

Critical Minerals Open-Cut Mining Project

Application Number: **02291**

Commencement Date:

Status: **Locked****06/03/2024**

1. About the project

1.1 Project details

1.1.1 Project title *

Critical Minerals Open-Cut Mining Project

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Other

1.1.4 Estimated start date *

01/04/2025

1.1.4 Estimated end date *

31/12/2053

1.2 Proposed Action details

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

Vanadium is recognised as a 'critical mineral' by both the Queensland Government and the Commonwealth Government. In addition to its traditional uses in steelmaking, vanadium is used in the manufacture of vanadium redox flow batteries. Large-scale vanadium redox flow batteries will be a critical part of Australia's energy transformation, with the shift from centralised coal and gas generation to distributed and intermittent

sources of energy such as wind and solar. Vanadium redox flow batteries are an ideal energy storage solution for utility and commercial uses because of their long lifespan (more than 25 years) and their application in both on-grid connection or off-grid storage.

Recent global increases in the demand for vanadium has triggered the Queensland government to implement a goal to capitalise on the state's rich vanadium deposits, in order to become a global leader in the production and exportation of the mineral. Queensland's strategy has a renewable energy focus, with the intention to use vanadium in the manufacture of vanadium redox flow batteries associated with renewable energy generation and a shift to decarbonisation (DSDILGP 2023).

Vecco Industrial Pty Ltd (Vecco, the Proponent) is seeking to develop the North West Minerals Province's world class vanadium deposit. The Vecco Critical Minerals Project (the Project) will produce critical minerals including vanadium, to be used primarily in the manufacture of industrial scale batteries for grid scale energy storage, high purity alumina (HPA), and molybdenum.

Vecco has prepared this Environment Protection and Biodiversity Conservation Act 2000 (EPBC Act) referral for the Project, which will be limited to the activities conducted under Proponent held mining leases.

The Project has concurrently commenced the process for designation as a Coordinated Project, requiring an Environmental Impact Statement (EIS), administered by the Office of the Coordinator General. Should the Project be declared a controlled action under the EPBC Act, the Proponent expects an assessment bilateral process, in accordance with the agreement between the Commonwealth and the Queensland Governments.

The proposed life-of-mine (LOM) is approximately 27 years, including construction, operation, and rehabilitation. The Project consists of a shallow, open-cut mining operation that will mine approximately 6.7 Mtpa Run of Mine (ROM) ore and produce in the order of 8,000 tpa V₂O₅, 4,000 tpa HPA, and up to 600 tpa of molybdenum, over an operational life of approximately 17 years.

Processing will occur on-site following extraction, crushing, and screening of the ore. Mineral products will be packed in containers as dry reagents, to be transported off site by truck to Townsville, for downstream processing into battery electrolyte or export from the Port of Townsville to international markets.

The Vecco Critical Minerals Project will include the following key components:

- open-cut mining of approximately 6.7 Mtpa ROM ore, using conventional surface mining equipment (excavators, front end loaders, rear dump trucks, dozers) or equivalent;
- development of a mine infrastructure area (MIA), including, administration buildings, bathhouse, crib rooms, storage warehouse, workshop, fuel storage, refuelling facilities, wash bay, laydown area, and a helipad;
- development of mine areas (open-cut pits) and waste rock dumps, including vegetation and soil stripping and stockpiling;
- construction and operation of a Mineral Processing Plant (MPP) and ore handling facilities adjacent to the MIA (including ROM ore stockpiles, product stockpiles and temporary residue drying facility);
- construction of on-site roads and tracks including a mine access road from the existing Punchbowl Road to the MIA and a bed level crossing over the Saxby River;
- construction of a solar farm and associated energy storage system to maximise renewable energy usage;
- installation of waste heat recovery equipment (such as a boiler) to harness steam-based power from the acid generation process;
- use of diesel or gas fired generators during construction or as a supplementary energy supply during operations;
- installation of infrastructure for water management and transfer including but not limited to pipelines, pumps, drains, bunds and dams;
- construction of an on-site workers accommodation village and associated facilities, including an adjacent sewage treatment plant (STP);

- progressive establishment of soil stockpiles, hardstand areas and borrow pits (for road base and civil works) within the ML. Additional material will be sourced from local quarries where required;
- continued exploration and resource definition;
- progressive rehabilitation occurring at defined milestones throughout the operational life. All voids will be backfilled, ensuring all rehabilitated landforms achieve a safe and sustainable post-mining land use on closure; and
- other associated minor infrastructure, plant, and equipment necessary to support the operations.

The total area of the Project site (spanning 3 MLAs) is approximately 3534 ha.

The estimated direct disturbance footprints associated with key Project developments are:

- Infrastructure (including Mine Infrastructure Area, accommodation facility, solar array) - 160 ha
- Access roads, drains and pipelines - 80 ha
- Dams - 75 ha
- Mine pit footprint (maximum extent, not at one time) - 820 ha
- Out-of-pit waste rock dump - 50 ha

Disturbance values listed above are estimates based on direct footprint of key Project developments.

Project infrastructure may change, or require a disturbance buffer - whereby additional disturbance may be necessary to ensure safe operations and minimise risks, such as those associated with fire or storms. The maximum disturbance area including contingency and buffers is approximately 1726 ha. Avoidance area is approximately 1808 ha.

Final infrastructure locations and extent will remain subject to ongoing assessment as part of the EIS process, with indicative locations and sizing presented in Attachment 2 (Figure 2 and Figure 3). The disturbance area indicated does not equate to the total disturbance footprint at any one point in time. Open-cut mining areas will be developed and rehabilitated progressively. Infrastructure will be developed on an as-needed basis to avoid unnecessary clearing where possible.

Baseline environmental data for the Project site has been collected over multiple years, including during field surveys, desktop assessments and technical assessments. The findings of these assessments supports this referral.

The vegetation expected to be directly impacted through clearing over the life of the Project is comprised of remnant vegetation. None of the potentially affected vegetation communities are listed as threatened under the EPBC Act. Maximum extent, and detailed composition of vegetation communities will be provided as part of the EIS process.

Potential indirect impacts to flora values from vegetation clearing, topsoil stripping, excavation, construction and operation activities include:

- potential for reduced condition of surrounding vegetation communities, due to the introduction of weeds and pests;
- dust and other air emissions impacting surrounding vegetation;
- increased risk of bushfire, linked to equipment operation and other accidental ignition sources;
- the release of contaminants, including sediment derived from erosion, within cleared areas or from stockpiles on the mine site.

The removal of remnant vegetation will directly impact fauna through removal of habitat within the Project footprint, and increase the potential for fauna injury or mortality through interactions with vehicles on roads and/or heavy machinery used for land clearing.

Potential indirect impacts to fauna values from vegetation clearing, topsoil stripping, excavation, construction and operation activities include:

- habitat fragmentation and loss of connectivity;
- reduced condition of surrounding habitat due to the introduction of weeds and pests;

- noise and vibration impacts on local fauna;
- increased risk of bushfire, linked to equipment operation and other accidental ignition sources; and
- impacts on fauna from artificial lighting

Potential direct and indirect impacts from the Project will be assessed in full during the EIS process.

Existing regional infrastructure, facilities and services may be utilised to support Project activities - but are not considered part of this referral. These include, but are not limited to, goods and services located in the town of Julia Creek, local roads, the Flinders Highway, rail networks, Julia Creek Aerodrome and other regional airports, Vecco's battery electrolyte plant in Townsville, and the Port of Townsville.

The Project will directly support the renewable energy transition through the production of high purity vanadium pentoxide (V₂O₅) to create high-grade vanadium electrolyte for use in vanadium redox flow batteries, in its factory in Townsville. The Townsville plant at full capacity will produce enough electrolyte annually to support 350 MWh of energy storage capacity per cycle. The Project will play a significant role in assisting the Queensland Government in achieving its renewable energy and emissions reduction goals, and its battery industry strategy, through both the mining of V₂O₅ and the production of vanadium electrolyte in the State.

The Project will also contribute to the federal Critical Minerals Strategy 2023-2030 (DISR 2023) by facilitating growth in the national production and exportation of critical minerals to meet global demands. Critical minerals are essential for the energy, transport, aerospace, defence, medical, automotive and telecommunications sectors, with additional manufacturing applications. The Australian government's vision is to become a global leader in critical mineral production by 2030, with the objectives to achieve a stable supply, expand sovereign capabilities, and grow regional economies (DISR 2023).

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

No

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 is expected to require approval under the Commonwealth EPBC Act. A referral to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) is required for the assessment of potential impacts to Matters of National Environmental Significance (MNES) under the EPBC Act.

In terms of the State of Queensland assessment process, the Proponent considers that the Project meets the criteria for a Coordinated Project declaration, requiring an EIS under the State Development and Public Works Organisation Act 1971 (SDPWO Act). Should this Project be determined a controlled action, then the Commonwealth assessment and approval process will commence. The Australian Government has bilateral agreements with state and territory governments to accredit environmental assessment processes that meet set standards. If an EPBC Act approval is needed, it may be possible to do a single assessment, avoiding duplication by undertaking a bilateral assessment process.

Where there may be a significant impact on a protected matter, an offset will be required in accordance with the EPBC Act and the EPBC Environmental Offsets Policy 2012. Where this is the case, an Offset Strategy will be included in the EIS.

A site-specific Environmental Authority application (EA) for a new resource activity under the *Environment Protection Act 1994* (EP Act) will be prepared for the Project and lodged with the Queensland Department of Environment, Science and Innovation (DESI). Concurrently, a Progressive Rehabilitation and Closure Plan (PRCP) will be lodged with DESI – presenting the detail on Project activities as they relate to rehabilitation and a return to a stable post mining land use. The PRCP will include milestones for rehabilitation, in addition to criteria and completion dates.

The Project is also subject to several Mining Lease (ML) applications, which have been lodged with the Department of Resources (DoR) under the Queensland *Mineral Resources Act 1989* (MR Act).

The Proponent will develop a Cultural Heritage Management Plan under the *Aboriginal Cultural Heritage Act 2003*. This will be registered with the Queensland Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and Arts.

Beyond these key legislative and approvals requirements, there may be additional approvals required. These will be identified as part of the EIS process.

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. *

The surrounding community and relevant stakeholders have been engaged on numerous occasions throughout the environmental impact assessment process. This ensures that relevant community members are aware of the Project, its benefits, and potential impacts. Consultation has provided the opportunity for stakeholders to comment on issues of relevance. Objectives of public consultation have included the following principles:

- Ensure community members have understood the Project details, timing, and workforce arrangements so that discussions about impacts and benefits are meaningful.
- Provide community members with the opportunity to identify and assess potential social impacts.
- Ensure transparent and inclusive community engagement to facilitate the ongoing management and monitoring of potential social impacts.
- Ensure Project planning and delivery are informed by community views.
- Ensure post-mining land use is consistent with community expectations.

A Social Impact Assessment has commenced and will be included in the EIS.

The majority of the Project area comprising ML 100367 (Production) and ML 100369 (Infrastructure) is located on free-hold land where native title has been extinguished. ML 100368 (Transport) traverses some land where native title may exist and is being granted in accordance with section 24MD of the *Native Title Act 1993* (Cth).

There are no active Native Title Claims applying to the Project area. The closest existing native title claim application (Mitakoodi People #5 – Tribunal file no. QC2015/009), is located approximately 70 km west of the Project.

The Proponent has maintained the highest standard and respect for cultural heritage sensitivities and has been proactive in its approach to development of the Project. The steps taken by the Proponent include and will continue to include:

- ongoing review of relevant government databases to identify any new native title claimants and/or Aboriginal parties for the land underlying the Project;
- ensuring all Project activities are carried out in accordance with:
 - the duty of care guidelines gazetted by the Minister under the *Aboriginal Cultural Heritage Act 1993* (QLD) (ACH Act); and

- the cultural heritage management plan (CHMP) (once approved) discussed in Section 6.8.2;
- providing or attempting to provide regular advice to the nearest known native title and/or Aboriginal parties of progress at the Project.

An assessment of Queensland Government databases has not identified any places or sites of Aboriginal cultural significance within the Project area.

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.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at privacy@awe.gov.au.

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/ACN 71620818920

Organisation name AARC ENVIRONMENTAL SOLUTIONS PTY LTD

Organisation address 164 Wharf St, Spring Hill, 4000, QLD

Referring party details

Name Justin Miller

Job title Environmental Scientist

Phone 3217 8772

Email jmiller@aacrc.au

Address 164 Wharf Street, Spring Hill, 4000, QLD

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/ACN 66158805497

Organisation name VECCO INDUSTRIAL PTY LTD

Organisation address 4066 QLD

Person proposing to take the action details

Name Shane Ryan

Job title Chief Operating Officer

Phone (07) 3155 6311

Email	sryan@veccogroup.com.au
Address	Level 10, 40 Creek Street, Brisbane, Queensland, 4000

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

No

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 person proposing the action (PPA) is Vecco Industrial Pty Ltd (ABN 66 158 805 497), a subsidiary of Vecco Group Pty Ltd (ABN 98 162 084 424). The PPA has no current or historical records of proceedings against them under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources. Vecco is an ethical and sustainability driven organisation.

Vecco has adhered to its regulatory responsibilities regarding its exploration activities and has not been the subject of any environmental legal proceedings that have resulted in fines or prosecution. Vecco is committed to operating in an environmentally and socially responsible manner during the design, approvals, construction, operation and closure of the Project.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

See attached - Vecco Environmental Policy.

This Vecco Environmental Policy establishes the framework for the management of environmental performance and explains our responsibilities and commitment to the environment. This policy applies to all employees of Vecco Group, its contractors and / or suppliers, along with all visitors to Vecco projects.

Vecco Group Pty Limited is committed to sustainable development and acknowledges that sound environmental management strategies are essential to the continued expansion of the Company. Management is committed to excellence in environmental management and aims to prevent unnecessary environmental impact from the Company's operations through a policy of minimisation of disturbance and

degradation of ecosystems. Prompt and effective rehabilitation of any areas disturbed during the course of exploration activities is a key strategy to mitigate environmental harm. To attain this objective, Vecco Group Pty Limited will:

- Develop, implement and maintain a framework to identify, assess and manage impacts on the environment and community at all stages of our operations.
- Ensure employees work within Vecco's policies and procedures, which are designed to take account of environmental and community considerations.
- Identify, report and fix (if possible) any environmental or community risks and/ or incidents.
- Incorporate environmental and community considerations into development plans and designs, looking for appropriate technologies which are environmentally sound and community savvy.
- Protect indigenous sites of environmental, cultural or spiritual significance.
- Ensure personnel understand the environmental effects of their activities.
- Ensure operational compliance with all relevant laws, regulations and standards as a minimum.
- Listen to community needs and expectations and seek regular feedback.
- Ensure that impacts on the community or environment are thoroughly investigated and recommendations followed up.
- Build a culture of environmental and community awareness.
- Implement exploration programs to conserve resources, reduce waste and promote recycling.
- Observe all environmental laws and conduct activities in compliance with applicable legislation, regulations and license requirements.
- Actively promote environmental awareness among Company personnel and contractors to increase the understanding of environmental matters.
- Incorporate environmental matters into planning and operational decisions and conduct regular audits of operations including those of contractors to ensure performance standards are maintained at the highest level.
- Undertake environmental awareness training programs for management and staff and contractors to recognise the value of the environments in which they work.
- Always comply with the Project Environmental Authority and the Code of Environmental Compliance.

Vecco will not tolerate;

- Damage to sites of indigenous and non-indigenous cultural heritage.
- Needless destruction of the natural environment.
- Any other behaviour or activity that impacts the credibility or reputation of Vecco.

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/ACN

66158805497

Organisation name	VECCO INDUSTRIAL PTY LTD
Organisation address	4066 QLD
Proposed designated proponent details	
Name	Shane Ryan
Job title	Chief Operating Officer
Phone	(07) 3155 6311
Email	sryan@veccogroup.com.au
Address	Level 10, 40 Creek Street, Brisbane, Queensland, 4000

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/ACN	71620818920
Organisation name	AARC ENVIRONMENTAL SOLUTIONS PTY LTD
Organisation address	164 Wharf St, Spring Hill, 4000, QLD
Representative's name	Justin Miller
Representative's job title	Environmental Scientist
Phone	3217 8772
Email	jmiller@aarc.au
Address	164 Wharf Street, Spring Hill, 4000, QLD

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/ACN	66158805497
Organisation name	VECCO INDUSTRIAL PTY LTD
Organisation address	4066 QLD
Representative's name	Shane Ryan
Representative's job title	Chief Operating Officer
Phone	(07) 3155 6311
Email	sryan@veccogroup.com.au
Address	Level 10, 40 Creek Street, Brisbane, Queensland, 4000

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)?

Yes

1.4.2 Select reason for exemption

Small Business

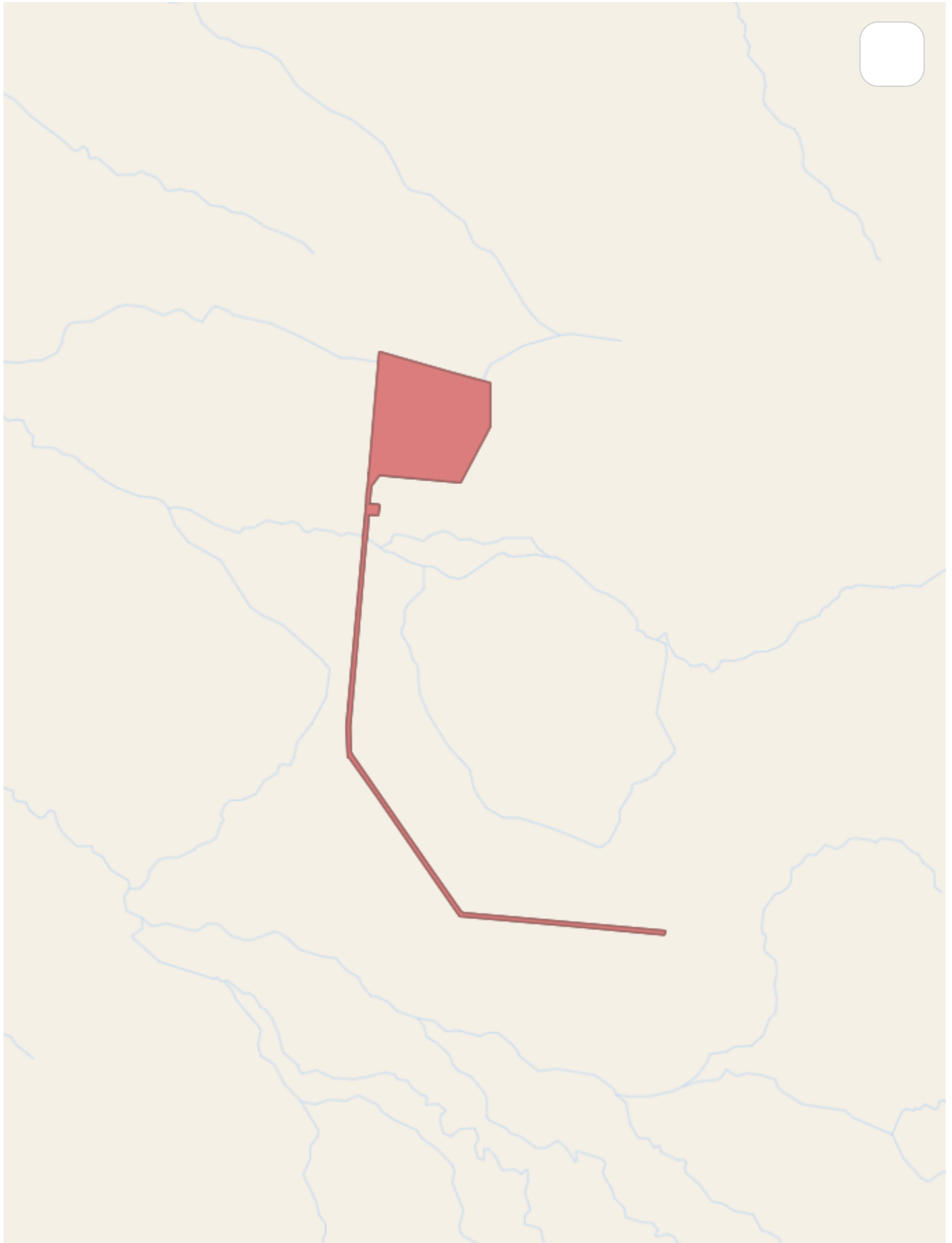
1.4 Payment details: Payment allocation

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

Proposed designated proponent

2. Location

2.1 Project footprint



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Project Area: 3548.02 Ha **Disturbance Footprint:** 3548.03 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

Punchbowl Road, Julia Creek (Bow Park, Malpas Trenton)

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 Project spans three Mining Lease Applications (MLAs). The relevant tenure is described as follows, and shown in attachment "20240224_EPMS.png":

- Mining and processing will occur within the Production ML (MLA 100367), which is within exploration permit for minerals (EPM) 25254, 25440, 26846 and 28388 held by Vecco.
- The mine access road will be located within the Transport ML (MLA 100368), which is within EPMS 25254, 26928 and 28556 held by Vecco, and EPM 27954 held by Red Ox Copper Pty Ltd.
- The Infrastructure ML (MLA 100369) is the planned location for minor infrastructure such as pumps and monitoring equipment. This Infrastructure ML is situated within EPM 25254 held by Vecco.

The combined area of the three Project mine lease applications is approximately 3,537 ha. This area will be the maximum extent of the Project. Final disturbance footprint will be determined through the EIS process, and likely not impact the combined maximum extent of the Project mine lease application area.

There are no additional resource tenements proximal to the proposed MLs.

Land within and adjacent to the Project is freehold, leasehold, or road/stock route land parcels. Land ownership as it relates to the Project is described as follows:

- The mine (Production MLA) will be located entirely within Lot 1 on Plan SX7, with adjacent properties stock route 010MLAY, and Lot 15 on Plan TD29.
- The Transport ML is located within Lot 2 on Plan SX7, Lot 4 on Plan SX7 and stock route 010MLAY, and adjacent to Lot 15 on Plan TD29, Lot 1 on Plan SX5, Lot 6 on Plan SX5, and Lot 5 on Plan

SX13.

- The Infrastructure ML is located within Lot 2 on Plan SX7 and adjacent to stock route 010MLAY.

There is one stock route located adjacent to the southern border of the Production MLA, transected in part by the Transport MLA. The Transport MLA crosses the end of one unnamed road and will connect to the McKinlay shire owned Punchbowl Road via a new intersection.

No State Forests, National Parks or conservation tenure are located within or on land adjacent to the Project.

3. Existing environment

3.1 Physical description

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

The Project is located in the North West Minerals Province, approximately 70 km north of the Julia Creek township and 515 km west of Townsville.

The Project is located within the Gulf Plains bioregion, approximately 20 km north-west of the Mitchell Grass Downs bioregion border.

The land within the Project area and surrounds is currently used for cattle grazing of unimproved pastures, which is consistent with the predominant land use of north-west Queensland (low intensity cattle grazing). Evidence of cattle grazing has been observed at all sites and habitats within the Project area.

The Project area is comprised of almost 100% remnant native vegetation. The condition of vegetation and the nature of disturbance present within the vegetation communities was assessed. Disturbances noted during the field surveys included previous vegetation clearing for agricultural activities, cattle grazing activities, roads/tracks, man-made canals for irrigation and the occurrence of weeds. Evidence of cattle grazing was observed at all sites and habitats, in the form of tracks, pats, and direct observation. Environmental weeds were present in low to moderate quantities, in most areas. There was evidence of debris resulting from storm damage within recorded in a post-wet season survey. The presence of weeds - particularly along man-made drainage lines - and the prolonged use of the property for cattle grazing, means that the vegetation in the area has some level of degradation. Vegetation quality is higher in the Saxby River riparian zone, which experiences ephemeral water flow, and has sustained less grazing pressures.

The Project land is predominantly classified as Class B based on agricultural land class mapping. Approximately 20% of the Production ML is mapped as Class A1 land, however a soil and land suitability assessment of the site does not support the assignment of Class A1, and accords with a lower, more restricted ALC class.

Topsoil stripping is required in planned mining disturbance areas to recover valuable topsoil resource for rehabilitation purposes. The identification and stripping of suitable topsoil is necessary to ensure removal of the maximum volume of viable topsoil and reduce wastage. Soil assessment has identified that generally soil fertility decreases with depth in response to the variation within a number of factors including soil texture, pH, organic matter content. Chemical and physical analysis of the soil identified in the Study Area indicates the most valuable soil resources are mainly confined to the surface horizons, which contain

seedstock, micro-organisms and nutrients necessary for plant growth. However, much of the solum to at least 0.5 m depth is usable for rehabilitation and respreading purposes, although chemical fertility declines with depth.

The Project is not located within Strategic Cropping Areas (SCA), Strategic Environmental Areas (SEA), Priority Agricultural Areas (PAA) or Priority Living Areas (PLA).

No historical mining has occurred in the underlying or surrounding Project area. Exploration drilling has been conducted as part of resource definition and development of groundwater monitoring bores.

The regional climate of the area can be described as sub-tropical with wet season dominated rainfall and mild, dry winter months. Rainfall is highly seasonal and is typically associated with monsoonal, thunderstorm and cyclonic weather patterns. Daily temperature records are available from the BoM Julia Creek Airport (029058) weather station. For the 2001 to 2023 period, recorded mean daily temperatures range between 17.3°C (min.) to 34.3°C (max.). Local meteorological conditions are provided in Attachment 4.

The Project is located adjacent to the Saxby River floodplain. The Saxby River is a tributary of the Flinders River and flows into the Flinders main branch around 220 km downstream of the site. The Saxby River floodplain is restricted on the northern side of the river at the production MLA boundary, with the topography rising by around 5 m over 800 m to where the project site is located. The southern bank floodplain extends out around 10 km from the Saxby River channel to the border of the Flinders River sub-catchment with water during significant floods flowing from the Saxby River into the Flinders River. Modelling indicates that mine infrastructure (excluding the access and infrastructure corridor) is located outside the probable maximum flood (PMF) and 0.1% AEP flood extent (Attachment 2, Figure 4 and Figure 5). The Julia Creek region experienced significant flooding in 2019 caused by a near-stationary monsoonal trough. This flooding event informed the modelling for the Project area, and confirms that mining operations (excluding the access and infrastructure corridor) is outside of the floodplain.

Periodic drought conditions in the region result in significant degradation of the ecological condition of the land. In the 6 years prior to the 2019 floods, the Julia Creek region was subject to drought conditions. The expansive grasslands of the region were unable to sustain vegetation, and cattle properties were required to de-stock. The ecological condition of the region was significantly degraded. Subsequent consecutive wet seasons have enabled the area to sustain vegetation in the grasslands, and support additional cattle grazing activities.

Additional assessment of the current conditions of the Project area's environment will be conducted as part of the EIS process.

The Project will utilise existing road infrastructure to get to the Project boundary. The Flinders Highway connects through Julia Creek, and will be the main access to and from the region by heavy and light vehicles, including for transport of mineral product to Townsville. Punchbowl Road connects Julia Creek to the Project boundary. Punchbowl Road is owned by the local McKinlay Shire Council and is sealed for 45 km, with a further 10 km stretch of unsealed road to reach the Project boundary. Punchbowl Road is currently used for access to rural properties, and for transport of cattle.

To connect Punchbowl Road to the Project site, the Proponent will develop an access and infrastructure corridor. The proposed access and infrastructure corridor for the Project, shown in Attachment 2 (Supporting figures, figure 3), is along the southern and western boundary of the underlying property. This area was chosen as it includes existing disturbance in the form of access tracks and clearing along fence lines. The Project will utilise existing disturbance as part of access road development, to minimise the impact to the environment and underlying property. This includes at the point of crossing the ephemeral Saxby River, where vegetation clearing will be reduced due to existing disturbance. Once the Project has been approved, the access road will be developed to ensure suitable use by heavy vehicles, including removal of additional vegetation, levelling and layering with gravel, ensuring suitable width for two-way use, and installation of safety infrastructure such as reflective posts and signs as necessary. The Saxby

Crossing will be bed-level, with culverts at the deepest channels to ensure fish passage during low flow events. The access road will be used as the sole access point for transport of materials, goods, and workers to and from site. Mineral product will be transported by A-triple trucks. Workers will be transported by bus. The access road is expected to be retained by the land owner at the end of the Project life.

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

The Vecco Critical Minerals Project is a greenfield site. Current and historic exploration drilling has been undertaken in and around the Project area.

The land within and surrounding Project area is designated as 'Rural' zone under the 'McKinlay Shire Planning Scheme 2019'. Queensland Land Use Mapping classifies the project area as 'Grazing Native Vegetation'. The Project overlaps one working property utilised by the landowner for beef cattle production, with several other properties adjacent to the Project MLs. One mapped stock route intersects the Transport ML.

Development of the Project area would involve new disturbance for the purposes of resource recovery and infrastructure establishment.

Rehabilitation will occur progressively and will be finalised following the completion of mining to return the land to a sustainable post-mining land use of native vegetation grazing by cattle.

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

There are no World Heritage areas, national protected areas, or state protected areas (established under the Queensland Nature Conservation Act 1992) within the Project area or within 150 km of the Project footprint. There is a state riparian biodiversity corridor mapped along the main channel of the Saxby River.

The Saxby River is defined as a watercourse under the Water Act and is the largest watercourse in the vicinity of the Project, with a catchment of approximately 5,700 km² adjacent to the Project site.

The Saxby River is an ephemeral watercourse typically subject to periods of no flows during the dry season (April – October) and high flow/flooding events during the wet season (November – March).

The Saxby River floodplain is restricted on the northern side of the river at the Production ML boundary, with the topography rising by around 5 m over 800 m to where the project site is located. The southern bank floodplain extends out around 10 km from the Saxby River channel to the border of the Flinders River sub-catchment with water during significant floods flowing from the Saxby River into the Flinders River.

The closest channel of the Saxby River lies approximately 900 m south of the Production ML.

The Project is located within the Flinders-Norman Drainage basin in north-west Queensland. Catchment flows from the Project area ultimately discharge through the Saxby River into the Gulf of Carpentaria via the Flinders River.

One *Vegetation Management Act 1999* (VM Act) wetland exists within the Transport ML.

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

The topography of the Project region is generally flat to gently undulating, with elevations ranging between 130 m and 150 m Australian Height Datum (AHD). The surface topography of the Project Area is relatively subdued, reducing from east to west by approximately 10 m over 11 km. The topography of the Project is representative of the surrounding region, being generally flat alluvial clay plains with sandy alluvial deposits as slight near-level rises.

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.

This section is accompanied by Attachment 3 (MNES Assessment).

Desktop assessments have been conducted to collate information on the ecological values within the Project area and surrounds (Attachment 3, Section 3). The detailed review informed ecology assessment methods and field survey design, ensuring a robust assessment of conservation significant flora and fauna potentially inhabiting the Project area. Conservation significant species under the EPBC Act identified by this desktop assessment were further assigned a likelihood of occurrence based on the criteria provided in Attachment 3 - Table 2. The likelihood assessment is based on the knowledge of ecologists, species' distribution, potential habitat suitability, known records, and scientific literature.

No species listed under the EPBC Act were classed as likely to occur.

Terrestrial flora, fauna, and aquatic ecology assessments of the Project site have been undertaken - including three terrestrial flora and fauna surveys, two aquatic surveys, and three targeted Julia Creek Dunnart surveys (Attachment 3, Section 4). These assessments have established baseline ecological data for the Project area, identified the presence or absence of Matters of National Environmental Significance (MNES), and contributed to the assessment of potential for significant impact.

Flora

No conservation significant flora species, or indications of their presence, were recorded during repeated field surveys of the Project site (Attachment 3, Section 5.1). No records were identified within the Project area during desktop assessment.

A total of 89 native flora species were recorded during field surveys, representing 26 families and 63 genera. The dominant family group was Poaceae (22 species) with Leguminosae (16 species) and Myrtaceae (9 species) also prominent. The dominant family groups demonstrate the overall composition and condition of the vegetation communities surveyed, with the ground layer being the most diverse. A full list of flora species identified in the Project area is provided in Attachment 3, Appendix D.

Nine introduced flora species were recorded within the Project area in low to moderate abundance. None of these species are listed as prohibited matters, or restricted matters under the Biosecurity Act (Qld). None of the species identified within the Project area are classed as weeds of national significance (WoNS).

The EPBC Act Protected Matters Search Tool identified one Threatened Ecological Community (TEC) with the potential to occur within the Project area. 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' TEC, is defined as a combination of native species, not necessarily linked to a regional ecosystem (RE). No springs have been mapped within the Project area, further, no natural discharge from the Great Artesian Basin has been identified within the Project area during the surveys. No vegetation that could represent TEC's were identified during field surveys.

No conservation significant flora species were recorded during the field surveys.

Fauna

No conservation significant fauna species were recorded during repeated field surveys of the Project site, and no records were identified within the Project area during desktop assessment (Attachment 3, Section 5.2, Section 5.3, Section 5.4, Section 5.5).

A total of 131 native vertebrate species were identified within the Project area during field surveys, comprising 1 amphibian, 22 reptiles, 85 birds and 15 mammals (9 of them confirmed micro-bat species). A list of fauna species is provided in Attachment 3, Appendix E.

No conservation significant fauna species were recorded during field surveys, suggesting presence is unlikely. Habitat features potentially suitable for migratory bird species were identified on or near the Project sites (Attachment 3, Section 5.3). Habitat characteristics suited to the Julia Creek Dunnart has also been identified within or in proximity to the Project (Attachment 3, Section 5.4).

Five introduced fauna species have been recorded within the Project area through the detection of scats, tracks, sensor camera detection and/or direct observation:

- Cane Toad (*Rhinella marina*)
- European Cattle (*Bos taurus*)
- Wild Dog (*Canis familiaris*)
- Feral Cat (*Felis catus*)
- Feral Pig (*Sus scrofa*)

Three of the introduced species, the Feral Cat, the Feral Pig and the Wild Dog are listed as a restricted matter, and none are a prohibited matter under the Biosecurity Act (Qld).

Aquatic

An 'Aquatic Ecology Assessment' was conducted to identify the presence or absence of conservation significant aquatic flora and fauna species at the Project site (Attachment 3, Section 5.5). One species of freshwater crab (*Austrothelphusa spp.*) and one fish species, Spangled Perch (*Leiopotherapon unicolor*), were observed at the Project site.

Two native, Least Concern status (NC Act), amphibian species were observed during the survey at the Project, including the Eastern Snapping Frog (*Litoria novaehollandiae*) and the Ornate Burrowing Frog (*Opisthodon ornatus*). No fauna species of conservation significance were observed during surveys.

No conservation significant or EPBC Act or NC Act listed Endangered, Vulnerable or Near Threatened aquatic species were observed at any of the survey sites during the survey. All aquatic species recorded in the Project area were native and are considered common or widespread species in the Flinders Drainage

Basin. No pest fish species were observed during the survey.

Julia Creek Dunnart

The Julia Creek Dunnart (*Sminthopsis douglasi*) is a small marsupial found between Julia Creek and Richmond in Queensland. Use of the Australian Government Protected Matters search tool (DCCEEW 2024) indicated that the Project is within an area designated as Julia Creek Dunnart “species or species habitat may occur”. The Project is not within an area designated “species or species habitat likely to occur” (Attachment 3, Figure 5).

Targeted Julia Creek Dunnart surveys by expert ecologists have been conducted in the Project area (Attachment 3, Section 4.3). The aim of these surveys was to determine the presence or absence of the Julia Creek Dunnart and assess any areas of potential suitable habitat occurrence. The report and data from these surveys concluded that extensive areas of the Project site are not suitable habitat for Julia Creek Dunnart due to the lack of wide soil cracks and the presence of prolonged grazing impacts affecting grass cover (Attachment 3, Section 5.3). No specimens or signs of specimens were encountered at the Project site during vigorous repeated surveys and trapping.

A list of flora and fauna species recorded during field surveys is provided in Attachment 3 (Appendix D and Appendix E respectively). A detailed description of the targeted Julia Creek Dunnart assessment is provided in Attachment 3 (Section 4.3, Section 5.3, Section 6.3).

Further assessment of ecological values, including of the Julia Creek Dunnart, will be undertaken as part of the EIS process.

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

Vegetation

Vegetation mapped within the Project is mapped remnant vegetation on the Queensland Government regulated vegetation map.

Field studies verified that the Project area supports remnant vegetation consisting of ten vegetation communities from three community types, all of which are listed as ‘Least Concern’ under the Queensland *Vegetation Management Act* (Attachment 3, Table 6) and none of which correspond to a listed Threatened Ecological Community under the EPBC Act.

The three vegetation communities (VC) associated with Low dry woodlands are characterised by:

- Wild Plum/Beefwood/Bloodwood woodland on gently undulating sand plains (VC1a) located near the Saxby River. This VC is consistent with the description of RE 2.5.1a (DESI 2021) and covers an area of approximately 63.6 ha. VC1a has a sparse ground layer with approximately 50% bare ground with patches of litter and tussock grasses scattered throughout.
- Western bloodwood low woodland on sandy soil (VC1b) is the dominant woodland vegetation within the Project area. VC1b is consistent with the description of RE 2.5.12a (DESI 2021), consisting of one large continuous patch of approximately 772.4 ha. Groundcover within this community is variable, ranging from 20-80% cover dominated by Feathertop Wiregrass, with Silky Browntop and Golden Beardgrass (*Chrysopogon fallax*) associated. On average, bare ground accounted for 35% of ground cover, while litter accounted for 20%.
- Melaleuca spp. low open woodland on alluvial plains (VC1c) is found in two patches within the Project area totalling 56.3 ha and is best represented by RE 2.5.33 (DESI 2021). The ground layer is less dense than other woodland communities. Vegetation groundcover makes up 15% and is dominated by Feathertop Wiregrass, with Northern Wanderrrie Grass (*Eriachne obtusa*) and the introduced Buffel Grass (*Cenchrus ciliaris*) associated. On average, bare ground accounts for approximately 45% of ground cover, while litter accounts for approximately 30%.

Two VCs associated with woodlands on alluvial soil were identified within the Project area and are characterised by:

- Coolibah woodland on alluvial plains (VC2a) is a riparian community found along the Saxby River, making up 1.83 ha. VC2a is best represented by RE 2.3.17a (DESI 2021). Live groundcover within this community accounts for approximately 50-75% total groundcover and is dominated by Silky Browntop.
- Gidgee low woodland on alluvial plains (VC2b) is located in small patches within the Project area, covering a total of 21.7 ha. This vegetation community is best represented by RE 2.3.7a (DESI 2021). The ground layer is variable, with large portions of bare ground (averaging 63%), broken up by patches of Fairy Grass (*Sporobolus caroli*) and Katoora Grass (*Sporobolus actinocladus*), and sporadic succulents such as Slender Pigweed (*Portulaca filifolia*), Red Spinach (*Trianthema triquetra*), and Black Pigweed (*Trianthema portulacastrum*).

Four tussock grassland communities were identified within the Project area, most of which defined by the dominance of Feathertop Wiregrass with other species making up the mosaic. These VC are characterised by:

- Tussock grassland on Tertiary clay deposits (VC3a) is the most prevalent vegetation community within the Project area, both within the primary area of planned infrastructure and along the proposed access road, accounting for a total of 2552.8 ha. The community is best represented by RE 2.4.2b (DESI 2021). Live groundcover was variable throughout the year ranging between 25 – 90% dominated primarily by Feathertop Wiregrass, with Silky Browntop, *Astrelba* spp. and *Eragrostis* spp. also associated.
- *Aristida* spp./*Sporobolus* spp. grassland on alluvial deposits (VC3b) VC is present south of where the Saxby River intercepts with the access road, making up approximately 11.6 ha of the Project area. This community is best represented by the RE 2.3.69a (DESI 2021). The ground layer is dominated by Feathertop Wiregrass, with Katoora Grass as subdominant with live vegetative cover making up an average of 30% groundcover.
- Common Native Couch / *Sporobolus* sp. dominant grassland on silty clays (VC3c) is a grassland community found adjacent to watercourses and wetlands communities within the Project area, making up 33.7 ha in total. This community is best represented by RE 2.3.69b (DESI 2021). The ground layer is dominated by Common Native Couch (*Brachyachne convergens*), with Katoora Grass and Feathertop Wiregrass associated with live vegetative ground cover ranging from 25% to 90%.
- Feathertop Wiregrass and Common Native Couch grassland on sandy loam (VC3d) is a grassland community comprising 17 ha of the Project area. It is best represented by the RE 2.5.35 (DESI 2021). The ground layer is dominated by Feathertop Wiregrass, with Common Native Couch and Leafy Nineawn (*Enneapogon polyphyllus*) associated, with a living groundcover percentage averaging 35%.
- Seasonal swamp dominated by Common Native Couch in circular depressions in sand plains (VC3e) comprising 0.2 ha of the Project area. This community is best represented by RE2.3.33b (DESI 2021). The ground layer is dominated by Common Native Couch, with a 50% vegetative and 38% bare ground cover. This vegetation community gets seasonally inundated but has no links to groundwater. The proposed access road in the Transport MLA intersects one such minor depression, also mapped as VM Wetland, along the access road.

Soil

The Atlas of Australian Soils (broad-scale national mapping at 1:1,000,000 scale) describes the Project Area being wholly grey, self-mulching, cracking clays on very gently undulating plains. The soil type mapped is described as uniform fine cracking, smooth-faced peds with grey clay horizon underlain by grey, mottled clay.

However, three soil management units (SMUs) have been described within the Project area during site surveys. These are the Mitchell SMU, Soapberry SMU and Gum SMU. The distribution of these SMUs will be further assessed in the EIS process.

Mitchell SMU: Predominantly deep, Grey Dermosols with Grey Vertosols occurring on gently inclined or near-level plains within an old alluvial landscape. This SMU is distributed throughout the majority of the Project area as regions of palaeo-drainage and flood channels. The soil consists either of a sandy surface, or self-mulching sandy clay surface, with clay content increasing with depth. Vegetation is predominantly feathertop wiregrass with interspersed Mitchell grass tussock grassland.

The neutral pH in the upper soil profile of the Mitchell SMU is within a suitable range for plant growth; it is not expected to limit the availability of essential nutrients above 0.5 m depth.

Topsoil typically displays weak-to-moderate structure, due to dominant sand fraction (55%) with lesser clay (29%). Risk of dispersion and erosion in the surface layer is considered low, although organic matter content is considered very low. Water holding capacity of this soil is considered to be medium (estimated plant available water capacity - PAWC of ≥ 150 mm), being restricted by very high evaporation rates especially from macro-voids.

Soapberry SMU: Reddish brown, deep, sandy soil occupying the southern region of the Production MLA, on gently inclined or near-level plains. The profile generally exhibits little or no A horizon material and therefore often comprises a B horizon with a sandy texture throughout. Vegetation associated with this unit includes wild plum (*Terminalia platyphylla*) and beefwood (*Grevillea striata*), with western bloodwood (*Corymbia terminalis*) and whitewood (*Atalaya hemiglauca*) associated in the upper canopy, and *Melaleuca* spp. in the sub-canopy.

The pH of the Soapberry SMU is slightly to moderately acidic throughout the profile, remaining within a suitable range for plant growth. The profile is non-saline and non-sodic, indicated by low ECSAT, CI and ESP values.

The topsoil is dominated by sand (90%), with low clay content (8%), contributing to loose, massive to weak granular structure at best. This, in conjunction with the very low organic matter content, suggests very poor structural stability of the topsoil layer, thus being prone to both wind and water erosion. Water holding capacity of this soil is considered to be medium (estimated plant available water capacity - PAWC of 125 - 150 mm, being restricted by very high evaporation rates, low organic matter, poor structure and high porosity (large inter-particle voids)). Of extractable nutrients, sulphate is present at marginal concentrations for crop health, while phosphorus, potassium and nitrate concentrations are very low, even for Australian semi-arid soils, for healthy improved pasture and crop growth, but adequate while sufficient soil water is available. Micronutrients are all present at low to marginal concentrations for healthy crop and improved pasture growth.

Gum SMU: Reddish brown, clay loam sandy soil, on gently inclined or near-level rises. The profile consists of only a B horizon with sandy clay loam to medium clay texture throughout. Vegetation associated with this unit includes bloodwood and *Corymbia* spp. woodlands.

The pH of the Gum SMU soils is moderately to slightly acidic throughout the profile, remaining within a suitable range for plant growth. This SMU has no salinity or sodicity limitations.

The topsoil is dominated by sand (81%), with clay (11%) and silt (7%) almost equally proportional. The sandy texture of the topsoil contributes to poor structure which forms single grain, loose and incoherent surfaces. The low organic matter content (0.9%) contributes little to the structural stability of topsoil layer. This leads to the topsoil being prone to wind and water erosion. Water holding capacity of this soil is

considered to be medium (estimated plant available water capacity - PAWC of 125 - 150 mm) being restricted by very high evaporation rates, low organic matter, poor structure and high porosity (large inter-particle voids).

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.

There are no known Commonwealth Heritage Places relevant to the Project.

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

The majority of the Project area comprising ML 100367 (Production) and ML 100369 (Infrastructure) is located on free-hold land where native title has been extinguished. ML 100368 (Transport) traverses some land where native title may exist and is being granted in accordance with section 24MD of the *Native Title Act 1993* (Cth).

There are no active Native Title Claims applying to the Project area. The closest existing native title claim application (Mitakoodi People #5 – Tribunal file no. QC2015/009), is located approximately 70 km west of the Project.

The Proponent has maintained the highest standard and respect for cultural heritage sensitivities and has been proactive in its approach to development of the Project. The steps taken by the Proponent include and will continue to include:

- ongoing review of relevant government databases to identify any new native title claimants and/or Aboriginal parties for the land underlying the Project;
- ensuring all Project activities are carried out in accordance with:
 - the duty of care guidelines gazetted by the Minister under the *Aboriginal Cultural Heritage Act 1993* (QLD) (ACH Act); and
 - the cultural heritage management plan (CHMP) (once approved) discussed in Section 6.8.2;
- providing or attempting to provide regular advice to the nearest known native title and/or Aboriginal parties of progress at the Project.

An assessment of Queensland Government databases has not identified any places or sites of Aboriginal cultural significance within the Project area.

Further assessment of indigenous heritage values will be undertaken during the EIS process.

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. *

Surface water:

The Project is located within the Flinders-Norman Drainage basin. The Project is located within the Saxby River sub-catchment, which covers a total area of 10,147 km². The Saxby River is situated approximately 2 km south of the Production MLA boundary and intersects with the mine access road. The Saxby River is comprised of braided channels of stream orders ranging from 6th order to 1st order. The Saxby River is approximately 1,030 km in length and begins at the Norman River and flows south-west for 108 km before turning north-west converging with the Flinders River eventually discharging into the Gulf of Carpentaria. Periods of flow are generally restricted to the wet season between the months of December to late March. No tributaries are mapped to traverse the Production MLA. The Saxby River is a tributary of the Flinders River and flows into the Flinders main branch around 220 km downstream of the site; however, there is some interaction between the Saxby River and Flinders River floodplains around 55 km downstream of the Project.

The Production MLA is located adjacent to, but outside the extent of, the Saxby River floodplain. The floodplain is restricted on the northern side of the river at the Production MLA boundary, with the topography here rising by around 5 m over 800 m to the ML. The southern bank floodplain extends out around 10 km from the Saxby River channel, including across the Transport MLA.

There are no major waterways (i.e., defined as a watercourse under the Water Act 2000) or unnamed waterways that traverse or intersect the Production MLA. The Transport MLA crosses the Saxby River to the south of the Production MLA. There are a number of artificial bore drains that convey water from nearby open landholder bores to the surrounding properties for livestock drinking water.

Further assessment of surface water values and potential impacts will be undertaken as part of the EIS process.

Groundwater:

The Project is located within the area of the Gulf Water Plan (2007), and the Great Artesian Basin and other regional aquifers Water Plan (2017).

Data from registered groundwater bores within approximately 20 km of the Project was obtained from the Department of Resources Groundwater Database. There are 14 registered bores located within 20 km of the Project with all bores constructed in the Gilbert River Formation, or the Eulo Queen Group – stratigraphically beneath the Gilbert River Formation. The Gilbert River Formation is a GAB aquifer which recharges approximately 100 km east of the Project. The Gilbert River Formation underlies the Project at an average depth of ~200 m and is separated from the groundwater units that may be impacted by mining by approximately 166 m (on average) of low-permeability Wallumbilla Formation sediments. The Gilbert River Formation aquifer is artesian in the Project area, meaning there is no potential for flow from the shallow units to the underlying GAB aquifer.

Mapping data indicates the possible presence of 'derived terrestrial GDEs' around the edges of vegetation communities within and near the Project. Databases identify these as permeable sandy plain aquifers with fresh, seasonal groundwater connectivity regime. The location of these potential GDEs broadly aligns with the outer edges of Quaternary – alluvial plain and aeolian deposits, mapped in the surface geology.

Mapping data also identifies potential presence of 'derived terrestrial GDEs' within the Saxby River riparian zone. Databases identify these as Quaternary alluvial aquifers with fresh, seasonal groundwater connectivity regime.

Further assessment of aquifer connectivity and Groundwater Dependent Ecosystems will be conducted during the Project EIS process.

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.

*

The EPBC Act Protected Matters Search Tool was used to identify any World Heritage properties (WHPs) located within the Project area. Searches were based on 10 km and 50 km buffers.

No WHPs were identified within a 50 km radius surrounding the Project.

The nearest WHP to the Project is the Australian Fossil Mammal Sites (Riversleigh). At its nearest point, the Australian Fossil Mammal Sites (Riversleigh) are located approximately 360 km north-west of the Project.

The next nearest WHP to the Project is the Wet Tropics of Queensland World Heritage property. The WHP occurs approximately 430 km north-east of the Project, at its nearest point.

The degree and nature of the separation between lands underlying the proposed action and the WHP areas suggests that the ecosystems associated with each area are not contiguous and function independently of one another. Given the Project's occurrence in either a separate catchment or downstream of the WHP areas, the proposed action is considered to pose no direct or indirect impacts to the WHPs.

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.

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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.

*

The EPBC Act Protected Matters Search Tool was used to identify any National Heritage places located within the Project area. Searches were based on 10 km and 50 km buffers.

No National Heritage places were identified within a 50 km radius surrounding the Project.

The nearest National Heritage place to the Project is Lignum Swamp. At its nearest point, Lignum Swamp is approximately 85 km west of the Project.

The degree and nature of the separation between lands underlying the proposed action and the National Heritage place suggests that the ecosystems associated with each area are not contiguous and function independently of one another. Given the Project's occurrence in either a separate catchment or downstream of the National Heritage place, the proposed action is not considered to pose any direct or indirect impacts to 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.

*

The EPBC Act Protected Matters Search Tool was used to identify any Ramsar Wetlands located within the Project area. Searches were based on 10 km and 50 km buffers.

No Ramsar Wetlands were identified within a 50 km radius surrounding the Project.

The nearest Ramsar Wetland to the Project is Bowling Green Bay, which is located approximately 530 km north-east of the Project at its nearest point.

The second nearest Ramsar Wetland to the Project is the Coongie Lakes Ramsar site, which is located approximately 730 km south-west of the Project at its nearest point.

The degree and nature of the separation between lands underlying the proposed action and the Ramsar Wetlands suggests that the ecosystems associated with each area are not contiguous and function independently of one another. Given the Project's occurrence in either a separate catchment or downstream of the Ramsar sites, the proposed action is not considered to pose any direct or indirect impacts to Ramsar Wetlands.

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	Calidris acuminata
No	No	Calidris ferruginea
No	No	Erythrotriorchis radiatus
No	No	Erythrura gouldiae
No	No	Falco hypoleucos
No	No	Gallinago hardwickii
No	No	Grantiella picta
No	No	Macroderma gigas
No	No	Neochmia ruficauda ruficauda
No	No	Pristis pristis
No	No	Rostratula australis
Yes	Yes	Sminthopsis douglasi
No	No	Tyto novaehollandiae kimberli
No	No	Varanus mertensi

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	The community of native species dependent on natural discharge of

Direct impact	Indirect impact	Ecological community
		groundwater from the Great Artesian Basin

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 Project will undertake additional assessment of MNES and potential impacts through an Environmental Impact Statement. Surveys have been undertaken across the Project area and will be further supported through this process.

The potential impacts on flora and fauna include:

- direct impacts through vegetation clearance and habitat disturbance;
- indirect impacts including:
 - fragmentation and edge effects;
 - weeds and pests;
 - noise and vibration;
 - dust;
 - artificial lighting;
 - hydrological; and
 - bushfires.

The open bore drains, farm dam and/or inundated paddocks within the Project area provide some potential foraging habitat for occasional migratory species (including the Sharp-tailed sandpiper) that utilise wetland habitats, particularly when climatic conditions are suitable.

It is expected that there will be low risk or magnitude of impact on this habitat type. The Project will not fragment habitat for mobile migratory species. The Project area does not provide potential breeding habitat for migratory species, with many being nonbreeding visitors to Australia. There are no significant changes to flood levels expected as a result of the Project. Therefore, no impact of changes to flooding regimes on migratory species is expected.

The Project area does not provide large permanent waterbodies, critical to migrating avian species. The potential habitat available to migratory species in the study area is unlikely to provide important habitat for any migratory species. The area is unlikely to support an ecologically significant proportion of the population of a migratory species. Nevertheless, the Project has been designed to avoid and mitigate impacts to migratory species where practicable. The open bore drains are artesian fed and will be required by Queensland legislation (Great Artesian Basin and other regional aquifers (GABORA) Water Plan) to be replaced with pipes, tanks and troughs by 2032 – removing the presence of this potential habitat.

Julia Creek Dunnart

No individuals or evidence of occupation were found during repeated targeted field surveys for the Julia Creek Dunnart (Attachment 3, Section 4.3). Habitat within the Project area is generally considered unsuitable for the Julia Creek Dunnart (Attachment 3, Section 6.3), however, small isolated areas of low amenity habitat have been identified in assessment work completed at the time of referral. The Protected

Matters search tool indicated that the Project is within an area designated Julia Creek Dunnart “species or species habitat may occur” (Attachment 3, Figure 5). The Project is not within an area designated “species or species habitat likely to occur”.

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. *

The Julia Creek Dunnart study included a significant impact assessment under the EPBC Act guidelines (Attachment 3, Section 6.1), which determined that the proposed action was not likely to have a significant impact on Julia Creek Dunnart. Vecco will conduct additional assessment of the Julia Creek Dunnart as part of the EIS process. It is understood that despite findings that the Project is not likely to have a significant impact, the Project is within an area of “species or species habitat may occur” (Attachment 3, Section 4.3) and therefore the Project may be determined a “controlled action” under the EPBC Act.

The key sections of the significant impact assessment are that:

- The Project will not lead to a long-term decrease in the size of an important population of Julia Creek Dunnart as the species is not considered present on site, as determined following targeted surveys and identified potential habitat is of low amenity, isolated, and largely outside the development footprint.
- The Project will not reduce the area of occupancy as the species is not considered present on site.
- The Project will not fragment an existing important population into two or more populations, as the species is not considered present on site and there are only two occurrences of purely low-amenity habitat.
- The Project will not adversely affect habitat critical to the survival of the Julia Creek Dunnart. Potential habitat on-site is considered suboptimal due to a paucity of significant soil cracks and only moderate grass cover. Considerable grazing pressure and associated impacts indicate the Project represents low suitability habitat. Access for livestock to standing water as dams or open bore drains, occurs in large portions of the underlying property, such as alongside much of the proposed access road, which further exacerbates localised grazing pressure. The Transport MLA, which includes a proposed access road, has been located to occur primarily along existing disturbance for an access track which is located on the fence line boundary of the underlying property. Disturbance for the access track along the fence line exists at a width of 10 m, and the proposed access road will have a width of approximately 10 m, this will mitigate the risk and magnitude of potential impacts by the access road.
- The Project will not disrupt the breeding cycle of an important population as the species is not considered present on site.
- The Project will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, as any occurrence of habitat within the Project is of low-amenity and showed no indication of supporting any individuals, and the proposed access road south of the Saxby River will build upon existing wide disturbance in the form of an access track along the fence line of the underlying property boundary .
- The Project will not result in invasive species that are harmful to the Julia Creek Dunnart becoming established in the Julia Creek Dunnart’s habitat. Feral cats are likely already established in the area and will be controlled as part of pest management activities. Prickly Acacia is extensive in the area and will be mapped and controlled to ensure spread is limited or decreased.
- The Project will not introduce disease that may cause the species to decline. There are no significant known diseases affecting Julia Creek Dunnart.

- The Project will not interfere substantially with the recovery of the species. Key recovery actions for the species include securing protection of suitable habitat, reducing the impact of threatening processes, and verifying the species' distribution. No individuals were recorded on-site, and the habitat in the Production area is assessed as suboptimal. The study of the Project area also contributes additional data points to understanding the species' distribution.

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

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

The Proposed action is not expected to pose a significant impact to any threatened species or ecological communities listed under the EPBC Act. Factors including Project location, design, scope, and mitigation and management methods reduce the likelihood of impact.

It is understood that despite findings that the Project is not likely to have a significant impact, the Project is within an area of "species or species habitat may occur" (Attachment 3, Figure 5) and therefore the Project may be determined a "controlled action" under the EPBC Act.

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. *

A range of mitigation measures and management strategies will be adopted for the Project; which may include, but will not be limited to:

- avoiding disturbance to significant values and land generally, through considered design of the mine plan;
- minimising impacts to vegetation communities and fauna habitat through detailed design of mine infrastructure and operations where feasible, implementation of vegetation clearing protocols and a clearing management program;
- developing and implementing noise and vibration, dust, artificial lighting, and vehicle management measures such as warning signs in sensitive areas, and enforced speed limits;
- developing and implementing surface and ground water control measures to minimise impacts on surface and ground water flow regimes and quality;
- developing and implementing erosion and sedimentation management as part of the site water management plan;
- developing and implementing weed and pest control measures, including the removal of key threats to the Julia Creek Dunnart such as feral cats, and Prickly Acacia – which will be mapped and controlled as part of mine operations, and improve habitat potential; and
- implementing progressive rehabilitation of disturbance areas.

In addition to targeted management of threats to the Julia Creek Dunnart, the Project will:

- conduct on-going surveys for the species prior to mining operations commencing, where surveys are undertaken by a suitably qualified expert with Julia Creek Dunnart surveying experience and build on previously undertaken baseline surveys;
- if evidence of Julia Creek Dunnart is identified on the Project at any time in the future, Vecco will either:
 - amend plans to avoid impacting the species habitat; or
 - where impact is unavoidable, the proponent commits to provide environmental offsets for the area of impacted habitat, determined in accordance with the EPBC Act Environmental Offset Policy. The offset will be delivered within 12 months.
- enact fauna spotter/catcher best practices to minimise potential for harm to individuals during and prior to operations;

As part of the EIS process, the Project will assess potential impacts and develop mitigation and management strategies as necessary.

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

The assessment of significance for MNES indicates that the Project is unlikely to result in a significant impact on threatened species or ecological communities. Therefore, offsets in accordance with the 'Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy' (DSEWPaC 2012) will not be required.

If evidence of Julia Creek Dunnart or high amenity habitat is identified to be impacted by the Project at any time in the future through the proposed monitoring and management methods, Vecco will either:

- amend plans to avoid impacting the species habitat; or
- where impact avoidance is not practicable, the proponent commits to provide environmental offsets for the area of impacted habitat, determined at the time in accordance with the EPBC Act Environmental Offset Policy. The offset will be delivered within 12 months.

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
No	No	Actitis hypoleucos
No	No	Apus pacificus
No	Yes	Calidris acuminata
No	No	Calidris ferruginea
No	No	Calidris melanotos

Direct impact	Indirect impact	Species
No	No	Charadrius veredus
No	No	Cuculus optatus
No	No	Gallinago hardwickii
No	No	Glareola maldivarum
No	No	Hirundo rustica
No	No	Motacilla cinerea
No	No	Motacilla flava
No	Yes	Plegadis falcinellus
No	No	Pristis pristis
No	Yes	Tringa glareola
No	Yes	Tringa stagnatilis

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. *

The open bore drains, farm dam and/or inundated paddocks within the Project area may provide some potential foraging habitat for occasional migratory species that utilise wetland habitats, when climatic conditions are suitable. Project development will require the removal of less than 1 ha of this potential foraging habitat.

The Project area does not provide potential breeding habitat for migratory species, with many being non-breeding visitors to Australia.

There are no significant changes to flood levels expected as a result of the Project. Therefore, no impact of changes to flooding regimes on migratory species is expected.

Calidris acuminata (Sharp-tailed Sandpiper)

- Development of the Project access road to make it suitable for heavy vehicles will require the clearing of <1 ha of ephemeral wetland habitat, which may be used as intermittent foraging habitat for the Sharp-tailed Sandpiper.

Tringa stagnatilis (Marsh Sandpiper)

- Development of the Project access road to make it suitable for heavy vehicles will require the clearing of <1 ha of ephemeral wetland habitat, which may be used as intermittent foraging habitat for the Marsh Sandpiper.

Tringa glareola (Wood Sandpiper)

- Development of the Project access road to make it suitable for heavy vehicles will require the clearing of <1 ha of ephemeral wetland habitat, which may be used as intermittent foraging habitat for the Wood Sandpiper.

Plegadis falcinellus (Glossy Ibis)

- Development of the Project access road to make it suitable for heavy vehicles will require the clearing of <1 ha of ephemeral wetland habitat, which may be used as intermittent foraging habitat for the Glossy Ibis.

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. *

No species listed as migratory under the EPBC Act were identified within the Project area during repeated and targeted site surveys.

The Project area is unlikely to provide important habitat for any migratory species. The area is unlikely to support an ecologically significant proportion of the population of a migratory species. The Project area does not provide potential breeding habitat for migratory species, with many being non-breeding visitors to Australia.

The proposed action and its associated activities are not expected to:

- substantially modify, destroy or isolate an area of important habitat for a migratory species;
- introduce an invasive species that is harmful to the migratory species becoming established in an area of important habitat; or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of a migratory species population.

The open bore drains in the Project area are artesian fed and will be required by Queensland legislation (Great Artesian Basin and other regional aquifers (GABORA) Water Plan) to be replaced with pipes, tanks and troughs by 2032 – removing the presence of this potential habitat, irrespective of the Project.

Based on the absence of important habitat for listed migratory fauna species on the Project site and surrounding region, the Proposed action is not expected to significantly impact on migratory species listed under the EPBC Act.

Supporting information on the assessment of migratory species is provided in Attachment 3 (MNES Assessment, Section 5.3 Migratory Species, and Section 6.2.1 Migratory species).

Further assessment of Matters of National Environmental Significance including migratory species will be conducted during the Project EIS approvals process.

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. *

*

The Project area does not contain large permanent waterbodies, critical to migrating avian species.

The Proposed action is not expected to result in significant impact to individuals or important habitat for any Migratory species listed under the EPBC Act.

No species listed as migratory under the EPBC Act were identified within the Project area during repeated and targeted site surveys.

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. *

The Project design avoids and mitigates impacts to migratory species where practicable.

The detailed design and development of the access road to allow for suitable access during construction and operation will seek to reduce or avoid direct impacts to the ephemeral wetland identified in a small section of the access and infrastructure corridor.

A range of mitigation measures and management strategies will be developed as part of the EIS process, which may include, but will not be limited to:

- avoiding disturbance to significant values and land generally, through considered design of the mine plan;
- minimising impacts to vegetation communities and fauna habitat through detailed design of mine infrastructure and operations where feasible, implementation of vegetation clearing protocols and a clearing management program;
- developing and implementing noise and vibration, dust, artificial lighting, and vehicle strike management measures;
- developing and implementing surface and ground water control measures to minimise impacts on surface and ground water flow regimes and quality;
- developing and implementing erosion and sedimentation management as part of the site water management plan;
- developing and implementing weed and pest control measures; and

implementing rehabilitation of disturbance areas to an agreed post mine land use.

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

The assessment of significance for MNES indicates that the Project is unlikely to result in a significant impact on migratory birds. Therefore, offsets in accordance with the 'Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy' (DSEWPaC 2012) will not be required.

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 does not propose any activities relating to nuclear actions and will not require approval for nuclear actions. The proposed action will not pose direct or indirect impacts related to a nuclear action.

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.

*

The Project is located approximately 300 km south-east of the Gulf of Carpentaria, approximately 380 km south-east of the Gulf of Carpentaria Special Purpose Zone (Trawl) and approximately 420 km south-east of the Gulf of Carpentaria National Park Zone.

The mine will be regulated under the *Queensland Environmental Protection Act 1994* (EP Act) and will be required to contain and treat any sediment or contaminated water, resulting in zero discharge of water that does not meet Australia and New Zealand Environment Conservation Council (ANZECC) 2000 Guidelines for Fresh and Marine Water Quality (Section 9.3 - Livestock Drinking Water Guidelines). Furthermore, given the distance between the site of the Proposed action and the waters of the Gulf of Carpentaria, any water released as a result of the Proposed action will be subject to significant dilution prior to reaching the waters of the Gulf of Carpentaria.

The proposed action is not expected to pose a direct or indirect impact to 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.

*

The Proposed action is located approximately 470 km south-west of the Great Barrier Reef (GBR) and is not located in a catchment upstream of the GBR.

The proposed action is not expected to pose a direct or indirect impact to the GBR.

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 Proposed action does not relate to a large coal mining development or coal seam gas Project.

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.

*

The Australian Government National Map search tool was used to identify Commonwealth Land in relation to the Project.

The Project is not located on or near any Commonwealth owned land (50 km search area from the Project).

The nearest Commonwealth Land (Lot 45 on SP248023) is located approximately 250 km from the Project, in Mount Isa.

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 does not occur in the region of a Commonwealth Heritage Place overseas.

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? *

No

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 Proponent has assessed the Project design, and considered numerous alternatives, to ensure that the outcome is a best practice and sustainable operation. These alternatives include for mining and production, water supply, power supply, transport, and a scenario where the Project does not proceed. These alternatives are detailed below.

The EIS process will include further detailed analysis of the options considered, including analysis of key environmental considerations and justification of the final proposed Project description.

Mining and production

The Proponent has explored location alternatives however none are considered feasible due to the specific location of the high-quality and near surface vanadium resource at the Project location.

The Project design has considered a number of different mining and production scenarios through ongoing feasibility studies, including:

- analysis of varying mining and production scenarios which have been refined through on-going resource exploration and mine planning, environmental assessment, and stakeholder engagement;
- vanadium and HPA processing techniques were assessed and trialed in the laboratory to optimise recovery methods and minimise environmental impacts; and
- differing process residue treatment and disposal strategies were investigated and refined through laboratory testing and modelling to develop a preferred backfill strategy that protects environmental values, aligns with land use policy and reduces residual risk post-mining. Options included:
 - ex-pit tailings storage – which has been assessed to be unviable due to long term liability and potential for negative impacts on post-mining land use objectives; and
 - in-pit disposal of neutralised residue – which has been determined to be the preferred option for the Project and is an environmentally sound and practical approach to ensure the sustainability and usability of the post-mining landform, and results in no final void.

The site layout and extent of the open-cut pit has been determined by the presence of high-quality, accessible mineral resources within the MLA. Alternative locations for this pit would reduce the benefits and economic viability of this Project. The MIA is situated in close proximity to the mine pit to increase operational efficiencies. Where practicable, the MIA and Project infrastructure has been situated in open grasslands, away from areas of dense tree growth. This will ensure reduced impact on environmental values and the need for vegetation clearing during development.

Water supply

The Project will require approximately 3,200 ML of water supply per year. Options assessed for suitability as water supply include:

- a water license under the Water Plan (GABORA); and
- extraction from the Saxby River during high flow events under an allocation of water held in the Strategic Reserve.

Under the Water Plan (GABORA), part of the water saved ($\leq 90\%$) through remediation works on open Great Artesian Basin (GAB) bores may be accessed as a water license in return for capping and preventing uncontrolled release. This approach provides a net increase in water volumes retained in the GAB with tangible environmental benefits and would provide a secure water supply for the Project. This has been identified as the preferred option for the Project. A summary of benefits of this approach are:

- tangible benefits for environmental values through water saved and retained in the GAB;
- providing a consistent and secure supply of water for the Project; and
- removing the need for streamflow harvesting as an alternate supply.

Engagement with the Department of Regional Development, Manufacturing and Water (DRDMW) has identified broad support for this strategy.

The Project has been deemed a project of regional significance, allowing for an application to be made to access water held in the Water Plan (Gulf) Strategic Reserve. This process would involve extraction from the Saxby River during high flow events. Extraction from the Saxby River has been assessed to be the least preferred option due to relative security of water supply, and potential impacts on flow and downstream users.

The final water supply solution will be subject to approval under the Water Act but will aim to minimise impacts on the environment and other users.

Power supply

The Project has an expected power demand of approximately 16 MW. Power supply options have been assessed, including connection to the regional electricity grid, and on-site power generation. Due to the remote location, on-site power generation is the most practical approach for the Project. To reduce operational costs and greenhouse gas emissions, the Project will install a solar array with combined battery energy storage system with approximately 10 MW capacity. This will be supported by steam turbine electrical power generated by the sulphuric acid plant, and supplementary supply from diesel or gas fired generators, when renewable options aren't available.

Transport

The final mineral products will be packed on-site into 1 t bulk bags and transported by truck to Townsville for secondary processing into battery electrolyte. The Project is not a large mine, and therefore the rate of production and movements, and the capacity to collect and deliver directly from site to the downstream facility, make trucks a preferred transport option over the use of alternatives such as the rail network.

The on-site accommodation of the Project workforce will reduce the daily travel requirements. Transport to and from the Project site for roster rotation will be by bus to the nearest viable airport, or by light vehicle for workforce residing locally. It is the intention of the Proponent that FIFO workers will be flown directly to and from Julia Creek, however this will require an upgrade of the Julia Creek runway and aerodrome facilities. The Proponent has engaged the relevant Government departments to work towards this outcome.

The 'do nothing' scenario

The Project has assessed a 'do nothing' scenario, whereby the mine and Project does not proceed. At a minimum, the following consequences of this outcome are inferred:

- there will be a loss of skilled employment opportunity including for 300 construction workers during Project development, and 274 operational workers over the life of the Project;
- approximately 136,000 tonnes of V2O5, 68,000 tonnes of HPA, and 10,000 tonnes of molybdenum will not be mined, resulting in loss of mining royalties;
- significantly reduced state and federal capacity to develop and support an economy which mines and processes critical minerals domestically;
- there will be a loss of federal tax revenue; and
- there will be a loss of state tax revenue royalties.

The EIS process will include detailed analysis of the options considered, including analysis of key environmental considerations and justification of the final proposed Project description.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(DISR 2023) Critical Minerals Strategy 2023-2030 https://www.industry.gov.au/sites/default/files/..			High
#2.	Link				

(DSDILGP 2023) What is vanadium and why are we mining it in Queensland?
<https://www.statedevelopment.qld.gov.au/news/wha..>

High

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Type	Name	Date	Sensitivity	Confidence
#1.	Document Vecco Environmental Policy.pdf Vecco Environmental Policy	11/03/2024	No	High

2.2.5 Tenure of the action area relevant to the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Document 20240224_EPMs.png Project tenure	23/02/2024	No	High
#2.	Document Att 2_Supporting figures.pdf Figures - Project regional location, indicative infrastructure layout, flood modelling	10/03/2024		High

3.1.1 Current condition of the project area's environment

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att 4_Local_meteorological_conditions.pdf Local meteorological conditions for the Project region, including wind, rain, temperatures, evaporation.	30/04/2024	No	High

3.1.2 Existing or proposed uses for the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Link (McKinlay Shire Council 2019) McKinlay Shire Planning Scheme https://www.mckinlay.qld.gov.au/downloads/file/5..			Medium

3.2.1 Flora and fauna within the affected area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Appendix C - Protected Matters Search Tool - 280224.pdf Appendix C - Protected Matters Search Tool results, appendix item for Attachment 3,	27/02/2024	No	High
#2.	Document Att 3_MNES Assessment.pdf MNES Assessment for Project	10/03/2024	No	High
#3.	Link (DCCEEW 2024) Protected Matters Search Tool https://pmst.awe.gov.au/#/map?			High

Ing=131.5283203125..

3.2.2 Vegetation within the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(DESI 2021) Search Regional Ecosystem Descriptions https://apps.des.qld.gov.au/regional-ecosystems/			High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(DATSIP 2004) Cultural heritage duty of care guidelines https://www.qld.gov.au/__data/assets/word_doc/00..			High

4.1.4.11 (Threatened Species and Ecological Communities) Proposed offsets relevant to avoidance or mitigation measures

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(DSEWPaC 2012) Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets https://www.agriculture.gov.au/sites/default/fil..			High

4.1.5.11 (Migratory Species) Proposed offsets relevant to avoidance or mitigation measures

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(DSEWPaC 2012) Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets https://Environment Protection and Biodiversity ..			High

4.1.7.3 (Commonwealth Marine Area) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	(ANZECC 2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 3 https://www.waterquality.gov.au/sites/default/fi..			High

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	71620818920
Organisation name	AARC ENVIRONMENTAL SOLUTIONS PTY LTD
Organisation address	164 Wharf St, Spring Hill, 4000, QLD
Representative's name	Justin Miller
Representative's job title	Environmental Scientist
Phone	3217 8772
Email	jmiller@aacr.au
Address	164 Wharf Street, Spring Hill, 4000, QLD

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, **Justin Miller of AARC ENVIRONMENTAL SOLUTIONS 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/ACN	66158805497
Organisation name	VECCO INDUSTRIAL PTY LTD

Organisation address 4066 QLD

Representative's name Shane Ryan

Representative's job title Chief Operating Officer

Phone (07) 3155 6311

Email sryan@veccogroup.com.au

Address Level 10, 40 Creek Street, Brisbane, Queensland, 4000

- 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, **Shane Ryan of VECCO INDUSTRIAL 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, **Shane Ryan of VECCO INDUSTRIAL 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. *