Cape Flattery Silica Sands Project

Application Number: **01441** Commencement Date: **26/09/2022** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Cape Flattery Silica Sands Project

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Mineral sand mine

1.1.4 Estimated start date *

1/09/2023

1.1.4 Estimated end date *

30/06/2049

1.2 Proposed Action details

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

The Cape Flattery Silica Sands Project (the Project and the Proposed Action) is a silica sand mining and processing operation located on a greenfield site approximately 42 kilometres (km) northeast of Hope Vale and 200 km north of Cairns, Queensland (refer Attachment 1-Project Description-Rev0-131022, Figure 1, pp. 2). Cape Flattery Silica Pty Ltd (CFS) is the Proponent for the Proposed Action. The mainland portion of the Proposed Action is located on freehold lands designated as Lot 35 on SP232620. The marine portion of the Proposed Action is located within the Port of Cape Flattery, an area administered by Ports North.

The Proposed Action comprises three key activities:

- Dry mining sand extraction
- Sand purification via an onsite processing plant and transport to a jetty infrastructure facility (JIF)
- Barging of silica sand product via a new jetty and marine offloading facility (MOF), and transhipment to bulk carriers anchored at a designated ‘swing basin’.

The Proposed Action (refer Attachment 1-Project Description-Rev0-131022, Figure 2, pp. 5) involves mining and processing up to 1.8 million tonnes per annum (Mtpa) of high quality silica sand onsite over a 20 to 25 year life of mine, with 1.35 Mtpa of saleable product to be shipped offsite via a JIF that will be constructed for the Project. All mine infrastructure and mining panels will be located within an indicative Mining Lease Application (MLA) area (required under State approval processes) covering a 616 hectare (ha) area. The JIF area is located outside of but adjacent to the proposed MLA. The overall area of the proposed action is 842.3 ha, disturbance footprint is 313.8 ha and avoidance area is 62.9 ha.

The MLA, JIF, jetty, MOF and swing basin areas comprise the Proposed Action for this referral (refer Attachment 1-Project Description-Rev0-131022, Figure 2, pp. 5).

The mining method would involve sequential excavation of sand dunes using a front end loader feeding a mobile tracked hopper-feeder with a slurry pipeline. Where possible vegetation will be pushed or transported off mining areas and stockpiled for future use in rehabilitation. Development of mining panels will be sequential with back-filling and progressive rehabilitation occurring behind the

advancing mine face. A dry mining unit will be progressively relocated as the sand dunes are mined to the base of the viable silica sand, which varies across the breath of the deposit (maximum thickness of 35 metres (m)). Mining and processing will operate as a continuous process for 24 hours per day, 360 days per year.

Mined sand from the face is loaded directly to a mobile feed unit to process coarse and woody debris. Once through the trash screen, sand is fluidised in the sump and pumped via pipelines to the Wet Concentrator Plant (WCP). The rejects from the wet concentration plant will contain low-grade silica sand including heavy minerals, Fe2O3 and aluminium oxide (Al2O3) which occur naturally in the Cape Flattery region and do not pose a risk to the environment. The rejects will be dewatered and pumped, once at a suitable water content, back to the rehabilitation faces that trail the advancing mine face and reshaped to suit the final landform.

Mine waste characterisation of reject samples show very low existing acidity and salinity and there is a negligible risk of acid and metalliferous drainage based on the geochemical classification and leachate chemistry of these samples. Targeted management is not required because potentially hostile rejects are not expected.

On-lease infrastructure will include a Mine Infrastructure Area (MIA) for general mine service facilities, mining panels, stockpile areas, laydown areas, processing plant, worker's accommodation for up to 80 persons, sediment basin, water storages, sewage treatment plant, conveyors, access tracks and a JIF to service the off-lease project infrastructure. Off-lease Project infrastructure includes a minimum 350 m jetty, a minimum 200 m material offloading facility (MOF), conveyors from the JIF to the jetty hopper, and a swing basin with mooring / anchorage capability.

The MOF will facilitate the delivery of equipment and goods to the Project during both construction and operations. It comprises a steel ramp meeting a series of jack up barges (3). These barges are self-supporting via piles (not attached to the seafloor) and will allow the barges to move up and down as needed, allowing tide and flow underneath.

Export of product silica sand will be from the product stockpile at the WCP via an enclosed conveyor to the JIF. Sand will be directly loaded onto the conveyor via a front-end loader into an apron feeder. Once on the jetty conveyor (also enclosed), the product will be loaded onto a transhipment vessel via the jetty stacker and transported offshore, where it will be transhipped onto bulk carriers. Shipping operations will occur from the jetty to a 'swing basin' where a bulk carrier ship (ocean going vessel (OGV)) would be moored during transfer operations. The swing basin will be located approximately 5 km north-west of the jetty and within the Port of Cape Flattery. A transhipment vessel will be used to transfer product from the shore to the moored OGV.

The movement of OGVs into and away from the Swing Basin, and their anchorage and movement within the swing basin, is not a component of the Action. These activities are undertaken by parties other than the Proponent and are under the direct control of Maritime Safety Queensland, the individual OGV Captains/Pilots, and for travel with the Great Barrier Reef Marine Park (GBRMP), within the requirements of the Great Barrier Reef and Torres Strait Vessel Traffic Service.

Mining activities and infrastructure within the disturbance footprint on land have potential to directly impact on threatened and migratory species through the action of vegetation and habitat clearing (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 5, pp. 56-63, and Attachment 7-Aquatic Baseline and Impact Assessment_V5-0, Section 5, pp. 67-78). Construction and operation of the jetty, JIF and MOF have potential to directly and indirectly impact on threatened and migratory marine species (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5, pp. 80-92).

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? *

Commonwealth

Proposed Action: This *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Act Referral is submitted to determine whether the Proposed Action is likely to have a significant impact on Matters of National Environmental Significance (MNES). If controlled, the Proposed Action may require additional assessment by the Commonwealth Department of Climate Change, Environment, Energy and Water (DCCEEW).

Offset Strategy: If there is a significant residual impact on a MNES that is not able to be avoided or mitigated, an offset will be required in accordance with the EPBC Environmental Offsets Policy 2012.

Native Title: The Proposed Action is within the Native Title Determination of QUD174/1997 Hopevale (QCD1997/001) according to the National Native Title Register. The Proposed Action is located on native title freehold land, which is held by Hope Vale Congress Aboriginal Corporation. Native title is shared between Hope Vale Congress Aboriginal Corporation Registered Native Title Body Corporate (RNTBC) Trustee, on behalf of the Nguurruumungu Clan, and Walmbaar Aboriginal Corporation, on behalf of the Dingaal Clan. CFS maintain engagement with both Clans, and are currently negotiating Aboriginal Cultural Heritage Agreements (ACHA) with each Clan for the Project.

State Approvals

Mining Lease: A mining lease application (MLA100284) was lodged with the Queensland Department of Resources (DoR) under the *Mineral Resources Act 1989* on 9 June 2021. The grant of the Mining Lease to which the MLA relates (equivalent to the mainland portion of the Proposed Action area) will be subject to the approval of the Environmental Authority (EA) application.

Environmental Authority: A site-specific EA application for a new resource activity under the *Environmental Protection Act 1994* (EP Act) will be prepared for the land-based components of the Proposed Action and lodged with the Queensland Department of Environment and Science (DES).

Progressive Rehabilitation and Closure Plan (PRCP): A PRCP is required to be submitted to DES. In accordance with section 126C of the EP Act, the PRCP will describe and plan for how and where activities will be carried out on land in a way that maximises the progressive rehabilitation of the land to a stable condition. The PRCP will include a proposed schedule outlining management milestones, criteria, and completion dates for rehabilitation.

Cultural Heritage Agreement: Two separate ACHAs have been developed with Hopevale Congress Aboriginal Corporation RNTBC Trustee – (on behalf of the Nguurruumungu Clan), and Walmbaar Aboriginal Corporation RNTBC (on behalf of the Dingaal Clan) for exploration activities onsite, respectively. Both agreements came into force in March 2021. These agreements were prepared in accordance with the *Aboriginal Cultural Heritage Act 2003.* They are intended to demonstrate a duty of care to protect and avoid harm to Aboriginal Cultural Heritage occurring in the area of the agreement during exploration activities for the Proposed Action.

Agreements for the mining operation are currently being prepared and negotiated.

Environmental Offsets: If the Proposed Action is deemed to have significant residual impacts to environmental matters listed under State legislation then environmental offsets will be required to compensate for such impacts. If this applies, an environmental offsets strategy will be prepared and implemented in accordance with the *Environmental Offsets Act 2014*.

Local Government Approvals

Development Approval: A Development Application (DA) will be prepared for the JIF and MOF located within the tidal areas of the Cook Shire Council and Hope Vale Aboriginal Shire Council and within the extent of the Port of Cape Flattery area (administered by Ports North). Hope Vale Shire Council has been assigned as the assessment manager for the DA.

Policy Documents

The Metallica Minerals Environment Policy document (Attachment 2-Environment Policy. pp. 1-2) will also apply to CFS as overarching guidance.

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 Proponent (CFS) commenced engagement with stakeholders relevant to the Proposed Action in late 2020. These comprise Traditional Owners, landowners, community organisations, and Local, State and Commonwealth Government departments.

CFS has and will continue to work together with Traditional Owners through comprehensive stakeholder engagement and will seek employees from within the local Indigenous population where suitable candidates are available (refer Attachment 3-Indigenous and Community Relations Policy. pp.1-2). CFS has been proactive in developing connections with local community members and in particular, Hopevale Congress Aboriginal Corporation RNTBC Trustee – on behalf of the Nguurruumungu Clan, and Walmbaar Aboriginal Corporation RNTBC – on behalf of the Dingaal Clan. CFS continue to conduct monthly consultation with the groups in development of an ACHA and to provide updates on the Project. CFS is committed to ensuring ongoing collaboration with the Traditional Owners throughout the project.

A community consultation process has been designed to enable opportunities for ongoing community and stakeholder feedback during the preparation of documentation informing the State legislative approvals process. The objective of the consultation process is to ensure transparent and inclusive community and stakeholder engagement that informs the State process and the ongoing management and monitoring of potential social impacts during the construction and operational phases of the Proposed Action.

Stakeholders identified as relevant to the Proposed Action include the following Local, State and Commonwealth Government departments:

- Queensland Department Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP)
- Queensland Department of State Development, Infrastructure, Local Government and Planning
- Queensland DES
- Queensland DoR
- Queensland Department of Regional Development and Manufacturing and Water
- Queensland Department of Agriculture and Fisheries
- Queensland Department of Transport and Main Roads (DTMR)
- Great Barrier Reef Marine Park Authority (GBRMPA)
- Leichhardt Federal Division
- Commonwealth DCCEEW
- Cook State Electorate
- Hope Vale Aboriginal Shire Council
- Cook Shire Council

The following businesses, community groups and organisations have also been identified:

- Queensland Government services including Police, Ambulance Service, Fire and Emergency Services and Health
- Infrastructure providers including Cooktown Airport and Ports North
- Indigenous stakeholders – the Dingaal and Nguurruumungu peoples
- Hope Vale and regional businesses and service providers
- Education providers

The Proponent has held a series of consultation and meetings with State and Local government representatives to introduce the Project and to enable all levels of Government to provide any initial feedback. Consultation with the federal government commenced in 2022.

To date the feedback from community consultation sessions has been analysed by CFS with initial discussions (across all stakeholder groups) focussed on:

- Initial consultation about the Proposed Action
- Initial site visits
- Social and economic opportunities for Dingaal and Nguurruumungu peoples and the local communities of Hope Vale and Cooktown
- Opportunities for participation in preliminary activities such as cultural heritage monitoring, drilling programs, and groundwater and surface water monitoring

The Proponent will hold a series of consultation meetings with business representatives and commercial leaders from Hope Vale and Cooktown, as well as Cairns and Townsville, throughout 2022 and into 2023, to allow for any feedback.

Consultation with all stakeholder groups will be ongoing as the Proposed Action progresses.

Community engagement will also be undertaken as part of the development of the PRCP, required to be approved by DES before grant of the EA. This will be incorporated into the stakeholder engagement strategy to ensure stakeholders are consulted about rehabilitation outcomes and that the requirements of the EP Act are met.

Outcomes from community and stakeholder engagement will be reported and analysed in the EA, PRCP, DA, and associated approval documents prepared for the Proposed Action.

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.

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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.

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☑ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	54169579275
Organisation name	Epic Environmental

Organisation address	Level 17, 95 North Quay, Brisbane QLD, 4000

Referring party details

Name	Maria Mahon
Job title	Senior Environmental Scientist
Phone	0417793127
Email	mmahon@epicenvironmental.com.au
Address	Level 17, 95 North Quay, 4000

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	52138608894
Organisation name	Cape Flattery Silica Pty Ltd
Organisation address	Terrace Office Park, Level 1, North Tower, 527 Gregory Terrace, Fortitude Valley QLD 4006

Person proposing to take the action details

Name	Nicholas Villa
Job title	General Manager / Site Senior Executive
Phone	0488596581
Email	nvilla@metallicaminerals.com.au
Address	Terrace Office Park Level 1, North Tower, 527 Gregory Terrace Fortitude Valley QLD 4006

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. *

CFS is a 100% owned subsidiary of Metallica Minerals (Metallica). Yes, CFS and Metallica Minerals have a satisfactory record of responsible environment management. Neither CFS or Metallica have been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

CFS (via Metallica Minerals) has established a corporate governance framework that includes risk protocols to ensure there is effective oversight, management and control across material risks including environmental and approvals. CFS has established an Environmental Policy as part of its Environmental and Social Governance (ESG) responsibilities (refer Attachment 2-Environment Policy, pp. 1-2), has assigned appropriate resources and is committed to further establishment of management systems and plans for the construction and operation of the CFS project.

Metallica has submitted one referral previously that was deemed not a controlled action (referral no. EPBC 2012/6304). Metallica has also been associated with two other approved referrals:

- Oresome Australia Pty Ltd, a subsidiary company of Metallica Minerals for the Urquhart Point Heavy Mineral Sand project (EPBC 2010/5707); and
- Oresome Bauxite Pty Ltd, a subsidiary company of Metallica Minerals for the Urquhart Bauxite project (EPBC 2016/7706).

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

CFS (via Metallica Minerals) has established a corporate governance framework that includes risk protocols to ensure there is effective oversight, management and control across material risks including environmental and approvals. CFS has established an Environmental Policy as part of its ESG responsibilities, has assigned appropriate resources and is committed to further establishment of management systems and plans for the construction and operation of the Project. Neither CFS or Metallica have been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

The Project will be managed in accordance with the environmental governance principles set out in the Metallica Minerals Environmental Policy (refer Attachment 2-Environment Policy, pp. 1-2):

- Working closely with the local communities in which we operate
- Preventing where possible or minimising adverse environmental impacts
- Reducing our environmental footprint by continually improving efficiency
- Adopting a safe and environmentally conscious lifestyle both at work and at home
- Endeavouring to protect and to restore biodiversity through land stewardship and rehabilitation

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	52138608894
Organisation name	Cape Flattery Silica Pty Ltd
Organisation address	Terrace Office Park, Level 1, North Tower, 527 Gregory Terrace, Fortitude Valley QLD 4006

Proposed designated proponent details

Name	Nicholas Villa
	General Manager / Site Senior Executive

Job title	
Phone	0488596581
Email	nvilla@metallicaminerals.com.au
Address	Terrace Office Park Level 1, North Tower, 527 Gregory Terrace Fortitude Valley QLD 4006

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	54169579275
Organisation name	Epic Environmental
Organisation address	Level 17, 95 North Quay, Brisbane QLD, 4000
Representative's name	Maria Mahon
Representative's job title	Senior Environmental Scientist
Phone	0417793127
Email	mmahon@epicenvironmental.com.au
Address	Level 17, 95 North Quay, 4000

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	52138608894
Organisation name	Cape Flattery Silica Pty Ltd
Organisation address	Terrace Office Park, Level 1, North Tower, 527 Gregory Terrace, Fortitude Valley QLD 4006
Representative's name	Nicholas Villa
Representative's job title	General Manager / Site Senior Executive
Phone	0488596581
Email	nvilla@metallicaminerals.com.au
Address	Terrace Office Park Level 1, North Tower, 527 Gregory Terrace Fortitude Valley QLD 4006

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

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

No

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

No

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

No

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

No

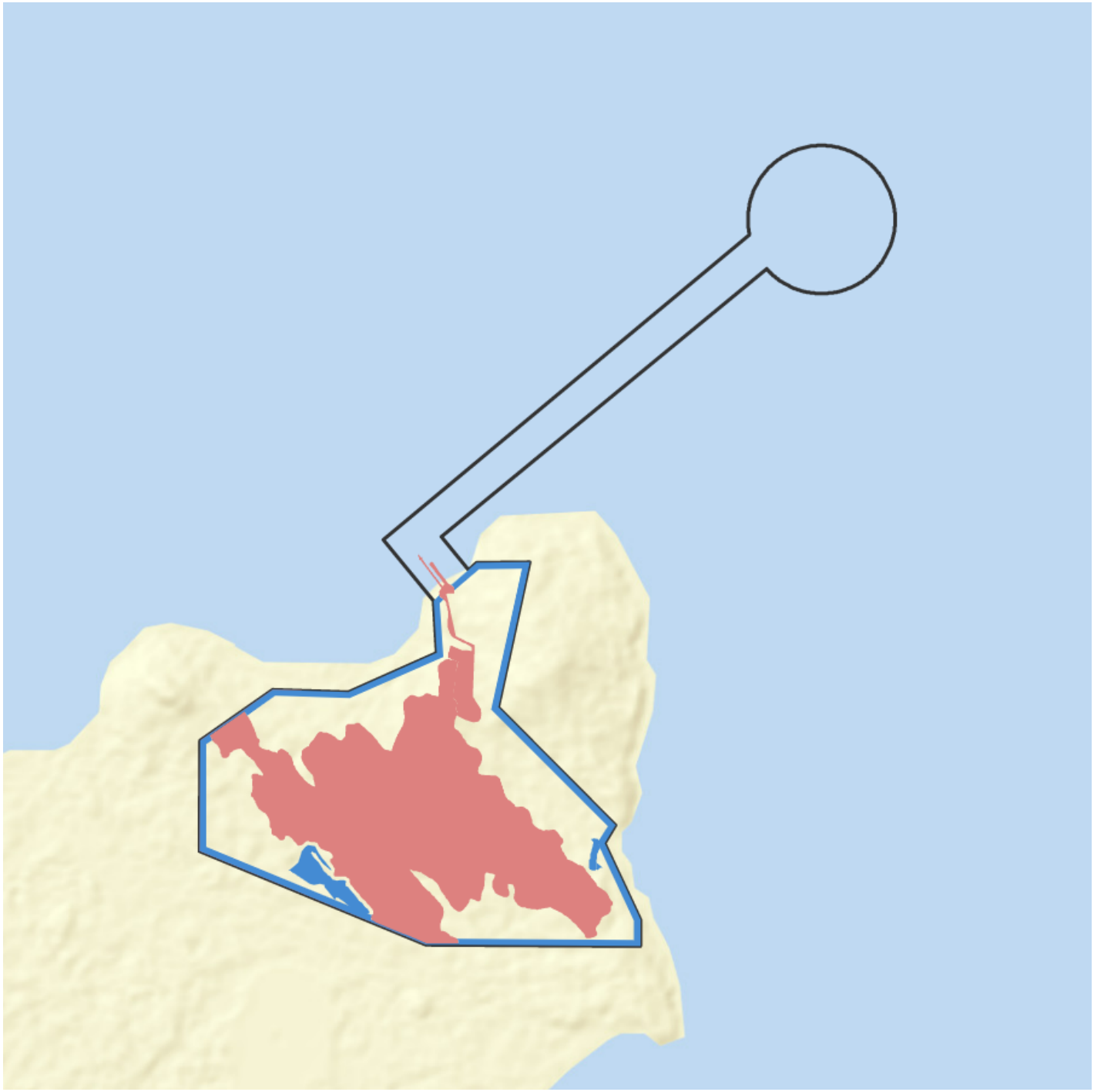
1.4 Payment details: Payment allocation

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

Person proposing to take the action

2. Location

2.1 Project footprint



2.2 Footprint details

2.2.1 What is the address of the proposed action? *

The Project is located on Lot 35 on SP232620 owned by Hopevale Congress Aboriginal Corporation RNTBC.

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 mine area is on freehold land within Lot 35 on Plan SP232620. It is within the Hope Vale Aboriginal Shire Local Government Area. The marine portion of the Proposed Action is located within the Port of Cape Flattery, an area administered by Ports North.

3. Existing environment

3.1 Physical description

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

The terrestrial portion of the Proposed Action area is located adjacent to the CFSM project which has been operating since the late 1960s and encompasses a large area directly to the south. Lands to the south have been subject to mine related clearing for the CFSM project associated infrastructure including access roads, conveyors, stockpile areas, and airstrip. Accommodation and various mine operations buildings are located near the coast to the west of the Proposed Action. The CFSM project currently exports silica via bulk carriers directly from an existing 400 m long jetty located to the south-east of the Proposed Action.

The Proposed Action area is extensively covered by remnant native vegetation with no permanently occupied habitation. The predominant land use is mapped as conservation and natural environment under Queensland Government land use mapping. The only land-based commercial enterprise in the local region is CFSM operated by Mitsubishi which lies adjacent to the Proposed Action area and has been in operation since 1967.

The jetty, MOF and shipping swing basin are located within the Port of Cape Flattery, managed by Ports North.

The Proposed Action area itself has experienced minimal disturbance and clearing appears to be limited to vehicle tracks, and small-scale tree removal around campsites along the Connies Beach foreshore. All vegetation observed was remnant vegetation in good condition, excepting areas cleared for tracks. Minimal evidence of recent fire was observed throughout the Project area. The lack of recent fire limits post fire species recruitment and species diversity, particularly in the heath dominated vegetation communities. The fire mapping service (North Australia and Rangelands Fire Information 2021) indicates there has been only one fire in the last 20 years, which burnt in 2013 and only over a small portion of the Proposed Action area. Therefore, most of the vegetation has been unburnt for at least 20 years, with a small area of heath and eucalypt woodland unburnt for seven years. These are much longer fire intervals than recommended for heath vegetation (recommended to burn every five to ten years) and eucalypt woodlands (to burn every one to five or two to five years) (Queensland Herbarium 2021). In addition to potentially reducing the health and species diversity of the vegetation in the survey area, it may also leave the flora and fauna susceptible to the damaging effects of a single, high intensity wildfire that burns out most of the vegetation.

Pest plant species have a very limited distribution across the survey area. They were mainly confined to camp sites along the foreshore of Connies Beach to the north of the Project area. None of the eight exotic species identified is a listed pest plant under the *Biosecurity Act 2014* or is a Weed of National Significance (WoNS). Pest plant species observed included *Cyperus eragrostis*, *Stachytarpheta cayennensis* and *Mesosphaerum suaveolens.* Five species of feral animal were recorded during the field survey, Dog/Dingo (*Canis familiaris*), feral Cat (*Felis catus*), feral Pig (*Sus scrofa*), House Gecko (*Hemidactylus frenatus*) and Cane Toad (*Rhinella marina*). Only Cane Toad appeared to be common.

The inshore marine area associated with the proposed port infrastructure is currently subject to little disturbance apart from activities associated with recreational camping on the nearby Connies Beach shoreline. The offshore waters are located within the Port of Cape Flattery and are subject to existing shipping movements. These are largely associated with CFSM project activity including ship loading at

the CFSM jetty to the south of the proposed action and smaller vessel movements carrying equipment/personnel to a barge landing near the accommodation area to the west of the Proposed Action.

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

The Proposed Action area is extensively covered by remnant native vegetation with no permanently occupied habitation. No current landuse is known and there is no commercial use. Connies Beach is used at times by the Traditional Owners as a camp site and recreational fishing takes place occasionally. Permission is required from Traditional Owners to access the Project area and the proposed mining operations are distant from and have no direct or indirect impact on Connies Beach. The proponent has committed to maintain private access for the Traditional Owners to Connies Beach.

The proposed land use will be mining within the mining lease and associated mineral processing activities and groundwater production bores. However, once operational activities have ceased in parts of the Proposed Action area, land will be progressively rehabilitated and made stable, safe, and non-polluting. The land use associated with the marine operations would be port land / operations.

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

The Proposed Action is set within a Wetland of National Importance – Cape Flattery Dune Lakes which may be considered an outstanding natural feature. This is the largest dune field on the east coast of Australia, north of Fraser Island. It covers approximately 600 square kilometres (km2) and is composed of a number of freshwater lakes and palustrine wetlands in dune swales. The Proposed Action footprint will not intersect any wetland areas and occupies less than 0.5 percent of the overall Cape Flattery Dune Lakes mapped area. A 50 m buffer has been placed around the wetlands in the south of the Proposed Action area. It is noted the adjacent CFSM project occupies a much larger area within the dune lakes system.

The Great Barrier Reef World Heritage Area (GBRWHA) is located adjacent to the majority of the Project. The port infrastructure occupies a very minor area within the boundary of the GBRWHA (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Figure 2, pp. 4).

No other potential outstanding natural features and/or any other important or unique values relevant to the Proposed Action area have been identified.

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

Topography across the mainland aspect of the Proposed Action ranges from approximately sea level at the location of the jetty and MOF infrastructure in the north and the near coastal portion in the east. The Proposed Action area rises as high as approximately 170 m Australian Height Datum (AHD) in the north where the MLA intersects the rocky hill associated with Cape Flattery headland. It is noted no Project infrastructure or mining activity is located above 90 m AHD. The Proposed Action area is bounded to the north-west, north-east and east by rocky hills. Otherwise, the Proposed Action area comprises dunefields of varying height, rising up to 90 m AHD.

The jetty and associated transhipment vessel mooring area associated with the jetty extend into marine waters to a depth of -3.5 m LAT. The swing basin area for mooring bulk carriers required for export of silica will be located 2-3 nautical miles offshore in waters at a depth of -20 m LAT.

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.

Site assessments were carried out in February 2021 (flora and fauna), June 2021 (fauna) and August 2021 (flora) by Epic Environmental Pty Ltd and December 2021 (marine ecology, and aquatic ecology) by Hydrobiology, respectively). Results of the site assessments are provided in the Project Terrestrial ecology technical report (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 4, pp. 31-55), Marine Ecology Technical Report (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0 Section 4, pp. 55-79) and Aquatic Ecology Technical Report (Attachment 7-Aquatic Baseline and Impact Assessment_V5-0, Section 4, 66. 47-66).

Flora Assessment

A total of 166 species of vascular plant was identified during the two site surveys. One species listed as Vulnerable under the EPBC Act, an ant plant (*Myrmecodia beccarii*), was recorded. This, and another recorded species, *Acacia solenota*, are listed as Vulnerable under Queensland's *Nature Conservation Act 1992* (NC Act). Eight recorded species are introduced weeds although none were common or listed as a WoNS.

The Proposed Action area is dominated by heath communities on sand dunes. All vegetation observed was remnant vegetation in good condition, excepting areas cleared for vehicle tracks. Ten vegetation communities (mapped as regional ecosystems (REs)) were verified as present during the surveys. These were as follows:

- RE 3.1.2a – Grey Mangrove (*Avicennia marina*) (0.28 ha)
- RE 3.2.10a – woodland with rainforest and heath species in the understorey and shrub layer (198.23 ha)
- RE 3.2.12a – low rainforest with a shrub layer of heath and rainforest species (11.41 ha)
- RE 3.2.14 – melaleuca woodland (0.13 ha)
- RE 3.2.18 – heath dominated by *Thryptomene oligandra* (11.64 ha)
- RE 3.2.21– heath dominated by Yellow Teatree (*Neofabricia myrtifolia*) (281.36 ha)
- RE 3.2.27– wetland in dunal depression (3.26 ha)
- RE 3.12.7 – woodland associated with granitic rocks (23.74ha)
- RE 3.12.39a – woodland with exposed granite boulders (22.11 ha)
- RE 3.12.47 – heath on rocky hills (61.1 ha).

Fauna Assessment

The combined field surveys recorded 82 terrestrial fauna species, comprised of nine mammal, 50 bird, 20 reptile and three frog species. This includes shorebirds recorded adjacent to the Proposed Action, including over inshore waters. Five species of feral animal were recorded, although only Cane Toad (*Rhinella marina*) appeared to be common. Threatened species listed under the EPBC Act included Lesser Sand Plover and Greater Sand Plover. Beach Stone-curlew (*Esacus magnirostris*) is listed as Vulnerable under the NC Act. Two recorded reptile species, Cape Heath Ctenotus (*Ctenotus rawlinsoni*) and Estuarine Crocodile, are listed as Vulnerable under the NC Act. Six bird species (as well as Estuarine Crocodile) listed as Migratory under the EPBC Act were recorded.

The Proposed Action is dominated by low heath on sand dunes which provides less resources than more structurally complex habitat types such as woodland and rainforest. The heath in the survey area is comparatively little disturbed, despite some vehicle tracks.

Aquatic Fauna

The Aquatic ecology survey recorded 17 species of fish from three sites within the Proposed Action area. Ten of these species were recorded from one site with a marine influence. Most sites investigated did not have water present at the time. Estuarine Crocodile was recorded in the freshwater wetlands located on the southern boundary of the Proposed Action.

Marine Flora and Fauna

The marine ecology survey associated with the port infrastructure identified the following marine habitats:

- A mixed community of intertidal mangroves dominated by *Rhizophora stylosa* present along the rocky shore of the port area. Community density was low and patchy and was limited by the lack of muddy substrate for mangroves to colonise.
- A fringing reef located 10 m – 80 m offshore comprising a rocky reef dominated by microalgal mats and dominant algal forests characterised by *Sargassum*. Estimates of coverage observed macroalgae dominating the reef with 64.2% coverage, a cumulative 12.9% coverage of hard coral coverage and 3% of soft coral.
- Seagrass meadows restricted to the lower intertidal to subtidal zones offshore from the port area with the largest meadows with respect to area coverage being observed approximately 3–10 m behind the fringing reef. Three species of seagrass were recorded.
- The only large marine fauna observed in the vicinity of the port area was a single Green Turtle (*Chelonia mydas*). There is no marine turtle nesting habitat associated with the port area and the beach to the west of the port is unsuitable for nesting as well due to the encroachment of vegetation on the top of the dune.
- Dugong was observed incidentally in Cape Flattery waters approximately 5 km south of the Proposed Action during marine surveys for the project (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 4.7.2, pp. 77).
- Marine turtles, dugongs and inshore dolphin species (i.e. Australian Snubfin dolphin and Indo-Pacific Humpback dolphin) potentially to occur in the inshore waters of the wider Cape Flattery area.
- Giant Manta Ray and Reef Manta Ray were not recorded during the marine survey for the project but are considered likely to occur. Giant Manta Rays are generally associated with offshore reefs and islands, although the species has previously been recorded off the coast of Cape Flattery (Armstrong et al. 2019). Reef Manta Ray is often observed in coastal inshore locations around rocky and coral reefs (Marshall et al. 2009). Sighting records compiled by Armstrong et al. (2019) indicates a small population in the Cape Flattery region (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 3.7, pp. 53-54). The Proposed Action area encompasses rocky fringing reef habitat which may be a suitable foraging area for these species. The Proposed Action has avoided directly impacting this habitat.

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

Vegetation characteristics:

The Proposed Action area is mapped as entirely comprising remnant vegetation. Refer to Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922 (Section 4.1, pp. 31-42) for further details on native vegetation onsite. There are 10 vegetation communities identified as present within the Project area based on the vegetation mapping for the Proposed Action as described below. Three of the observed REs are listed as Of Concern status under Queensland's *Vegetation Management Act 1999* (VM Act) and/or EP Act. One vegetation community identified in the Project area, RE 3.2.12a, contains floristic elements analogous to the *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia* Threatened Ecological Community (TEC). The TEC is listed as Critically Endangered under the EPBC Act.

Field-verified REs and their status under the VM Act and EP Act are:

- RE 3.1.2a – Least Concern (VM Act), No Concern at Present (EP Act), 0.28 ha
- RE 3.2.10a – Least Concern (VM Act), Of Concern (EP Act), 198.23 ha
- RE 3.2.12a – Least Concern (VM Act), No Concern at Present (EP Act), 11.41 ha
- RE 3.2.14 – Of Concern (VM Act), Of Concern (EP Act), 0.13 ha
- RE 3.2.18 – Least Concern (VM Act), No Concern at Present (EP Act), 11.64 ha
- RE 3.2.21 – Least Concern (VM Act), No Concern at Present (EP Act),) 281.36 ha
- RE 3.2.27 – Least Concern (VM Act), No Concern at Present (EP Act), 3.26 ha
- RE 3.12.7 – Least Concern (VM Act), No Concern at Present (EP Act), 23.74ha
- RE 3.12.39a – Of Concern (VM Act), Of Concern (EP Act), 22.11 ha
- RE 3.12.47 – Least Concern (VM Act), No Concern at Present (EP Act), 61.1 ha.

Within the Project, there are two soil units mapped under the Atlas of Australian Soils classification (Northcote et al. 1960-68):

- Ca35: bleached sands with a coloured B horizon occurring on hilly land bounded by steep scarps and often dissected by streams.
- B36: siliceous sands occurring on sand dunes, often elongated parabolic ridges. High parabolic sand dunes make up a majority of the Proposed Action.

The Project area contains podosol and tenosol soils. A review of the *Australian Soil Resource Information System Mapping* (ASRIS) register of acid sulphate soils of Australia indicates that the Project area is located in an area of extremely low probability, very low confidence for presence of acid sulphate soils (ASRIS 2014).

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 Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

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

There is one site recorded with the Queensland Government DSDSATSIP (2022) within the Proposed Action area, site ER: C61. This site is recorded as a 'Cultural Site'. The current Project design will avoid this cultural site. Proposed works for the Project area have been assessed as Duty of Care Category 5: Activities causing Additional Surface Disturbance. Where an activity is proposed under Category 5 there is generally a high risk that it could harm Aboriginal cultural heritage. There will be consultations with relevant Aboriginal parties to determine their requirements for management of the site.

On 31 March 2021, CFS signed ACHAs with Hope Vale Congress Aboriginal Corporation (as agent for the Nguurruumungu Clan) and Walmbaar Aboriginal Corporation (as agent for the Dingaal Clan). The ACHAs provide CFS with a process that allowed drilling to occur off the existing tracks within Exploration Permit Minerals EPM25734 (including the Proposed Action extent) in July/August 2021. No items of cultural significance were found during the preclearance surveys or during the exploration drilling activities.

CFS maintain engagement with both Clans, and are currently negotiating ACHAs with each Clan for the Project.

3.4 Hydrology

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

The Proposed Action is expected to require 750 megalitres per annum (MLpa) water. The water allocation would be primarily used in mineral processing, where recycling will play a key part in minimising water consumption. The Proposed Action expects to source the majority of its water supply via bores intersecting deeper aquifers beneath the Project MLA, with a lesser amount derived from the localised rainfall catchment and stored in a sediment basin at the MIA.

Watercourses:

The Proposed Action is located within the Jeannie River catchment. The Jeannie River drains to the Cape Flattery area from the headwaters in the northern region of the Cape York Peninsula of the Great Dividing Range. No key river or tributary systems flow within the Project area, instead a series of small, unnamed, non-perennial first order tributary inputs discharge into the adjacent marine area (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Figure 6, pp. 20). Site observations during surveys for the terrestrial and aquatic ecology surveys recorded little water present in any mapped watercourse.

Wetlands:

The Proposed Action is located entirely within the boundary of a Wetland of National Importance – Cape Flattery Dune Lakes. This is the largest dune field on the east coast of Australia, north of Fraser Island. It covers approximately 600 km2 and is composed of freshwater lakes and palustrine wetlands in dune swales. The dunes are vegetated with a variety of vegetation types, including heath and rainforest (CCEEW 2022).

There are two wetland areas (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Figure 6, Sections 3.1.4 and 3.2-3.6, pp. 19-23) associated with the Proposed Action area including:

- Two mapped palustrine wetlands intersected by the southern boundary of the Proposed Action area. They occupy the lower depressions between major dunes. These lakes have a wet season depth of more than 2 m, but 1-1.5 m is more common (Pye 1982). There is evident connectivity between the two wetlands, though flows are only likely to occur during wet seasonal conditions. The wetlands are mapped as ‘High Ecological Significance’ on the Map of Queensland Wetland Environmental Values.
- Two Dune Lake systems located outside of the Proposed Action that may experience discharge from watercourses within the Proposed Action area located outside of the mine impact footprint. Aerial photography shows that the two Dune Lakes are connected via a narrow inland channel.

Groundwater:

The Proposed Action is located within the area of the *Water Plan (Cape York) 2019.* The Proposed Action area is located within *Laura Rolling Downs* and *Laura Gilbert River equivalents* groundwater units. Six groundwater monitoring bores were installed within the Proposed Action area but at this stage only three of the bores provide reliable groundwater level data. The groundwater levels in the southwest of the Proposed Action area are the closest to the ground surface at around 15 metres below ground level (mbgl). The deepest water level measured are at approximately 45 mbgl. The variation in depth to groundwater would appear to highly dependent on the ground elevation at each location. Groundwater recharge to the site is essentially through diffuse recharge to the dominant sand dune areas. Recharge will occur via direct infiltration to the sand mass across the site. Some as yet undefined recharge may occur from rainfall runoff from the hard rock areas to the north-east of the mine area.

Groundwater Dependent Ecosystems:

No Groundwater Dependent Ecosystem (GDE) is mapped by the Queensland Government (Queensland Globe) as occurring in the Proposed Action area. Two previous studies (Hawkins et al. 1988; Timms 1986) investigating groundwater dependence of the Dune Lakes in the region have found conflicting results (either groundwater dependent or not). Based on groundwater investigations the conceptual understanding is the palustrine wetlands in the south of the Proposed Action are disconnected from the water table and therefore are perched water bodies with an impermeable base. This is a common observation within the southern sand masses, particularly on similar systems on North Stradbroke Island, where local perching layers have formed by organic material and partially cemented horizons.

Release Points:

Environmental values for water courses, wetlands, groundwater and GDEs will be protected through an EA approval (being sought from Qld Government). Attachment 7-Aquatic Baseline and Impact Assessment_V5-0, Section 6, (pp. 80-85) describes the avoidance, mitigation and management measures for protecting aquatic ecosystem values during the construction and operation phases of the proposed Action.

Rain events causing any ponding onsite (particularly in the pits) is pumped to the sediment basin. There may be infiltration to groundwater given the porosity of the sand onsite. As such, there will be a release point established to protect groundwater resources and managed in accordance with the EA approval.

There are no direct or indirect release points proposed to the marine environment. All mine affected water will be pumped to the sediment basin or diverted to the nominated groundwater release point (to be determined through the EA approval process). Water quality will be managed in accordance with the avoidance, mitigation and management measures for protecting the marine environment during the construction and operation phases of the proposed Action as per Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 6 (pp. 95, 98 and 100).

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	Yes	Yes
S15B	National Heritage	Yes	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.

Direct impact	Indirect impact	World heritage
Yes	Yes	Great Barrier Reef

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

Yes

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

The Proposed Action requires activities within the GBRWHA and is likely to have a direct impact. The inner boundary of the GBRWHA is the low water mark along the Queensland coast. The majority of the Proposed Action lies on terrestrial lands adjacent the GBRWHA. Construction of the jetty and MOF will occur within the boundary of the GBRWHA (the low-water tide level) to an extent of approximately 1,050 and 3,000 square metres (m2) respectively. The jetty will be supported by 11 single piles over the total length and eight dolphins (piles) installed at the end of the jetty in an arc formation for the vessels to moor against while being loaded. Additional piles will support the transhipment vessel loading and jetty hopper infrastructure which extends an additional 10 m from the end of the jetty. The MOF will be a minimum 200 m in length and will comprise three connected floating jack up barges. These barges are self-supporting via piles (not attached to the seafloor) and will allow the barges to move up and down as needed, allowing tide and flow underneath. Transhipment activity between the JIF and OGVs will occur within the Cape Flattery Port Limits which are within the GBRWHA.

OGV shipping movements (on average 1 every two weeks) outside of the Port of Cape Flattery will be undertaken within existing shipping routes and as such, will be operated and controlled by others to comply with Australian Maritime Safety Authority (AMSA) and Great Barrier Reef and Torres Strait Vessel Traffic Service requirements for movement through the GBRMP. OGV shipping through existing shipping channels is not considered an impact to the GBRWHA and is not part of this referral submission.

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

No

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

A detailed description of the Outstanding Universal Values (OUV) of the GBRWHA as associated with the Cape Flattery region and the Proposed Action is provided in Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Section 2, pp. 8-20). The results of the assessment are summarised below.

Key attributes of the GBRWHA relevant to the wider Cape Flattery area include scenic vistas, mangrove communities, fringing coral reefs, seagrass meadows, threatened marine fauna (marine turtles, inshore dolphins and Dugong (*Dugong dugon*)) shorebirds and seabirds. The Cape Flattery area is remote and generally considered as relatively intact, although it is noted the Proposed Action lies adjacent to an existing sand mining operation to the south, with an associated accommodation village located near the shoreline to the direct west of the Proposed Action, and an operating jetty and transhipment facilities to the south-east. The existing operation commenced in 1967.

The GBRMPA is the managing authority for the GBRWHA. The marine waters of the Proposed Action are within a 150 km2 area designated for the Port of Cape Flattery which is outside the boundary of the GBRMP. Ports North manages activities in the marine environment within the port area through the *Port of Cape Flattery Environmental Management Plan (2014).* The Proposed Action will operate within the existing and future management framework implemented for the Port of Cape Flattery area.

Scenic vistas - the extensive areas of continental islands, sand cays and outer reefs in the surrounding region (e.g. Lizard Island, Two Islands Reef and Rocky Islets) are all located well away from the Proposed Action and will not be conceivably impacted by Project activities. The only aspects of the Proposed Action that will be visible from the sea will be the accommodation area, conveyor, JIF, jetty and MOF. Following construction, the scenic vista and superlative natural beauty values associated with Cape Flattery will remain largely undisturbed.

The scale of the development within the GBRWHA boundary (i.e a 350 m long jetty and MOF) is considered minor in extent. The design, location and construction of the jetty and MOF have been revised over several iterations in order to reduce impacts to sensitive marine habitats in the local area. A detailed summary of the potential impacts of the Proposed Action to the identified OUVs is provided in Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Section 3, pp. 21-24).

Mangroves - the construction of the jetty and MOF will not result in the direct loss of any of the scattered low-growing mangroves occurring in the local area. The closest extensive and continuous mangrove communities are located along the shoreline to the west of Cape Flattery which are over 3.5 km west of the proposed JIF area.

Seagrass and fringing reefs - surveys identified seagrass meadows and a fringing rocky reef extending across the jetty and MOF footprint. The seagrass meadows comprise a variable seagrass cover of 10-30 percent. The fringing reef is dominated by macroalgal communities with an average coral cover of 15.9 percent. Direct impacts from the jetty and MOF are restricted to disturbance caused by piling estimated as impacting 400 m2 of seagrass and no piling impact on the fringing reef. Indirect shading impact on these habitats from the jetty is uncertain. The MOF is more likely to cause shading impacts. An estimated area of 1,059 m2 of seagrass and 516 m2 of fringing reef has some potential to be impacted by shading. Given the extent of these habitats in the wider Cape Flattery port area this impact is considered to be minor in consequence.

Marine turtles, dugongs and inshore dolphin species potentially to occur in the inshore waters of the wider Cape Flattery area. The area associated with the Proposed Action encompasses foraging habitat for these taxa. The rocky nature of the coastline at Cape Flattery does not provide suitable nesting habitat for marine turtles. The extent of the Proposed Action is minor. Foraging marine fauna may be temporarily impacted during the construction phase through noise impacts and may avoid the area. Transhipment vessel movements are not expected to directly impact large marine fauna through collision (due to low vessel speeds) or impact habitat suitable for foraging.

The Proposed Action area is not a nesting area for seabirds or a significant foraging or roosting area for shorebirds. There is no conceivable reason the Proposed Action would have any impact on offshore sites. The Proposed Action is considered unlikely to degrade, damage, notably alter, modify, obscure or diminish any populations of marine fauna within the GBRWHA.

An assessment of the potential for significant impacts on the OUVs was carried out using the criteria described in the *EPBC Act referral guidelines for the Outstanding Universal Value of the Great Barrier Reef World Heritage Area* (Department of the Environment (DoE) 2014) (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Section 4, pp. 25-30)). The assessment found that a significant impact on the OUVs of the GBRWHA as a result of the Proposed Action is unlikely.

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

No

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

It is noted the Project is located adjacent to an existing mine (Mitsubishi's Cape Flattery Silica Mine (CFSM)) and is not proposed to be located in a 'pristine' location that has not been subject to previous development. Infrastructure associated with the CFSM project is already impacting scenic amenity associated with the GBRWHA in the local area. There are few OUVs associated with GBRWHA present in close vicinity to the Proposed Action. Impacts to scenic amenity of the Cape Flattery area will be minimal. Mining operations will not be visible from the sea. The extent of mining operations visible at any one time will be minimised via progressive rehabilitation of mined areas and OGV shipping movements will occur on average once every two weeks and use existing shipping routes.

The extent of the Project within or close to the GBRWHA is very minor (at worst). Aspects of the Project design have been revised to reduce any localised impacts to sensitive marine habitats. As a result there will be no direct construction impact on the fringing reef or scattered mangroves associated with the port area. It is acknowledged there will be minor direct impact to seagrass habitat and potential shading impacts to seagrass and fringing reef. The extent of these impacts are very minor when considered in the context of the available habitat in the local and wider area. Any potential impact to sensitive marine fauna species that may use the area at times will be localised and temporary (during construction). The extent and design of port infrastructure has been minimised in extent as much as is feasible and it is noted shipping already occurs in the local area for the adjacent CFSM project.

With the application of mitigation measures recommended for the Project any potential impacts on the OUVs associated with the GBRWHA are considered to be negligible. The proponent considers the Project is not a controlled action with regard to this MNES.

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

The Proponent continues to refine the Project design and has already reduced or eliminated impacts to sensitive marine habitats and other MNES as part of this process.

Mitigation measures designed to avoid or reduce impacts of the Proposed Action will be documented in a Construction Environmental Management Plan and Operational Environmental Management Plan. Avoidance and preliminary mitigation measures have been detailed in the relevant sections of Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922 (Section 6, pp. 64-68), Attachment 6-Marine Baseline and Impact Assessment_V5-0 (Section 6, pp. 93-100) and Attachment 7-Aquatic Baseline and Impact Assessment_V5-0 (Section 6, pp. 79-85). Impacts associated with the GBRWHA are largely associated with the coastal and marine area. Mitigation measures with relevance to these areas are summarised below:

- Marine infrastructure (jetty and MOF) has been located in an area with minimal impact to sensitive species associated with the GBRWHA (i.e. migratory waders/shorebirds) and the design has minimised direct impacts to habitat for marine species such as marine turtles and Dugong (*Dugong dugon*)
- In consultation with indigenous landowners the Project has been designed to avoid any impacts to Connies Beach which provides intermittent habitat for several wader/shorebird species listed as MNES as well as recreational opportunities
- The marine construction footprint will clearly be delineated with avoidance (or habitat protection) zones established with active monitoring of any incursions
- Construction of marine infrastructure will be carried out in the presence of a marine fauna observer with stop-work measures in place (where required)
- Noise from underwater piling will be managed following the 'Underwater Piling Noise Guidelines' (Department of Planning, Transport and Infrastructure (DPTI) 2012)
- Monitoring of tidal and intertidal habitats (seagrass, fringing reefs) adjacent to construction areas will be established
- Post construction undertake monitoring of all tidal and intertidal marine habitats adjacent to the Project disturbance footprint
- Runoff, erosion and sediment control measures will be installed and maintained, as per the requirements outlined in the Project Erosion and Sediment Control Plan (ESCP)
- The sediment basin dam associated with the MIA has been designed to prevent overtopping during any modelled storm event and no uncontrolled mine water discharges to the environment (and therefore to catchments of the Great Barrier Reef (GBR)) are expected
- Construction and operational lighting will be directed towards the land and away from the water where practicable with high intensity/flood lighting to be used and blue wavelength lighting minimised/avoided
- Potential for boat strike will be minimised using methods in the Vessel Traffic Management Plan, and the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (Department of Environment and Energy (DEE) 2017)

- Shipping activity within the Port of Cape Flattery area will be required to operate under the existing Ports North management of the area including the *Port of Cape Flattery port rules* (Ports North 2012), *Port procedures and information for shipping – Cape Flattery, Cooktown and Port Douglas* (DTMR 2021), and management measures described in the *Port of Cape Flattery – environmental management plan* (Ports North 2014).
- The introduction of exotic marine pest species will be managed under the Project-specific Ship-sourced Pollution Prevention Management Plan which includes management of ballast water

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

The Proponent considers offsets are not required for this MNES.

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.

Direct impact	Indirect impact	National heritage
Yes		Great Barrier Reef

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

Yes

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

The GBR is listed as a national heritage place and world heritage property under the EPBC Act (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Section 1.2.1 & Figure 1, pp. 2-3). Both are MNES but are for the same natural feature and have the same values as per the *Significant impact guidelines 1.1* (DoE 2013), with the exception of additional assessment of Indigenous Heritage Values which is only relevant to a national heritage place and is described below. As such the impact assessment undertaken for the national heritage place (Section 4.1.2 of this Referral) is based on the assessment for the world heritage property (Section 4.1.1 of this Referral).

The Proposed Action requires activities near the GBR, a National Heritage Place and has potential to have an indirect impact on the GBR. The inner boundary of the GBR is the low water mark along the Queensland coast. The majority of the Proposed Action lies on terrestrial lands adjacent the GBR. Construction of the jetty and MOF will occur within the boundary of the GBR (the low-water tide level) to an extent of approximately 1,050 m2 and 3,000 m2 respectively. The jetty will be supported by 11 single piles over the total length and eight dolphins (piles) installed at the end of the jetty in an arc formation for the vessels to moor against while being loaded. Additional piles will support the vessel loading and jetty hopper infrastructure which extends an additional 10 m from the end of the jetty. The MOF will be a minimum 200 m in length and will comprise three connected floating jack up barges. These barges are self-supporting via piles (not attached to the seafloor) and will allow the barges to move up and down as needed, allowing tide and flow underneath. Transhipment activity between the JIF and OGVs will occur within the Cape Flattery Port Limits which are within the GBR.

OGV shipping movements (on average 1 every two weeks) outside of the Port of Cape Flattery will be undertaken within existing shipping routes and as such, will be operated and controlled by others to comply with AMSA and Great Barrier Reef and Torres Strait Vessel Traffic Service requirements for movement through the GBRMP. OGV shipping through existing shipping channels is not considered an impact to the GBR and is not part of this referral submission.

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

No

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

The GBR is also listed as a National Heritage place over the same area as the GBRWHA (i.e. inner boundary of the GBRWHA is the low water mark along the Queensland coast) (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Section 1.2.1 & Figure 1, pp. 2-3). Elements of the port infrastructure will need to be constructed within the National Heritage Place. Transhipment activity associated with the Project will also occur in the waters of the National Heritage Place. The significant impact criteria for a National Heritage place is the same as for a World Heritage property. As such the significant impact assessment for the GBRWHA values in this report also applies as the significant impact assessment for the National Heritage Place – GBR values.

Key attributes of the GBR relevant to the wider Cape Flattery area include scenic vistas, mangrove communities, fringing coral reefs, seagrass meadows, threatened marine fauna (marine turtles, inshore dolphins and Dugong (*Dugong dugon*)) shorebirds and seabirds. The Cape Flattery area is remote and generally considered as relatively intact, although it is noted the Proposed Action lies adjacent to an existing sand mining operation to the south, with an associated accommodation village located near the shoreline to the direct west of the Proposed Action, and an operating jetty and transhipment facilities to the south-east. The existing operation commenced in 1967.

The GBRMPA is the managing authority for the GBR. The marine waters of the Proposed Action are within a 150 km2 area designated for the Port of Cape Flattery which is outside the boundary of the GBRMP. Ports North manages activities in the marine environment within the port area through the *Port of Cape Flattery Environmental Management Plan (2014)*. The Proposed Action will operate within the existing and future management framework implemented for the Port of Cape Flattery area.

Scenic vistas - the extensive areas of continental islands, sand cays and outer reefs in the surrounding region (e.g. Lizard Island, Two Islands Reef and Rocky Islets) are all located well away from the Proposed Action and will not be conceivably impacted by Project activities. The only aspects of the Proposed Action that will be visible from the sea will be the accommodation area, conveyor, JIF, jetty and MOF. Following construction, the scenic vista and superlative natural beauty values associated with Cape Flattery will remain largely undisturbed.

The scale of the development within the GBR (i.e. a 350 m long jetty and MOF) is considered minor in extent. The design, location and construction of the jetty and MOF have been revised over several iterations in order to reduce impacts to sensitive marine habitats in the local area. A detailed summary of the potential impacts of the Proposed Action is provided in Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Section 3 pp. 21-24).

Mangroves - the construction of the jetty and MOF will not result in the direct loss of any of the scattered low-growing mangroves occurring in the local area. The closest extensive and continuous mangrove communities are located along the shoreline to the west of Cape Flattery which are over 3.5 km west of the proposed JIF area.

Seagrass and fringing reefs - surveys identified seagrass meadows and a fringing rocky reef extending across the jetty and MOF footprint. The seagrass meadows comprise a variable seagrass cover of 10-30 percent. The fringing reef is dominated by macroalgal communities with an average coral cover of 15.9 percent. Direct impacts from the jetty and MOF are restricted to disturbance caused by piling estimated as impacting 400 m2 of seagrass and no piling impact on the fringing reef. Indirect shading impact on these habitats from the jetty is uncertain. The MOF is more likely to cause shading impacts. An estimated area of 1,059 m2 of seagrass and 516 m2 of fringing reef has some potential to be impacted by shading. Given the extent of these habitats in the wider Cape Flattery port area this impact is considered to be minor in consequence.

Marine turtles, dugongs and inshore dolphin species potentially to occur in the inshore waters of the wider Cape Flattery area. The area associated with the Proposed Action encompasses foraging habitat for these taxa. The rocky nature of the coastline at Cape Flattery does not provide suitable nesting habitat for marine turtles. The extent of the Proposed Action is minor. Foraging marine fauna may be temporarily impacted during the construction phase through noise impacts and may avoid the area. Transhipment vessel movements are not expected to directly impact large marine fauna through collision (due to low vessel speeds) or impact habitat suitable for foraging.

The Proposed Action area is not a nesting area for seabirds or a significant foraging or roosting area for shorebirds. There is no conceivable reason the Proposed Action would have any impact on offshore sites. The Proposed Action is considered unlikely to degrade, damage, notably alter, modify, obscure or diminish any populations of marine fauna within the GBRWHA.

An assessment of the potential for significant impacts on the OUVs was carried out using the criteria described in the *EPBC Act referral guidelines for the Outstanding Universal Value of the Great Barrier Reef World Heritage Area* (Department of the Environment (DoE) 2014) (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Section 3, pp. 25-30). The assessment found that a significant impact on the values of the GBR as a result of the Proposed Action is unlikely.

In regards to the Indigenous heritage values, Traditional Owners (TOs) have been consulted with prior to and throughout the mine exploration, planning and design processes to date. The location of the jetty and MOF was selected as the most appropriate location after consultation with TOs. Cultural heritage pre-clearance surveys have been undertaken with TOs, CFS and a suitably qualified expert prior to any exploration works and there is a commitment to continue this for pre-construction works, and before the commencement of mining in accordance with an ACHA. Implementation of a Cultural Heritage Management Plan will appropriately manage potential impacts to cultural heritage during the construction and operation phases of the Project. The TOs will also be able to continue their use of the land and sea

within the proposed Action area. CFS have committed to creating a new boundary access track around the mining operation to maintain safe access for TOs to Connies Beach (refer Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Figure 2, pp. 4). As such, it is unlikely the proposed Action will cause a significant impact to the Indigenous heritage values of the GBR National Heritage Place.

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

No

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

It is noted the Project is located adjacent to an existing mine (Mitsubishi's Cape Flattery Silica Mine (CFSM)) and is not proposed to be located in a 'pristine' location that has not been subject to previous development. Infrastructure associated with the CFSM project is already impacting scenic amenity associated with the GBR in the local area. There are few values associated with GBR present in close vicinity to the Proposed Action. Impacts to scenic amenity of the Cape Flattery area will be minimal. Mining operations will not be visible from the sea. The extent of mining operations visible at any one time will be minimised via progressive rehabilitation of mined areas and OGV shipping movements will occur on average once every two weeks and use existing shipping routes.

The extent of the Project within or close to the GBR is very minor (at worst). Aspects of the Project design have been revised to reduce any localised impacts to sensitive marine habitats. As a result there will be no direct construction impact on the fringing reef or scattered mangroves associated with the port area (Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Section 3.1, pp.21). It is acknowledged there will be minor direct impact to seagrass habitat and potential shading impacts to seagrass and fringing reef. The extent of these impacts are very minor when considered in the context of the available habitat in the local and wider area (Attachment 4-CFS-GBRWHA-RPT-Rev1-141122, Section 3.1, pp.22). Any potential impact to sensitive marine fauna species that may use the area at times will be localised and temporary (during construction). The extent and design of port infrastructure has been minimised in extent as much as is feasible and it is noted shipping already occurs in the local area for the adjacent CFSM project.

With the application of mitigation measures recommended for the Project any potential impacts on the values associated with the GBR are considered to be negligible. The proponent considers the Project is not a controlled action with regard to this MNES.

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

The Proponent continues to refine the Project design and has already reduced or eliminated impacts to sensitive marine habitats and other MNES as part of this process.

Mitigation measures designed to avoid or reduce impacts of the Proposed Action will be documented in a Construction Environmental Management Plan and Operational Environmental Management Plan. Avoidance and preliminary mitigation measures have been detailed in the relevant sections of Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922 (Section 6, pp. 64-68), Attachment 6-MarineBaseline and Impact Assessment_V5-0 (Section 6, pp. 93-100) and Attachment 7-Aquatic Baseline and Impact Assessment_V5-0 (Section6, pp. 79-85). Impacts associated with the GBR are largely associated with the coastal and marine area. Mitigation measures with relevance to these areas are summarised below:

- Marine infrastructure (jetty and MOF) has been located in an area with minimal impact to sensitive species associated with the GBR (i.e. migratory waders/shorebirds) and the design has minimised direct impacts to habitat for marine species such as marine turtles and Dugong (*Dugong dugon*)
- In consultation with indigenous landowners the Project has been designed to avoid any impacts to Connies Beach which provides intermittent habitat for several wader/shorebird species listed as MNES as well as recreational opportunities
- The marine construction footprint will clearly be delineated with avoidance (or habitat protection) zones established with active monitoring of any incursions
- Construction of marine infrastructure will be carried out in the presence of a marine fauna observer with stop-work measures in place (where required)
- Noise from underwater piling will be managed following the 'Underwater Piling Noise Guidelines' (Department of Planning, Transport and Infrastructure (DPTI) 2012)
- Monitoring of tidal and intertidal habitats (seagrass, fringing reefs) adjacent to construction areas will be established
- Post construction undertake monitoring of all tidal and intertidal marine habitats adjacent to the Project disturbance footprint
- Runoff, erosion and sediment control measures will be installed and maintained, as per the requirements outlined in the Project Erosion and Sediment Control Plan (ESCP)
- The sediment basin dam associated with the MIA has been designed to prevent overtopping during any modelled storm event and no uncontrolled mine water discharges to the environment (and therefore to catchments of the GBR) are expected
- Construction and operational lighting will be directed towards the land and away from the water where practicable with high intensity/flood lighting to be used and blue wavelength lighting minimised/avoided
- Potential for boat strike will be minimised using methods in the Vessel Traffic Management Plan, and the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (Department of Environment and Energy (DEE) 2017)
- Shipping activity within the Port of Cape Flattery area will be required to operate under the existing Ports North management of the area including the *Port of Cape Flattery port rules* (Ports North 2012), *Port procedures and information for shipping – Cape Flattery,*

Cooktown and Port Douglas (DTMR 2021), and management measures described in the *Port of Cape Flattery – environmental management plan* (Ports North 2014).

- The introduction of exotic marine pest species will be managed under the Project-specific Ship-sourced Pollution Prevention Management Plan which includes management of ballast water

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

The Proponent considers offsets are not required for this MNES.

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.

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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. *

There are no RAMSAR wetlands within the vicinity of the proposed Action. The closest mapped RAMSAR wetland is approximately 450km south-east of the proposed Action, as such it will not be directly or indirectly impacted.

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

Direct impact	Indirect impact	Species
No	No	Balaenoptera musculus
No	No	Calidris canutus
No	No	Calidris ferruginea
No	No	Carcharodon carcharias
Yes		Caretta caretta
No	Yes	Charadrius leschenaultii
No	Yes	Charadrius mongolus
Yes		Chelonia mydas
No	No	Dasyurus hallucatus
No	No	Dendrobium johannis
No	No	Dermochelys coriacea
No	No	Egernia rugosa
No	No	Eremochloa muricata
No	No	Eretmochelys imbricata
No	No	Erythrotriorchis radiatus
No	No	Falco hypoleucos
No	No	Fregetta grallaria grallaria
No	No	Hipposideros semoni
No	No	Hirundapus caudacutus
No	No	Lepidochelys olivacea
No	No	Limosa lapponica baueri
No	No	Macroderma gigas
No	No	Mesembriomys gouldii rattoides
Yes		Myrmecodia beccarii
Yes		Natator depressus
No	No	Numenius madagascariensis
No	No	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)
No	No	Phlegmariurus dalhousieanus
No	No	Pristis pristis
No	No	Pristis zijsron
No	No	Probosciger aterrimus macgillivrayi
No	No	Pteropus conspicillatus
No	No	Rhinolophus robertsi
No	No	Rostratula australis
No	No	Sphyrna lewini

Direct impact	Indirect impact	Species
No	No	Stiphodon semoni
No	No	Vappodes phalaenopsis
No	No	Xeromys myoides

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Littoral Rainforest and Coastal Vine Thickets of Eastern Australia

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. *

Marine and terrestrial ecological surveys have been undertaken within the proposed Action extent which identified threatened flora, a TEC and fauna. A likelihood of occurrence assessment has been made in the terrestrial ecological assessment (Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 4, pp. 31-55) and marine ecological assessment (Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.3.2, 5.3.7-5.3.9, 5.4.3-5.4.4, pp. 84-85, 87-88, 90-91), taking into account desktop search results and survey findings to identify threatened species and ecological communities that may be directly or indirectly impacted:

- Littoral rainforest and coastal vine thickets of eastern Australia TEC is listed as Critically Endangered under the EPBC Act. Two patches of the TEC were in the south-east and south-west of the Project area, totalling approximately 11.41 ha. These areas have been avoided by the final project disturbance footprint, with a 50 m protection buffer placed around them. There will be no impact to upstream water flows draining towards the patches of TEC. This community will not be disturbed due to Project activities and there will be no direct impact to the TEC. With the 50 m buffer in place no indirect impacts associated with Project are expected on the TEC.
- Ant plant (*Myrmecodia beccarii*) is listed as Vulnerable under the EPBC Act. A single plant was observed during the wet season survey growing on *Melaleuca arcana*. This plant was recorded within the disturbance footprint and has potential to be directly impacted by vegetation clearing.
- Lesser Sand Plover (*Charadrius mongolus*) is listed as Endangered under the EPBC Act. Seventeen birds were found at a high tide roost west of Connies Beach in the wet season. The species is not expected to occur within the proposed mine area but may utilise habitat adjacent to the proposed port area and as such may be indirectly impacted by noise and lighting from the port construction and operations.
- Greater Sand Plover (Charadrius leschenaultii) is listed as Vulnerable under the EPBC Act. Two birds were roosting with the Lesser Sand Plovers at a high tide roost west of Connies Beach in the wet season. The species is not expected to occur within the proposed mine area but may utilise habitat adjacent to the proposed port area and as such may be indirectly impacted by noise and lighting from the port construction and operations.
- Green sea turtle (*Chelonia mydas*) is listed as Vulnerable under the EPBC Act. One individual was identified during the marine ecology survey. The species may be directly impacted due to the loss of foraging habitat (i.e. removal of seagrass for jetty pilings and shading caused by construction of the jetty and MOF), underwater noise during construction and vessel strike.
- Loggerhead Turtle (*Caretta caretta*) is listed as Endangered under the EPBC Act. One individual was identified during the marine ecology survey. The species may be directly impacted due to the loss of foraging habitat (i.e. removal of seagrass for jetty pilings and shading caused by construction of the jetty and MOF), underwater noise during construction and vessel strike.
- Flatback Turtle (*Natator depressus*) is listed as Vulnerable under the EPBC Act. One individual was identified during the marine ecology survey. The species may be directly impacted due to the loss of foraging habitat (i.e. removal of seagrass for jetty pilings and shading caused by construction of the jetty and MOF), underwater noise during construction and vessel strike.

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. *

One vegetation community identified in the Proposed Action area (RE 3.2.12a) contains floristic elements analogous to the Littoral rainforest and coastal vine thickets of eastern Australia TEC. Two patches totalling approximately 11.41 ha occur (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 4.1.3, Figure 10 and Table 7, pp. 31-38). These areas have been avoided by the final

mine footprint with a 50 m disturbance buffer placed around them. There will be no impact to upstream water flows draining towards the patches of TEC. A fire management strategy and Weed and Pest Management Plan will be developed and implemented for the Proposed Action. With the 50 m buffer in place no indirect impacts associated with Project are expected on the TEC.

Myrmecodia beccarii is an epiphytic plant that grows in lowland woodland dominated by melaleucas, mostly Broad-leaved Paperbark (*Melaleuca viridiflora*). A single plant was observed growing on *M. arcana* in a small patch of RE 3.2.14 (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 4.1.4 & Figure 11, pp. 38-40) which occupies a minor portion of the MLA. It may occur elsewhere in the Proposed Action area, mainly in the canopy layer of sheltered pockets of woodlands with taller Broad-leaved Paperbark (RE 3.12.39a). Only 0.13 ha of RE 3.2.14 and 0.05 ha of RE 3.12.39a is proposed to be cleared. If the species is found it will be subject to a translocation program which will be detailed in the Project Environmental Management Plan. No significant residual impacts considered as likely on this species (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 7.1.2.1, pp. 74-76).

Lesser Sand Plover (*Charadrius mongolus*) and Greater Sand Plover (*Charadrius leschenaultii*) were both observed at a high tide roost west of Connies Beach (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Figure 12, pp. 55). No foraging was observed. The general absence of waders on Connies beach suggests it is not an important foraging location for sandpipers and plovers. The lack of database records for the beach supports this conclusion. The observed roost location is located approximately 600 m from the closest mining panel (year 23/24 mining period) and 1.9 km west of the jetty and MOF. Neither species will occur in non-coastal habitats and any possible impacts would be localised to construction and operation of the jetty and MOF. CFS have entered into an agreement with traditional owners to avoid any impacts to Connies Beach and adjacent coastal habitat, with a buffer between Connies Beach and the proposed disturbance area. Any impacts from the project would be largely restricted to the construction phase and be short-term. There is abundant identical habitat throughout the Cape Flattery area that will remain undisturbed. No significant residual impacts considered as likely on these species (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 7.1.2.1, pp. 72-77).

A single Green Turtle (*Chelonia mydas*) observed in the vicinity of the JIF area during survey of the marine area associated with the project (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 4.7.1, pp. 74-75). Loggerhead Turtle (*Caretta caretta*) and Flatback Turtle (*Natator depressus*) are considered known to occur although neither were recorded during survey of the marine area. Marine turtle nesting is not known to occur along the beaches on the mainland to the north and south of Cape Flattery. Lizard Island is located 32 km north of Cape Flattery and supports low numbers (1-10 individuals) of nesting Green Turtle and Loggerhead Turtle (Limpus 1985). There is no suitable nesting habitat for marine turtles associated with the Proposed Action. The marine infrastructure is located on an area of rocky intertidal habitat which is unsuitable for nesting. The beach to the west of the JIF (Connies Beach) is not suitable as a nesting site for marine turtles (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922. Section 5.6, pp. 60).

The Proposed Action will only directly impact minor and localised potential foraging habitat through piling activity associated with the construction of the jetty. Additional areas of seagrass and fringing reef may be impacted by shading caused by the jetty and MOF (Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.3, pp. 84-85), although the extent of this impact is uncertain. There is extensive identical habitat mapped in the wider Cape Flattery port area (Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.3, pp. 82). The potential loss of foraging habitat for the species is considered to be an impact of negligible consequence.

Individuals may be impacted by noise (particularly piling activity) generated during construction. This impact will be temporary and subject to management measures. Shipping/vessel movements associated with the Proposed Action pose a potential risk to larger marine fauna through collisions. Vessels used for the Project will inherently operate at slow speeds and vessel strike considered a very low risk. Potential impacts relevant to these species are of minor or negligible significance (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 7, pp. 102-104).

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

No

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

Threatened Ecological Community:

There will be no impact to the TEC within the Proposed Action area. As part of the design phase a 50 m buffer has been placed around the TEC within the Proposed Action area. Fire and weed invasion are considered key threats to this TEC (Threatened Species Scientific Committee (TSSC) 2008). A suitable fire management strategy for the ecological community will be developed and implemented. A Weed and Pest Management Plan will be implemented. Management plans will ensure the TEC is protected. Currently there is no formal fire management plan for the area nor any weed control. With additional weed and fire management measures applied within the Project's Construction EMP and Operational EMP, no direct or indirect impacts are expected.

Threatened flora:

One individual of one species was recorded within the Proposed Action area. Two further threatened orchid species have potential to occur although preferred habitat for either species is limited within the disturbance footprint. All species are epiphytic and therefore relatively easy to identify and translocate. The Project will implement pre-clearance surveys, post-clearance searches of fallen trees, and relocation of individuals (where required). No impact is expected to a local population of any threatened plant species.

Threatened fauna (terrestrial):

The Proposed Action area provides limited habitat value for threatened wader/shorebird species listed as MNES. Any impact will be restricted to the port area and will most likely be restricted to localised impacts during construction. The site may provide some value as a roost site and little value as low tide foraging habitat. There is abundant identical habitat in the region surrounding the JIF. No other threatened terrestrial fauna is associated with the Project.

Threatened and migratory fauna (marine):

The marine waters associated with the Proposed Action provides limited value for large marine fauna listed as MNES. Benthic habitat in the disturbance footprint includes fringing reef and seagrass communities. The disturbance footprint of the jetty and MOF infrastructure is relatively minor given the extent of identical habitat in the surrounding area. While threatened and migratory marine fauna (such as marine turtles, Dugong and inshore dolphins) may transiently occur in the local area associated with the Proposed Action there is no reason the species would be reliant on or use the area for an extended period. Any impacts are likely to only be during the construction period with the species avoiding the area. Mitigation measures will be in place during sensitive works (i.e. piling) with marine fauna spotters and stop-works measures in place.

Shipping movements already occur at Cape Flattery for the existing CFSM port area. Shipping and vessel movements associated with the Proposed Action are not considered to be of a nature (i.e. relatively slow speeds) to cause additional risk to marine fauna.

The proponent considers the Project is not a controlled action with regard to this MNES.

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. *

The Proponent continues to refine the Project design and has already reduced or eliminated impacts to threatened fauna habitats and other MNES as part of this process.

Mitigation measures designed to avoid or reduce impacts of the Proposed Action will be documented in a Construction Environmental Management Plan and Operational Environmental Management Plan. Avoidance and preliminary mitigation measures have been detailed in the relevant sections of Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922 (Section 6, pp. 64-68), Attachment 6-Marine Baseline and Impact Assessment_V5-0 (Section 6, pp. 93-100) and Attachment 7-Aquatic Baseline and Impact Assessment_V5-0 (Section 6, pp. 79-85).

General Project mitigation measures will include the following:

- Vegetation clearing extent will be clearly demarcated
- Clearing will remove habitats in stages, allowing fauna to move away from disturbed areas
- Fauna spotter catchers and salvaging of habitat features for use in rehabilitation during clearing
- Ongoing habitat rehabilitation to reduce long-term environmental impact (habitat loss)
- Dust suppressed using water trucks/wetting to keep dust related impacts to a minimum
- Fire management regimes will be developed and implemented
- Vehicle wash downs will ensure weeds/seeds are not introduced onto site

Mining for the Project will be carried out in a sequential manner. The layout of the proposed annual mining schedule is provided in Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Figure 2, pp. 4). A rehabilitation program will be developed and implemented within the PRCP as required under State approvals. Mine panels will be subject to progressive vegetation rehabilitation with existing flora species as mining moves forward, thereby reducing the extent of exposed soils at any one time.

Potential impacts to MNES from the Proposed Action will be avoided where practicable and avoidance measures include the following regarding Project planning and infrastructure siting:

- The disturbance footprint avoids and places a 50 m buffer around the TEC and wetlands occurring within the Proposed Action area
- Project infrastructure has been located in areas to avoid potential impacts to TECs and threatened species.
- Threatened MNES plants which occur (ant plant (*Myrmecodia beccarii*)) and potentially occur (orchids) will be subject to pre-clearance surveys and a relocation program (where required)
- Marine infrastructure (jetty and MOF) has been located in an area with minimal impact to terrestrial MNES (i.e. migratory waders/shorebirds) and the design has minimised direct impacts to habitat for MNES marine species such as marine turtles
- Construction of marine infrastructure will be carried out in the presence of a marine fauna observer with stop-work measures in place (where required)

Other mitigation measures with relevance to marine MNES fauna include:

- In consultation with indigenous landowners the Project has been designed to avoid any impacts to Connies Beach which provides intermittent habitat for several wader/shorebird species listed as MNES
- The marine construction footprint will clearly be delineated with avoidance (or habitat protection) zones established with active monitoring of any incursions
- Noise from underwater piling will be managed following the ‘Underwater Piling Noise Guidelines’ (DPTI 2012)
- Runoff, erosion and sediment control measures will be installed and maintained, as per the requirements outlined in the Project ESCP
- Construction and operational lighting will be directed towards the land and away from the water where practicable with high intensity/flood lighting to be used and blue wavelength lighting minimised/avoided

- Potential for boat strike will be minimised using methods in the Vessel Traffic Management Plan, and the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (DEE 2017)

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

The Proponent considers offsets are not required for this MNES.

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	Anous stolidus
No	No	Anoxypristis cuspidata
No	No	Apus pacificus
No	No	Balaenoptera edeni
No	No	Balaenoptera musculus
No	No	Calidris acuminata
No	No	Calidris canutus
No	No	Calidris ferruginea
No	No	Calidris melanotos
No	No	Carcharhinus longimanus
No	No	Carcharodon carcharias
No	No	Caretta caretta
No	No	Charadrius leschenaultii
No	No	Chelonia mydas
Yes	No	Crocodylus porosus
No	No	Cuculus optatus
No	No	Dermochelys coriacea
Yes	No	Dugong dugon

Direct impact	Indirect impact	Species
No	No	Eretmochelys imbricata
No	No	Fregata ariel
No	No	Fregata minor
No	No	Gallinago hardwickii
No	No	Hirundapus caudacutus
No	Yes	Hydroprogne caspia
No	No	Lepidochelys olivacea
No	No	Limosa lapponica
No	No	Megaptera novaeangliae
No	Yes	Mobula alfredi
No	Yes	Mobula birostris
No	No	Monarcha melanopsis
No	No	Natator depressus
No	No	Numenius madagascariensis
No	Yes	Numenius phaeopus
No	No	Orcaella heinsohni
No	No	Orcinus orca
No	No	Phaethon lepturus
No	No	Pristis pristis
No	No	Pristis zijsron
Yes	No	Rhipidura rufifrons
No	No	Sousa sahulensis
No	No	Sterna anaethetus
No	Yes	Sternula albifrons
No	No	Symposiachrus trivirgatus
No	Yes	Thalasseus bergii
No	No	Tringa nebularia

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

Yes

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

Marine and terrestrial ecological surveys have been undertaken within the proposed Action extent which identified migratory fauna. A likelihood of occurrence assessment has been made in the terrestrial ecological assessment (Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 4, pp. 43-55) and marine ecological assessment (Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 3.7, 5.3, 5.4.1-5.4.6, pp.48-54, 81-85, 89-91), taking into account desktop search results and survey findings to identify migratory species that may be directly or indirectly impacted:

- Whimbrel (Numenius phaeopus), Little Tern (*Sternula albifrons*) and Greater Crested Tern (*Thalasseus bergii*) were recorded during the terrestrial surveys on Connies Beach. The species are not expected to occur within the proposed mine area but may utilise habitat adjacent to the proposed port area. and as such may be indirectly impacted by noise and lighting from the port construction and operations.
- Caspian Tern (*Hydroprogne caspia*) was recorded during the dry season terrestrial survey on Connies Beach. The species is not expected to occur within the proposed mine area but may forage at wetlands in the southern portion of the mine area, however, a 50 m buffer from disturbance has been placed on the wetlands. They may also utilise habitat adjacent to the proposed port area. As such Caspian Tern may be indirectly impacted by noise and lighting from the port construction and operations.
- One small Estuarine Crocodile (Crocodylus porosus) was observed in coastal waters to the east of Connies Beach during the dry season survey. There was also evidence of tracks and slides from larger individuals in the same area and at the wetland in the southern portion of the mine area. A 50 m buffer from disturbance has been placed on the wetlands and is not expected to be impacted. Potential disturbance associated with construction of the port infrastructure may indirectly impact the species through noise and presence of machinery / workers causing them to avoid the area, but there is abundant identical habitat in the immediate surrounds and wider area.
- A single Rufous Fantail (*Rhipidura rufifrons*) was observed in coastal scrub near Connies Beach during Project surveys (outside the Project area). It occurs in moist habitats, including closed forests, coastal scrubs, mangroves and along watercourses and gullies, and urban/rural areas during mid-year migration, as such the species has potential to be directly impacted due to clearance of vegetation within the Project area.
- Dugong was observed incidentally in Cape Flattery waters approximately 5 km south of the Proposed Action during marine surveys for the project (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 4.7.2, pp. 77). As such there is potential for a direct impact due to the loss of food / foraging habitat (i.e. removal / loss of seagrass for jetty pilings and shading caused by construction of the jetty and MOF), underwater noise during construction and vessel strike.
- Giant Manta Ray (*Manta birostris*) and Reef Manta Ray (*Manta alfredi*) were not recorded during the marine survey for the Project but are considered likely to occur. As such there may be an indirect impact on these species due to the potential shading impacts to rocky fringing reef habitat which may be a suitable foraging area for these species (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Table 3-6, pp. 52-54).

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. *

Four migratory wader/shorebirds have been recorded during Project surveys: Whimbrel, Bridled Tern, Little Tern, Caspian Tern and Greater Crested Tern. All were recorded (mostly as individuals) from the coastal habitat associated with Connies Beach (outside the Project area). CFS have entered into an agreement with traditional owners to place a buffer between Connies Beach and the disturbance area. The nearest disturbance to Connies Beach from the Project (MIA and year 26 mining) will be approximately 250 m away from the east end of the beach. The only possible impact from the Project is likely to be localised construction disturbance associated with the port infrastructure. The port area is located 300 m away from the eastern edge of Connies Beach. The construction disturbance will be temporary and no offsite impacts to local foraging habitat are likely. A significant impact is considered as very unlikely on these species.

Caspian Tern and Estuarine Crocodile have potential to occur within the Project mine area. Slides attributable to Estuarine Crocodile were observed at a wetland area located on the southern boundary. Caspian Tern also has a minor potential to forage over the wetland. A 50 m buffer from disturbance has been placed on the wetlands. Both species also use coastal habitat/waters. As noted above, any disturbance will be minor, temporary and localised to the port area. The Project area is not at the limit of the range of either species, within an area where they are declining, contain important habitat. The region is not known to support an ecologically significant proportion of their populations. No significant impacts considered as likely on these species (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 7.1.3, pp. 76-80).

A single Rufous Fantail was observed in coastal scrub near Connies Beach during Project surveys (outside the Project area). It occurs in moist habitats, including closed forests, coastal scrubs, mangroves and along watercourses and gullies, and urban/rural areas during mid-year migration. It is common in suitable habitat along the eastern seaboard (Higgins et al. 2006; Menkhorst et al. 2017). The most suitable habitat for the species in the area (dry rainforest and coastal scrub) will not be impacted by the Project. The project may impact up to 52 ha of potential habitat. The Project area is not at the limit of the species range, within an area where it is declining, or contain habitat that is of importance to the species. The region is not known to support an ecologically significant proportion of the population. No significant impacts considered as likely on this species (refer Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922, Section 7.1.3, pp. 76-79).

Dugong was observed incidentally in Cape Flattery waters approximately 5 km south of the Proposed Action during marine surveys for the project (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 4.7.2, pp. 77). It was not observed in the vicinity of the port area. The waters of the northern GBR are considered to be some of the most important Dugong habitat in the GBRMP (Grech et al. 2011), although surveys suggest the species appears to be more common to the north of Cape Flattery (Marsh and Lawler 2001). The species forages on seagrass which occurs offshore from the port infrastructure. The Proposed Action will only directly impact seagrass habitat through piling activity associated with the construction of the jetty. This will impact 400 m2 of seagrass. It is estimated that approximately 1,059 m2 of seagrass may be additionally impacted by shading caused by the jetty and MOF.

Giant Manta Ray and Reef Manta Ray were not recorded during the marine survey for the project but are considered likely to occur. Giant Manta Rays are generally associated with offshore reefs and islands, although the species has previously been recorded off the coast of Cape Flattery (Armstrong et al. 2019). Reef Manta Ray is often observed in coastal inshore locations around rocky and coral reefs (Marshall et al. 2009). Sighting records compiled by Armstrong et al. (2019) indicates a small population in the Cape Flattery region (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Table 3-6, pp. 53-54). The Proposed Action area encompasses rocky fringing reef habitat which may be a suitable foraging area for these species. The Proposed Action has avoided directly impacting this habitat.

The Proposed Action area is not at the limit of the range of Dugong or manta ray species, nor is it within an area where these species is known to be declining. The Proposed Action is minor in extent and is not considered to contain habitat that is of importance to these species. There is extensive seagrass and reef habitat in the immediate surrounds of the port infrastructure and in the wider Cape Flattery region (Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.3, pp. 82-84). Potential impacts relevant to these species are of minor or negligible significance (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 7, pp. 102-104).

Construction of the jetty will include pile driving and associated activities that can potentially disturb marine animals, particularly marine mammals (whales and dolphins) and turtles due to the underwater noise produced. Underwater noise generated by pile driving can have behavioural impacts such as changes in breathing patterns, changes in vocalisation and avoidance, as well as physiological impacts such as temporary or permanent hearing loss (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.3.7, pp. 87).

Sudden loud, impulsive or impact noises may cause fauna to become startled, which if occurring over the longer term, may affect feeding and breeding behaviour in some species. These impacts are expected to occur to the fauna using the habitats both within and immediately adjacent to the infrastructure. Operations at the marine infrastructure is expected to increase background noise, though this would be less than what is experienced during construction (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Section 5.4.2, pp. 89-90). Noise generation during operation will be associated with:

- Increased vehicle movements
- Increased boat activity
- Increased human activity

Underwater noise associated with piling activities for the jetty would be managed in accordance with the Underwater Piling Noise Guideline (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Table 6-1, pp. 96). During operations noise levels will be monitored periodically and compared to standard guidelines. As a result there is no significant impact anticipated to marine species.

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. *

Marine migratory birds:

The Proposed Action area provides limited habitat value for migratory wader/shorebird species listed as MNES. Most of the species identified are tern species which forage widely including offshore. Any impact will be restricted to the port area and will most likely be restricted to localised impacts during construction. The site may provide some value as a roost site and little value as low tide foraging habitat. There is abundant identical habitat in the region surrounding the JIF. There will be a negligible (if any) impact on these species.

Terrestrial migratory birds:

Potential habitat for a single terrestrial migratory species (Rufous Fantail) will be impacted over the life of the Project. Nevertheless, this is a widespread species and there is abundant identical habitat in the wider region that will remain undisturbed. A single individual was observed and there is no reason to believe the Proposed Action supports important habitat or an ecologically significant proportion of the population. There will be a negligible (if any) impact on these species.

Migratory marine fauna:

The marine waters associated with the Proposed Action provides limited value for migratory marine fauna listed as MNES. Benthic habitat in the disturbance footprint includes seagrass communities which may provide foraging habitat for Dugong. The disturbance footprint of the jetty and MOF infrastructure is relatively minor given the extent of identical habitat in the surrounding area. While migratory marine fauna (such as Dugong, Estuarine Crocodile and inshore dolphins) may transiently occur in the local area associated with the Proposed Action there is no reason these species would be reliant on or use the area for an extended period. Any impacts are likely to only be during the construction period with the species avoiding the area at this time. Mitigation measures will be in place during sensitive works (i.e. piling) with marine fauna spotters and stop-works measures in place.

Shipping movements already occur at Cape Flattery for the existing CFSM port area. Shipping and vessel movements associated with the Proposed Action are not considered to be of a nature (i.e. relatively slow speeds) to cause additional risk to marine fauna.

The proponent considers the Project is not a controlled action with regard to this MNES.

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 Proponent continues to refine the Project design and has already reduced or eliminated impacts to migratory fauna habitats and other MNES as part of this process.

Mitigation measures designed to avoid or reduce impacts of the Proposed Action will be documented in a Construction Environmental Management Plan and Operational Environmental Management Plan. Avoidance and preliminary mitigation measures have been detailed in the relevant sections of Attachment 5-CFS-Terrestrial Ecology Report-Rev2-260922 (Section 6, pp. 64-68), Attachment 6-Marine Baseline and Impact Assessment_V5-0 (Section 6, pp. 93-100) and Attachment 7-Aquatic Baseline and Impact Assessment_V5-0 (Section 6, pp. 79-85).

General Project mitigation measures will include the following:

- Vegetation clearing extent will be clearly demarcated
- Clearing will remove habitats in stages, allowing fauna to move away from disturbed areas
- Fauna spotter catchers and salvaging of habitat features for use in rehabilitation during clearing
- Ongoing habitat rehabilitation to reduce long-term environmental impact (habitat loss)
- Dust suppressed using water trucks/wetting to keep dust related impacts to a minimum
- Fire management regimes will be developed and implemented
- Vehicle wash downs will ensure weeds/seeds are not introduced onto site

Mining for the Project will be carried out in a sequential manner. The layout of the proposed annual mining schedule is provided in Attachment 4-CFS-GBRWHA-RPT-Rev1-141122 (Figure 2, pp. 4). A rehabilitation program will be developed and implemented within the PRCP as required under State approvals. Mine panels will be subject to progressive surface and vegetation rehabilitation with existing flora species as mining moves forward, thereby reducing the extent of exposed soils at any one time. Progressive rehabilitation activities commence from year 2 of operations.

Potential impacts to MNES from the Proposed Action will be avoided where practicable and avoidance measures include the following regarding Project planning and infrastructure siting:

- The disturbance footprint avoids and places a 50 m buffer around the TEC (habitat for Rufous Fantail) and wetlands (habitat for Estuarine Crocodile) occurring within the Proposed Action area
- Project infrastructure has been located in areas to avoid potential impacts to migratory species where possible.
- Marine infrastructure (jetty and MOF) has been located in an area with minimal impact to terrestrial MNES (i.e. migratory waders/shorebirds) and the design has minimised direct impacts to habitat for MNES marine species such as Dugong
- Construction of marine infrastructure will be carried out in the presence of a marine fauna observer with stop-work measures in place (where required)

Other mitigation measures with relevance to marine MNES fauna include:

- In consultation with indigenous landowners the Project has been designed to avoid any impacts to Connies Beach which provides intermittent habitat for several wader/shorebird species listed as MNES
- The marine construction footprint will clearly be delineated with avoidance (or habitat protection) zones established with active monitoring of any incursions
- Noise from underwater piling will be managed following the ‘Underwater Piling Noise Guidelines’ (DPTI 2012)
- Runoff, erosion and sediment control measures will be installed and maintained, as per the requirements outlined in the Project ESCP
- Potential for boat strike will be minimised using methods in the Vessel Traffic Management Plan, and the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (DEE 2017).

Specific mitigation measures in regards to construction piling activities to reduce underwater noise includes (refer Attachment 6-Marine Baseline and Impact Assessment_V5-0, Table 6-1, pp. 96):

- Avoid pile-driving during times when marine mammals are likely to be breeding, calving or resting in nearby biologically important areas.
- All team members involved in pile driving should be briefed on marine mammal identification
- A suitably trained person should continually monitor for marine mammals during piling activities
- Pre-start procedure – the presence of marine mammals should be visually monitored by a suitably trained team member for at least 30 minutes before commencement of piling
- Soft start procedure – If no marine mammals have been sighted during the pre-start then piling can commence with impact energy increased gradually over a 10 minute period. The soft start procedure should also be used after long (30min) breaks in piling activity.
- Normal operating procedure – If no marine mammals have been sighted during the soft start piling may be conducted at full impact energy. Trained crew members should continually monitor for marine mammals during this time.
- Stand-by operations procedure If a marine mammal is sighted within the observation zone during the soft start or normal operation procedures, the operator of the piling rig should be placed on stand-by to shut-down the piling rig. An additional trained crew member should continuously monitor the marine mammal in sight.
- Shut-down procedure – If marine mammals are sighted within or are about to enter shut-down zone (within 100m) piling should stop immediately. If marine mammals are seen to leave the impact zone or no marine mammals have been observed for 30 mins since shut-down, piling activities may re-commence using the soft-start procedure.

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

The Proponent considers offsets are not required for this MNES.

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 proposed Action does not meet the definition of a nuclear action under section 22 of the the EPBC Act.

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.

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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 proposed Action is approximately 20 km west of the Commonwealth Marine Area, as such it will not cause a direct or indirect impact.

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 will not have a direct impact as it is outside the GBRMP.

Indirect impacts to the GBRMP associated with shipping movements have been considered. There will be no new shipping channels required to be created for shipping movements of the proposed Action.

Shipping frequency will be approximately one ship every two weeks, which represents 0.3% of existing shipping numbers (based on the current class of vessel used) (refer Attachment 1-Project Description-Rev0-131022, pp. 1). Based on this there is unlikely to be any indirect impact on the GBRMP.

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. *

This matter is not relevant to the proposed Action as it is not a 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.

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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. *

This matter is not relevant to the proposed Action as it is not within or in the vicinity of Commonwealth Land. The closest Commonwealth Land is Daarrba (Cape York Peninsula Aboriginal Land), approximately 24 km south-west of the Proposed Action.

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.

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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 proposed Action is is not overseas and will therefore not impact Commonwealth heritage places 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 location of the mine itself is restricted to the location of the resource. There is no feasible alternative location available. Given the project is located adjacent to an existing silica mine (the CFSM project) it is considered the project is consistent with existing land use in the region and is not proposed to occur in an undeveloped area. The design of the project has been flexible and alternative design features have been incorporated in consultation with traditional landowners and in order to avoid or minimise impacts to MNES. This includes the following:

- Placing a 50 m buffer from disturbance to the TEC and wetlands occurring within the MLA
- Avoiding any disturbance to or close to Connies Beach, which provides habitat for limited numbers of wader/shorebird species listed as MNES
- Re-designing the port infrastructure (jetty and MOF) to avoid direct impacts (from piling) to the fringing reef offshore from the port

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Attachment 1 - Project Description	Document	Description of the proposed action and extent

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

#1.	Attachment 2- Environment Policy	Document	Metallica Minerals Environment Policy

1.2.7 Public consultation regarding the project area

#1.	Attachment 3-Indigenous and Community Relations Policy	Document	Metallica Minerals Indigenous and Community Relations Policy

3.1.1 Current condition of the project area's environment

#1.	Attachment 8-References	Document	List of references for whole referral.

3.1.3 Natural features, important or unique values that applies to the project area

#1.	Attachment 4 - GBR World Heritage Property and National Heritage Place Assessment	Document	Assessment of GBR World Heritage Property and National Heritage Place in relation to the Cape Flattery Silica Sands Project

3.2.1 Flora and fauna within the affected area

#1.	Attachment 5-Terrestrial Ecology Assessment	Document	Assessment of terrestrial ecology values, potential impacts and mitigation measures for the Cape Flattery Silica Sands project
#2.	Attachment 6-Marine Ecology Baseline and Impact Assessment	Document	Assessment of marine ecology values, potential impacts and mitigation measures for the Cape Flattery Silica Sands project
#3.	Attachment 7-Aquatic Baseline and Impact Assessment	Document	Assessment of aquatic ecosystem values, potential impacts and mitigation measures for the Cape Flattery Silica Sands project

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	54169579275
Organisation name	Epic Environmental
Organisation address	Level 17, 95 North Quay, Brisbane QLD, 4000
Representative's name	Maria Mahon
Representative's job title	Senior Environmental Scientist
Phone	0417793127
Email	mmahon@epicenvironmental.com.au
Address	Level 17, 95 North Quay, 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. *

By checking this box, I, **Maria Mahon of Epic Environmental**, 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	52138608894
Organisation name	Cape Flattery Silica Pty Ltd
Organisation address	Terrace Office Park, Level 1, North Tower, 527 Gregory Terrace, Fortitude Valley QLD 4006
Representative's name	Nicholas Villa
Representative's job title	General Manager / Site Senior Executive
Phone	0488596581
Email	nvilla@metallicaminerals.com.au
Address	Terrace Office Park Level 1, North Tower, 527 Gregory Terrace Fortitude Valley QLD 4006

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, **Nicholas Villa of Cape Flattery Silica 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, **Nicholas Villa of Cape Flattery Silica 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. *