require significant changes in order to allow Australia to deliver on its commitments under the Paris Agreement and achieve net zero emissions by 2050. Those changes will necessarily include the construction of new renewable energy generation facilities, primarily wind and solar photovoltaic, supported by energy storage primarily in the form of batteries or pumped hydro. The Mt Rawdon pumped hydro project represents an opportunity to delivery this necessary infrastructure at a location where significant avoidance of impacts is already inherent in project design through its off-stream location, re-use of an existing mine pit, re-use of an existing water pipeline easement and opportunity to locate the waterway tunnels and powerhouse underground. The project is also, as part of Australia's broader approach to climate change, a step towards mitigating climate change which is a threatening process for many listed threatened species.

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The proposed action has the potential to have impacts on migratory species during the construction phase through construction works - primarily vegetation clearing - required within the greenfield parts of the project site (primarily the upper storage, haul roads and the decline to the underground power station). The operational phase the project has much less potential for impacts on migratory species. The one-off nature of the potential impacts, together with the proposed avoidance and mitigation measures (see Att L-Avoidance and Mitigation Measures, whole document), will mean that the impact is unlikely to be significant.

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

For this proposed action the Protected Matters Search Tool has identified 15 listed migratory species, as potentially occurring within 10 km of the Project. However, the breeding grounds for the majority of listed migratory species are located outside of Australia and no significant populations of migratory species has been recorded within the footprint of the proposed project. This will be confirmed through comprehensive wet- and dry-season surveys specifically targeting the listed migratory species. Through this detailed ground truthing, avoidance and mitigation measures will be developed and implemented through an Environmental Management Plan and a Biodiversity Management Plan. The knowledge obtained from these surveys will influence the final design, with the aim of avoiding crucial habitats. Through the implementation of the above process, it is anticipated that significant impacts can be avoided and therefore the proposed action will not meet the definition of a controlled action.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Preliminary avoidance, management and mitigation measures have been identified and are listed below by physical environments. These measures will be refined, and additional ones added during the preparation of the impact assessment, in consultation with the relevant authorities and subject matter experts, and through the review of applicable guidelines. Preliminary measures include:

Landforms and Soil - Limiting vehicle movements to defined access roads and existing operational areas, Utilising land-clearing techniques that preserve the rootstock of removed vegetation in the ground (where practicable), Undertaking major earthworks and ground disturbance activities during the drier months, wherever practicable when exposed surfaces will be less prone to rainfall erosion and avoiding such works during high rainfall periods, Refuelling on impermeable hardstand areas with spill prevention and spill containment kits available in close proximity, Storage of fuels and chemicals in accordance with Australian Standards, Development and implementation of an Environmental Management Plan (EMP).

Surface and groundwater - Minimising the area of land cleared, Diverting clean water away from disturbed areas, Controlling sediment runoff from stockpiles by installing sediment control structures to prevent sediment release to watercourse, Avoiding stockpiling spoil and/or topsoil in close proximity to existing drainage lines, maintaining a minimum distance of approximately 50 m, where practicable, Ensure regular water samples are taken, especially immediately after a storm or intense weather events, Depending upon the quality of the rock present in the upper storage site, measures to prevent seepage from the upper storage to groundwater such as grouting or lining, Minimising or avoiding the risk of over-pumping through dam operations systems and procedures and appropriate design of an emergency spillway to minimise safety and environmental risks, Undertake groundwater investigations to characterise the groundwater and utilise this information to develop groundwater models to model the impact of the project on groundwater.

Air quality - Minimising the area of vegetation to be cleared by locating Project components such as temporary facilities on land that has already been disturbed by the mine site, Using tarps or covers for trucks and trailers transporting materials to and from the site, Using water for dust suppression on access roads, All plant equipment will meet exhaust air quality standards. Vehicles and machinery will be fitted with the appropriate emission control equipment and will be maintained and serviced frequently, Prepare and implement a greenhouse gas management plan for both the construction and the operational phases of the project.

Flora and fauna (terrestrial and aquatic) - Minimising the area of direct land clearing in areas sensitive to disturbance, such as near waterways, Complete ecology surveys to identify threatened species populations and habitats, Clearly identifying areas of vegetation and habitat that are to be protected and therefore avoided, Stockpiling of vegetation debris collected during clearing for later use in rehabilitation, Progressively rehabilitating disturbed areas, Retaining areas of vegetation that have high species diversity, Felling large trees in a manner that minimises harm to wildlife and damage to surrounding vegetation, Minimise the time frame between vegetation being cleared and the area being used for Project requirements to reduce the likelihood of weeds becoming established, Rehabilitate disturbed areas as soon as possible to reduce likelihood of weed development.

Noise - Maintaining construction vehicles and equipment in order to limit noise emissions, Maintaining noise suppression devices on construction vehicles and equipment.

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Visual amenity - Watering exposed areas to minimise dust generation.

Social and Cultural Heritage - Implementing operating procedures and staff training to identify artefacts and manage the reporting of cultural heritage, Stopping all works immediately and implementing the Chance Finds Procedure if suspected indigenous or non-indigenous culturally significant material or artefacts are found within 50 m of works, Establishing and maintaining an exclusion zone around identified potential heritage items observed on site, Have regard to impacts on visual amenity in selecting final alignment, Undertaking ongoing engagement with local community (Mt Perry, surrounding landholder and mine workers) providing clear, factual and accurate information relating.

Waste - Monitor the volumes and weights of waste produced, Substituting materials for reusables to reduce waste, Ensure appropriate recycling and reuse of materials, Waste areas are covered to prevent foraging of animals and birds, Ensure regular monitoring of site to ensure no debris or litter has blown into the surrounding environment.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these

measures. *

Offsets will be provided following the completion of a detailed EIS or IAR and will be in accordance with the *Environmental Offsets Act 2014* (*Qld*) and the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The project will not directly or indirectly impact a nuclear action. There are no nuclear actions within or in close proximity to the project area and the project itself will not be a nuclear action or is associated with one.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any Commonwealth Marine Areas, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on Commonwealth Marine Areas as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any Commonwealth Marine Areas.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any Commonwealth Marine Areas, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on Commonwealth Marine Areas as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any Commonwealth Marine Areas.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The project areas does not fall within or in close proximity to a current or proposed coal seam gas or large coal mining development. There are no developments currently identified for the project area and the project is not associated with one.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

A search of the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any Commonwealth Lands, within the project area or inside 10 km. The project is unlikely to have a direct or indirect impact on Commonwealth Lands as the project will be a closed system that will not impact the environment outside the project footprint. The initial construction will have a direct impact on the environment within the project footprint, which does not contain any Commonwealth Lands.

4.1.11 Commonwealth heritage places overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The project is not associated with or will not impact directly or indirectly any Commonwealth heritage places overseas. All direct and indirect impacts of the project will be contained within the footprint of the project area.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

The proposed pumped hydro facility will assist the Queensland and Australian Governments in delivering on their commitments to achieving net zero emissions by 2050. It will also provide a portion of the dispatchable energy identified as required by the Australian Energy Market Operator in its Integrated System Plan (AEMO, 2022, Integrated System Plan for the National Electricity Market, June 2022).

The timing of commencement of the project is contingent upon the end of mining at the existing Mt Rawdon gold mine.

In order to be suitable for pumped hydro generation, a site must meet a number of specific criteria including an adequate difference in elevation between the upper and lower storages and reasonable proximity to the electricity grid. The location of the proposed Mt Rawdon pumped hydro facility is considered ideal because, in addition to providing suitable topography and proximity to the existing electricity transmission grid:

- It is an off-stream facility which avoids the impacts to the environment and other water users that can be caused by on-stream storages;
- It minimises its environmental impact by re-using the mine pit, access roads and water pipeline easement of the existing gold mine;
- It provides an immediate and economically productive use for mined land; and
- It will provide construction jobs which may mitigate some of the economic impact that the local community will experience upon closure of the mine.

The site of the Mt Rawdon pumped hydro facility provides an opportunity to provide this necessary infrastructure at a location that minimises its environmental impacts and provides economic benefits to a community that will shortly feel the economic impacts of the closure of a large employer in the Mt Rawdon mine.

The site of the powerhouse and waterway tunnels was driven by the geotechnical suitability of their location. Any change in the location of these underground facilities is unlikely to have significantly different environmental impacts.

For further discussion please see Att M - Alternative Considerations (whole document).

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Att A-Additional Background Information	Document	Additional background information on the project and associated gold mine
#2.	Att B-1.2.1 Proposed Action	Document	A description of the proposed action.
#3.	Att C-Mt Rawdon Pumped Hydro Project - figures	Document	Attachment containing all figures that are referenced in the referral.

1.2.7 Public consultation regarding the project area

#1.	Att D-Mt Rawdon	Document	The first newsletter regarding the project which was
	Newsletter		circulated as part of stakeholder engagement. Additional newsletters will be circulated providing
			updates on the project.

3.1.1 Current condition of the project area's environment

#1.	Queensland Globe	Link (Webpage)	https://qldglobe.information.qld.gov.au	
#2.	Rangelands 2008 —	Link (Webpage)	https://www.awe.gov.au/sites/default/files/documents/rangeland	ls(
	Taking the pulse		pulse.pdf	

3.2.1 Flora and fauna within the affected area

#1.	Att E-NRC 2013	Document	Flora and Fauna Technical Report Mt Rawdon Operations
#2.	Att F-SLR 2020	Document	Received Environment Monitoring Program, Technical Report Mount Rawdon
#3.	Queensland Globe	Link (Webpage)	https://qldglobe.information.qld.gov.au

3.2.2 Vegetation within the project area

#1. Queensland Globe Link (Webpage) https://qldglobe.information.qld.gov.au	#1.	Queensland Globe	Link (Webpage)	https://qldglobe.information.qld.gov.au
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3.3.2 Indigenous heritage values that apply to the project area

#1.	Att G-Archaeo, 2013	Document	Referenced Cultural Heritage Survey
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3.4.1 Hydrology characteristics that apply to the project area

01/09/2022, 09:54			Print Application · Custom Portal	
	Att H-NRC 2015	Document	Mt Rawdon Operations: Application to Amend Environmental Authority to Facilitate a Revision to the Groundwater Monitoring Program. Received Environment Monitoring Program, Technical Report Mount Rawdon	
	#2. Queensland Globe	Link (Webpage)	https://qldglobe.information.qld.gov.au	

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att I-Protected Matters - MNES layers - March 21st 2022	Document	Protected Matters Search Results
#2.	Att J-Threatened Species and Ecological Communities	Document	List of Threatened Species and Ecological Communities identified via the EPBC search tool and potential impacts

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att K-Significant Impact Considerations	Document	Additional information regarding significant impacts
#2.	Protected Matters Search Tool	Link (Webpage)	https://www.awe.gov.au/environment/epbc/protected- matters-search-tool

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

#1.	Att L-Avoidance and	Document	Additional information regarding avoidance and
	Mitigation Measures		mitigation measures

4.1.5.6 (Migratory Species) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att L - Avoidance and Mitigation Measures	Document	Additional information regarding avoidance and mitigation measures
#2.	Protected Matters Search Tool	Link (Webpage)	https://www.awe.gov.au/environment/epbc/protected- matters-search-tool

4.3.8 Why alternatives for your proposed action were not possible

#1.	Att M - Alternative	Document	A discussion of considerations in identifying project
	Considerations		alternatives.

4.3.3 Why an alternate timeline for your proposed action was not possible.

#1.	2022 Integrated System	Link (Webpage)	https://aemo.com.au/-/media/files/major-
	Plan		publications/isp/2022/2022-documents/2022-
			integrated-system-

4.3.5.2 (Considered alternatives) Details of possible alternatives that you have considered but are not proposing

#1.	Att M-Alternative	Document	Additional information regarding alternatives
	Considerations		

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN	28155087362
Organisation name	ERIAS GROUP PTY LTD
Organisation address	13-25 Church Street, Hawthorn, Victoria, 3122
Representative's name	David Browne
Representative's job title	Director
Phone	0419012698
Email	rod.conroy@eriasgroup.com
Address	Level 20 / 307 Queen Street

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

By checking this box, I, **David Browne of ERIAS GROUP PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	69631031742
Organisation name	ICA Investment Services Pty Ltd
Organisation address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney, NSW 2000
Representative's name	Michael Siede
Representative's job title	Director
Phone	0417392065
Email	MSiede@icapartners.com.au
Address	Level 25, Governor Macquarie Tower, 1 Farrer Place, Sydney NSW 2000

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

I, Michael Siede of ICA Investment Services Pty Ltd, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

I, Michael Siede of ICA Investment Services Pty Ltd, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

I would like to receive notifications and track the referral progress through the EPBC portal. *