Construction of the proposed Mackay Port Access Road – Section 3

Application Number: **02825** Commencement Date: **17/03/2025** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Construction of the proposed Mackay Port Access Road – Section 3

1.1.2 Project industry type *

Transport - Land

1.1.3 Project industry sub-type

Road

1.1.4 Estimated start date *

09/01/2034

1.1.4 Estimated end date *

31/10/2036

1.2 Proposed Action details

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

Project Overview

The Department of Transport and Main Roads (TMR) is undertaking the Mackay Port Access Project (MPAP) to develop the Mackay Port Access Road (MPAR), connecting the Bruce Highway to the Port of Mackay to reduce interactions between local and regional traffic. This would reduce congestion within Mackay and improve local and regional supply chain connectivity.

MPAR is jointly funded by the Australian and Queensland governments, with the Queensland Transport and Roads Investment Program (QTRIP) 2025-26 to 2028-29 outlining funding to improve freight efficiency, safety and connectivity for the Mackay and broader Bowen Basin community.

The MPAR planning is divided into three (3) distinct sections:

- Section 1 (Ring Road/Glenella Section): Extending from the Mackay Ring Road to approximately 20m east of Glenella-Richmond Road.
- Section 2 (Glenella/Mt Pleasant Section): Extending from approximately 20m east of Glenella-Richmond Road to approximately 600m west of the Glenpark Street overpass.
- Section 3 (Bassett Basin Section): Extending from approximately 600m west of the Glenpark Street overpass to Harbour Road.

MPAR was referred to the Department of Agriculture, Water and the Environment (DAWE) in 2020 under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for potential significant impacts to Matters of National Environmental Significance (MNES), specifically the water mouse (*Xeromys myoides*). It was subsequently determined as not a controlled action (EPBC 2020/8783).

A re-referral is being undertaken due to subsequent changes to the Project design and footprint. The MPAR has since been divided into the three sections described above to facilitate a potential staged development. The locality plan of the entire MPAR has been provided in **Att A.**

Project Objectives

The MPAR is the final component in a series of strategic infrastructure projects designed to improve connectivity between major freight hubs and key regional economic centres. Economic growth in the Mackay region had long been constrained by poor accessibility, deteriorating levels of service on the Bruce Highway and Peak Downs Highway, and limited access to the Port of Mackay.

The Bassett Basin Section (Section 3) is the proposed action for this referral and will hereafter be referred to as the ‘Project’. It is intended to be constructed after completion of Section 1 and Section 2 of the MPAR.

Construction of the Project intends to deliver the following outcomes:

- Improved connectivity and freight efficiency between the industrial centres (Paget, Rosella, Racecourse Mill) and the Port of Mackay, with reductions in peak journey times.
- Improved commuter connectivity between homes and jobs, alleviating urban congestion.
- Reduced congestion within Mackay strengthening local supply chain connectivity.
- Increased safety through freight traffic travelling on more appropriate routes; and
- Minimising impacts on urban and agricultural areas through the use of the pre-established multi-modal transport corridor.

Project Features

Key features of the Project include:

- A two-lane, 3.5km single carriageway extending east to Harbour Road. The proposed alignment will run parallel with the Queensland Rail (QR) Harbour Rail corridor, passing under the existing

Glenpark Street Overpass, and deviating away from the QR Harbour Rail corridor after 2km. It will then run adjacent to the western and southern boundaries of the Bayersville Landfill before connecting with Harbour Road.
- A 600m bridge structure alongside Gooseponds Creek.
- A 300m bridge structure across Vines Creek.
- Several series of culvert banks that include low-level barrels within defined channels to promote fish passage and recharge the wetlands to the north of the QR Harbour Rail corridor, and high-level barrels to accommodate south-to-north flood water conveyance for more extreme wet weather events.
- A 70m diameter dual lane roundabout at Harbour Road.

Project Activities

The proposed activities to complete the Project are expected to include:

- Establishing site offices in suitable locations.
- Constructing temporary access tracks.
- Establishing and maintaining erosion and sediment control devices.
- Clearing and grubbing works.
- Topsoil stripping.
- Stockpiling and laydown of materials.
- Transportation and hauling of excess spoil and waste materials off-site.
- Transportation and hauling of construction materials on-site.
- Ground surface and foundation treatments.
- Construction of embankments.
- Construction of bridging structures (Gooseponds and Vines Creek).
- Construction of drainage structures and water quality treatment devices.
- Construction of road surfaces and finishing elements, including road furniture, signs and line marking.
- Minor demolition works at the existing Glenpark Street Overpass.
- Realignment of existing footpaths along Harbour Road.
- Landscaping and rehabilitation activities.
- Clean up and restoration of areas used during construction, including areas used for storage of plant and equipment.
- Delivery of environmental offsets and initiatives.

The Project will also involve additional developments required to facilitate construction. These include:

- Potential service relocations (i.e. sewer) within the Bassett Basin.
- Upgrades to local roads such as Coles Road, Norris Park Access Road, Ambrose Way and Valley Street.
- Realignment of existing active transport routes.

Project Area and Disturbance Footprint

The Project is located approximately 3.5km north of the Mackay CBD, within the urban area in Mackay, mostly aligned in an east-west direction. It runs through the suburbs of Beaconsfield, Andergrove and North Mackay towards Mackay Harbour. It intersects Goosepond Creek and Vines Creek watercourses.

The total Project area, based on the current concept design, is 46.90ha. This Project area includes a conservative Disturbance footprint (26.57ha), as well as an Avoidance area (3.78ha). The remaining Project area is a combination of a buffer zone and potential ancillary locations.

The buffer zone and the potential ancillary locations have been included in the Project area to accommodate future design development. This includes further consideration of temporary erosion and sediment control measures and temporary access requirements during construction. Through ongoing design development and engagement activities, it is anticipated that a balanced outcome will be reached that carefully considers competing requirements and significantly minimises the extent of disturbances within the Project area.

Project Tenure

Tenure associated with the Project area is a combination of road reserve, freehold, and State land. Freehold and State parcels will need to be converted to road reserve for the Project.

The QR Harbour rail corridor adjacent to the Project area is leasehold. There are also multiple Mackay Regional Council managed reserves (McMahon Street Reserve, Sapphire Court Reserve, Grendon Street Reserve and Bayersville Tip Reserve) and sports precincts (Lions Soccer Club, Quarry Hill Rugby Union) immediately adjacent to the Project area.

An indicative corridor for the Project is nominated as a 'Future State Road' within Mackay Regional Council's Planning Scheme. An indicative corridor is also identified as a 'Future State Transport Corridor' within the Queensland Government's Development Assessment and State Planning Policy interactive mapping system.

Impacts on MNES

The potential for direct and indirect impacts to MNES from the Project is addressed in Section 4 of this referral.

In summary, the Project has the potential to have a significant direct impact on the following MNES:

- Threatened Species and Ecological Communities
  - 10.39ha of potential habitat and 4.56ha of marginal habitat for the water mouse (*Xeromys myoides*) within the Disturbance footprint.

The Project is not anticipated to have a significant direct or indirect impact on the following MNES:

- Threatened Species and Ecological Communities
  - Grey-headed flying fox (*Pteropus poliocephalus)* foraging and roosting habitat
  - Eastern curlew (*Numenius madagascariensis*) foraging habitat
  - White-throated needletail (*Hirundapus caudacutus*) hunting habitat
  - Marine turtle foraging habitat
- World Heritage Area – Great Barrier Reef
- National Heritage – Great Barrier Reef
- Great Barrier Reef Marine Park
- Migratory Species
  - Migratory shorebirds and wader foraging habitat
  - Fork-tailed swift (*Apus pacificus*) hunting habitat
  - Eastern osprey (*Pandion haliaetus cristatus*) hunting habitat
  - Glossy ibis (*Plegadis falcinellus*) foraging habitat
  - Estuarine crocodile (*Crocodylus porosus*) nesting and feeding habitat

Additional Works

The following activities do not form part of the Project, the proposed action for this referral.

1. Surveys and investigations undertaken by TMR necessary to inform environmental assessment and project design. These include but are not limited to geotechnical surveys, installation of groundwater monitoring bores, contaminated land and acid sulphate soils investigations, ecological surveys, and pot-holing surveys for public utilities within the Project area. These will be sited to avoid direct and indirect impacts to MNES, and assessed via EPBC Act self-assessment where necessary prior to commencing.
2. Independent activities occurring proximate to the proposed action. These may include business as usual maintenance works on the existing QR Harbour Rail corridor and on existing TMR infrastructure within the Project area.
3. Works by other entities. These may include public utility plant relocation and installation works undertaken by utility entities and Mackay Regional Council within the Project area.
4. Potential offset locations. Offset locations for the Project will be identified and assessed within a Biodiversity Offsets Strategy and/or Management Plan during future design stages.

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

Yes

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

No

1.2.4 Related referral(s)

EPBC Number	Project Title
2020/8783	Mackay Port Access Road

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

Project Background

Economic growth in the Mackay region has long been constrained by poor accessibility, deteriorating levels of service on the Bruce Highway and Peak Downs Highway, limited direct access to the Port of Mackay and inefficient connectivity between the Port and the region's primary industrial and commercial hub at Paget. The MPAR intends to improve this freight connectivity, protect national network function, enhance safety and amenity, and strengthen connections between homes and jobs.

The MPAR follows and builds upon the success of several major local infrastructure projects as shown in **Att B**. This includes the Mackay Ring Road and Mackay Ring Road Bald Hill Connection Road Project. A brief description of these two projects and their relevance to the proposed MPAR is provided below.

Mackay Ring Road: The Mackay Ring Road, which was completed in 2020, is a diversion of the Bruce Highway from the Stockroute Road roundabout in the south through to the Bruce Highway, north of Mackay. The Mackay Ring Road was assessed as having no significant impacts to MNES.

The Mackay Ring Road is now a key component of the region’s freight network that supports supply chain efficiencies by minimising the need for freight vehicles to travel through Mackay’s built-up areas. This project has significantly reduced congestion and enhanced safety on the Bruce Highway, however its full benefits will not be realised until the completion of the MPAR, which will further improve regional connectivity and supply chain efficiency.

Mackay Ring Road Bald Hill Connection Road Project: The Mackay Ring Road Bald Hill Connection Road Project is a continuation of the Mackay Ring Road. It involves the upgrading of a 1km section of the Bruce Highway from a 2-lane undivided carriageway to a 4-lane divided carriageway. It also involves building three new overpasses over the operating QR Harbour Rail corridor for the future MPAR Section 1 road alignment, as well as a realignment of the Bald Hill Road and Bruce Highway intersection. The Mackay Ring Road Bald Hill Connection Road Project was assessed as having no significant impacts to MNES.

Construction of the Mackay Ring Road Bald Hill Connection Road Project is currently nearing completion.

The Larger Action

As shown in **Att A**, the MPAR is split into three components as a part of an expected staged development:

- MPAR Section 1 - Ring Road/Glenella Section (related action).
- MPAR Section 2 - Glenella/Mt Pleasant Section (related action).
- MPAR Section 3 - Bassett Basin Section (referred action).

Related Actions

MPAR Section 1: This component of the MPAR is currently in the detailed design stage. It includes the following elements:

- Approximately 2.3km of two-lane rural highway extending from the Mackay Ring Road to Glenella Richmond Road that will be constructed with a design flood immunity of 1 in 50 years. This new west to east rural highway will link the Mackay Ring Road to local roads via a series of at-speed on/off ramps. This will enable commuter and freight vehicles to travel north via the Bruce Highway or south along the Mackay Ring Road, where they can choose at a roundabout south of Mackay to continue either south via the Bruce Highway or west via the Peak Downs Highway.
- A T-intersection and short connection road, located west of the new overpass over the MPAR and QR Harbour Rail corridor, that will provide access to Glenella-Richmond Road via a roundabout.

The MPAR Section 1 road corridor is located within both rural and urban environments and is bound by the QR Harbour Rail corridor to the north.

MPAR Section 2: This component of the MPAR is currently in the concept phase. It includes the following elements:

- Approximately 4km of two-lane rural highway extending eastward from MPAR Section 1 to a T-intersection and short connector road, ending at a new roundabout. This roundabout will link upgraded extensions of local roads, including Valley Street, Ambrose Way, and Norris Park Access Road, located just west of Glenpark Street. The road will be constructed with a design flood immunity of 1 in 50 years.
- The new rural highway will pass under an existing overpass at Norris Road.
- Three new overpasses are required to carry Pioneer Street and Mackay-Bucasia Road over the new rural highway and QR Harbour Rail corridor.

The MPAR Section 2 corridor traverses a predominantly urban environment and is also generally bounded to the north by the QR Harbour Rail corridor.

Referred Action

Section 3 of the MPAR (the Project/Proposed action) has been separated from Sections 1 and 2 for the purposes of this referral for the following reasons.

A stand-alone action

The related actions (Section 1 and 2) traverse a largely cleared landscape and have been assessed as having no significant impacts to MNES. Once constructed, these assets can operate independently (indefinitely) without delivery of the referred action (Section 3). It is therefore considered a stand-alone action.

The referred action and the related action are not co-dependent

Construction of the related actions (Section 1 and 2) will provide significant benefits irrespective of whether the referred action (Section 3) is ultimately delivered.

Completion of Section 1 will:

- Provide an alternate route between the Northern Beaches, Mackay CBD and Paget industrial precinct.
- Alleviate congestion on Mackay-Bucasia Road during peak periods and reduce pressure on surrounding local government roads.
- Address a known safety concern of the Glendaragh Road/Bruce Highway intersection, located north of the Mackay Ring Road connection to the Bruce Highway.

Completion of Section 2 will:

- Provide an alternate route for several residential suburbs in North Mackay, including Beaconsfield, Andergrove, and Eaglemount Heights, to access the Mackay Ring Road via the more direct MPAR, thereby alleviating peak hour congestion on surrounding major and minor collector roads.
- Enhance the connectivity and resilience through the extension of Norris Park Access Road, Ambrose Way and Valley Street to a circulating roundabout that connects to the MPAR. This improves traffic dispersal and creates alternate routes for local travel, particularly during school drop-off and pick-up times, where significant traffic volumes are generated due to the close proximity of Mackay North State High School and the Mackay Christian College’s junior and senior campuses.
- Reduce pressure on Malcolmson Street, a key regional major collector road, by redistributing commuter and freight traffic toward the higher capacity MPAR and Mackay Ring Road, enabling more efficient regional travel to and from the Paget industrial precinct and the broader state-controlled road network.

- Enable a safer and more integrated active transport network by upgrading local road extensions to link with the MPAR. This creates an east–west corridor connecting residential suburbs with schools, community facilities, and other cycle and pedestrian infrastructure.

It is therefore considered that the related action and the referred action are not co-dependent.

The timeframe between the referred action and the related action

Construction commencement of the related actions (Section 1 and 2) and the referred action (Section 3) is currently undetermined and is largely subject to further funding commitments. Timeframes between the referred action and the related actions is therefore unknown and there is potential for a lengthy period of time between the actions.

Geographic relationship between the referred action and the related action

The related actions (Section 1 and 2) and referred action (Section 3) would connect in the urban area of North Mackay. The related actions are located within the residential suburbs of Glenella and Mount Pleasant while the referred action is predominately located within the estuarine Bassett Basin. Due to the significant differences in land use, environmental characteristics, and planning contexts, the areas affected by the related and referred actions are considered to be geographically separate and distinct.

Overall plan or vision for the larger action

The MPAR intends to not only improve freight efficiency to the Port of Mackay but also increase local connectivity for the Mackay community. This benefit will be progressively realised as each section is constructed and becomes operational. This approach is consistent with the typical goals of staged delivery of major transport infrastructure, including realising social benefits sooner, balancing market capacities and resourcing capabilities, and addressing risks associated with financial feasibility.

Authorisation of the actions

The related and referred actions are not authorised by a single local government or State permit, licence or other authorisation.

Funding source for the action

The MPAR is jointly funded by the Australian and Queensland governments. The current funding commitment is expected to support the delivery of Section 1 only. It is anticipated that a similar joint funding arrangement would be pursued to support the construction of Section 2, followed by a separate funding arrangement for Section 3.

Ability to achieve the objectives of the EPBC Act

The related actions (Section 1 and 2) traverse a largely cleared landscape and have been assessed as having no significant impacts to MNES. Separating the referred action (Section 3) from these related actions would not result in inadequate consideration of the staged developments' impact on MNES.

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

Relevant Commonwealth Legislation

This referral is being undertaken to determine whether approval for Project under the EPBC Act is required. Ecological assessments have determined that the proposed action has the potential to have a significant impact on MNES and therefore may be considered a controlled action.

Relevant State Legislation

State approvals/permits relevant to the ecological values at the location of the Project include:

- A development approval under the *Fisheries Act 1994* is required for undertaking operational works for constructing or raising waterway barrier works.
- A development approval under the *Fisheries Act 1994* is required for the removal or destruction of marine plants.
- A development approval under the *Coastal Protection and Management Act 1995* is required for development (high-impact earthworks) within a coastal management district.
- An Environmental Authority (ERA-16) under the *Environmental Protection Act 1994* will be required for undertaking a material change of use for dredging greater than 1,000t of material. A quarry material allocation may be required.
- Delivery of a counterbalancing environmental offset under *Environmental Protection Act 1994* may be required for development (high-impact earthworks) within a wetland protection area.
- A Soil Disposal Permit under the *Environment Protection Act 1994* may be required for the removal and disposal of contaminated soils.
- A Flying-fox roost management permit under the *Nature Conservation Act 1992* is required for the management and dispersal of flying-foxes at the Glenpark St roost.
- A low risk species management program (SMP) under the *Nature Conservation Act 1992* is required for tampering with animal breeding places for least-concern animals.
- A high risk species management program under the *Nature Conservation Act 1992* is required for the tampering of colonial breeding species that cohabit the Glenpark St flying fox roost. These species include the Australian white ibis (*Threskiornis molucca*), great egret (*Ardea alba*) and intermediate egret (*Ardea intermedia*).
- Revocation of a portion of the Bassett Basin Fish Habitat Area under the *Fisheries Act 1994* is required.
- A development application and resource allocation authority under the *Fisheries Act 1994* may be required for early works within the Bassett Basin Fish Habitat Area.
- Requirements for state offsets under the Queensland environmental offsets framework will be required for significant residual impacts to various Matters of State Environmental Significance (MSES).

Relevant Local Legislation

TMR are exempt from assessment under local planning schemes. TMR has been consulting with Mackay Regional Council on a range of matters, including land acquisition requirements, potential impacts on the broader local road network due to traffic rerouting associated with the new west–east connection, acceptance of concept designs for proposed local road upgrades, provision for water and sewer infrastructure to support future development, and the assessment and management of hydraulic constraints and environmental sensitivities.

Infrastructure Sustainability Rating

The Project will obtain a Design and As-Built Infrastructure Sustainability Rating using the Infrastructure Sustainability Council of Australia (ISCA) assessment process.

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

Public and stakeholder consultation has been undertaken during previous and current phases of the Project's lifecycle as summarised below.

Report to the Co-Ordinator General, Multi Modal Corridor (TMR, 1977)

In 1977, a feasibility study was undertaken by Ullman and Nolan to determine the desirability, environmental acceptability and method of implementation of a multi-modal transport corridor (MMC) to link Bakers Creek, Erakala and the Mackay Harbour. Four routes were considered within the study - refer to **Att C** for a digitalised version of the assessed options and Section 4.3.8 of this referral for a detailed summary. Submissions from 14 organisations were requested. These organisations included local authorities, progress associations, conservation groups, and parties involved in the local sugar industry.

Although the community views varied between organisations, they contributed to the eventual decision to choose Scheme C as the route for the MMC.

Mackay Urban Congestion Study (TMR, 2010)

In 2010, extensive community consultation was undertaken as part of a Mackay Urban Congestion Study. This process sought feedback on the proposed plan of upgrades to the existing Bruce Highway and the potential construction of a new alternative route west of the existing highway. Nearly 200 public submissions were received, with many respondents in favour of a new alternative highway alignment of the Bruce Highway in some form.

Options Analysis for Mackay Ring Road Stage 1 and 2 (TMR, 2012)

During the Options Analysis stage for the Mackay Ring Road (previously referred to as the Mackay Ring Road Stage 1) and the MPAR (previously referred to as the Mackay Ring Road Stage 2), consultation focussed on identifying and obtaining input from targeted and impacted key stakeholders. This consultation consisted largely of face-to-face meetings in an open format. It concluded that containing the MPAR alignment within the pre-established MMC was still preferable.

Mackay Ring Road Planning Study (TMR, 2013)

The broader community was engaged in 2013 during delivery of the Mackay Ring Road Planning Study to further evaluate support for the Mackay Ring Road and the MPAR. This consultation focussed on the preferred alignment of the Bruce Highway around Mackay. Most of the communication engagement activities were conducted between 21st May and 19th June 2013 and included public information sessions, information displays, fact sheets, individual meetings, industry group briefings, and a project website/hotline/email.

This consultation resulted in relatively positive feedback, reflecting an acceptance and understanding of the requirement for a ring road to improve safety, reduce congestion and improve connectivity. Results concluded:

- 80% of respondents considered the Mackay Ring Road/MPAR as the highest priority for improving the Mackay road network.
- 50% of respondents identified that the most important issue to be addressed is the removal of heavy vehicles and "through traffic" from the Bruce Highway in urban areas.
- 75% of respondents indicated they would likely use the Mackay Ring Road/MPAR on a daily or weekly basis.

Key issues raised in the consultation included concerns relating to noise impacts, land acquisition, the amount of cane land affected by the proposed route and the uncertainty around funding for the projects.

Mackay Port Access Road Business Case (TMR, 2019 - Present)

A wide range of community members and organisations have been targeted during public consultation undertaken as a part of the current business case stage.

Landowner consultation: The Bassett Basin is located within primarily State and local government-controlled land parcels. The relevant government entities have been consulted regarding future land take provisions, local traffic, underground services, environmental sensitivities, and hydrologic constraints.

Consultation with private landowners adjacent to the Project area is also ongoing.

Bassett Basin Fish Habitat Area (FHA) revocation consultation: TMR is proposing to revoke around 20ha from the 650ha declared Bassett Basin FHA to allow for construction of the Project. Refer to **Att E**.

TMR is proposing to mitigate the revocation of this area through the addition of quality, connected areas of fish habitat to the FHA. TMR is proposing to add eight (8) additional areas, totalling approximately 42.5ha, to the FHA. The additional areas have been assessed as being of suitable ecological value to offset the revoked fish habitats. Rehabilitation activities within the FHA are also proposed to occur.

TMR has undertaken general and targeted stakeholder consultation regarding the FHA revocation proposal. This occurred between the 6th February and 7th March 2025. Submissions were received via the Project email and the Project website. A total of 36 submissions were received via the website, with an additional 13 submissions provided via email. To further raise awareness, a geo-targeted TMR social media post ran for a total of 17 days, generating 74 comments and 2,273 impressions.

Comments on the social media platform were relatively balanced, whereas submissions received through the website and email expressed more concern about the impacts of the proposal. These responses generally focused on the below themes:

- Loss of mangrove habitat.
- Perceived reduction in fish nursery areas.
- Questions regarding quality of the proposed land compensation areas.
- Altered tidal flushing patterns.
- Fish passage continuity.
- Flood and storm surge risk and changes to flood patterns.
- Cumulative impacts of climate change – loss of vegetation that stores carbon.
- Loss of habitat.
- Reservations regarding continued investment in infrastructure perceived to support fossil fuel usage.

Responses that supported the revocation acknowledged the proposal's approach to aligning the MPAR with areas already affected by existing infrastructure, such as the QR Harbour Rail corridor and the Bayersville Landfill, thereby minimising new disturbance. These submissions generally recognised the importance of regional infrastructure improvements.

Broader regional considerations and constructive suggestions were also provided. Topics included:

- Prioritisation of other congestion points on the transport network (e.g. Mackay Bucasia Road).
- Strong emphasis on the need for ongoing monitoring of fish habitat and fish passage post construction.
- Suggestions for additional land compensation sites.
- Additional ideas which included fish stocking, installing artificial fish habitat structures and land buyback programs.

A copy of the Consultation Summary Report is available via the Project website. All submissions are currently being carefully reviewed and considered as part of the finalisation of the FHA Revocation Assessment Study and broader environmental considerations for the Project.

Intergovernmental consultation: Consultation has occurred with intergovernmental departments to obtain advice, understand concerns, and mitigate impacts. Formal discussions are ongoing with the following authorities:

- State Assessment and Referral Agency (SARA) to determine legislative triggers under the *Planning Act 2016*. Referral agencies that have also been consulted included the Department of Primary Industries (DPI) and the Department of Environment, Tourism, Science and Innovation (DETSI) impact assessment teams.
- DETSI Wildlife Operations Team for impacts to the Glenpark St flying fox colony.
- DETSI Marine Protected Area Policy team and DPI for the proposed revocation of a portion of the Bassett Basin Fish Habitat Area.
- Department of Local Government, Water and Volunteers (DLGWV) regarding proposed watercourse diversions.
- North Queensland Bulk Ports (NQBP) for strategic planning assistance including freight assessments studies, traffic modelling, and environmental offset opportunities.
- QR regarding the adjacent QR Harbour rail corridor, including safe access arrangements and mutual protection and maintenance requirements for both assets.
- Mackay Regional Council to determine impacts on local road networks and water/sewer infrastructure.

Transport Industry consultation: The Project team has met with key impacted transport industries.

Traditional owner consultation: The Yuwibara People are the Native Title Holders and Cultural Heritage Party for the Project area. Native title is held by the Yuwi Aboriginal Corporation (YAC). Consultation with the Yuwibara (Yuwi) People regarding the Project has occurred and will continue during future project stages. Refer to **Att P** for further information (**Att P** will not be made publicly available due to cultural sensitivity reasons).

Broader community consultation: In addition to the aforementioned consultation, a Project website has been maintained to provide Project updates throughout the business case: https://www.tmr.qld.gov.au/projects/mackay-port-access-bruce-highway-to-mackay-slade-point-road-stage-1.

Further broadscale community consultation will occur in the preliminary and detailed design stages of the Project.

1.3.1 Identity: Referring party

Privacy Notice:

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

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

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

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Alternatively, email us at privacy@dcceew.gov.au.

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	39407690291
Organisation name	Department of Transport and Main Roads
Organisation address	4000 QLD

Referring party details

Name	Mark Weatherley
Job title	Project Director
Phone	0749518555
Email	mackay.environment@tmr.qld.gov.au
Address	Floor 2 Mackay Government Office Building, 44 Nelson Street, Mackay Qld 4740

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? *

Yes

Person proposing to take the action organisation details

ABN/ACN	39407690291
Organisation name	Department of Transport and Main Roads
Organisation address	4000 QLD

Person proposing to take the action details

Name	Mark Weatherley
Job title	Project Director
Phone	0749518555
Email	mackay.environment@tmr.qld.gov.au
Address	Floor 2 Mackay Government Office Building, 44 Nelson Street, Mackay Qld 4740

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. *

Person Proposing the Action

The Project is being delivered by TMR. TMR are highly experienced in the planning, delivery and operation of major transport infrastructure projects. TMR's core role is the planning, building and maintaining of Queensland's road, rail, freight and maritime infrastructure.

TMR has an excellent track record in coordinating environmental assessments and delivering environmentally sensitive transport solutions, evidenced through recently completed major infrastructure projects such as the Eton Range Realignment Project and the Townsville Ring Road Stage 5.

TMR is committed to the principles of sustainable development and environmental stewardship, including the protection of the environment and striving to minimise adverse impacts of operations on the environment and the local community.

TMR has not been subject to any proceedings under a Commonwealth or State law for the protection of the environment or conservation and sustainable use of natural resources and therefore has a satisfactory record of responsible environmental management. TMR is committed to transparent and meaningful engagement with planning and environmental authorities with respect to its projects and activities.

Previous Referred Actions

Recent actions previously referred under the EPBC Act by TMR include:

- 2015/7552 Eton Range Realignment Project
- 2019/8573 Bruce Highway - Smiths Gap Overtaking Lane and Fauna Crossing
- 2020/8625 Townsville Ring Road 5
- 2020/8628 Rockhampton Ring Road
- 2020/8783 Mackay Port Access Road (previous referral)
- 2020/8803 Beerburrum to Nambour Rail Upgrade Project the B2N Project
- 2021/9116 Kin Kin Road - Transport - Road widening
- 2021/9120 Six Mile Creek Bridge Replacement
- 2022/9181 Rockhampton - Yeppoon Road Upgrade
- 2022/09348 Loganlea Station Relocation and Park 'n' Ride Expansion
- 2022/09439 Logan and Gold Coast Faster Rail
- 2023/09701 Warrego Highway / Mount Crosby Road Interchange Upgrade
- 2024/09800 Gateway Motorway (Bracken Ridge to Pine River) Upgrade
- 2024/09821 Bruce Highway (Gateway Motorway to Dohles Rocks Road) Upgrade
- 2024/09886 Bruce Highway (Gympie – Maryborough), Tiaro Bypass, construct four lane bypass
- 2024/09896 Gairloch Safety Realignment (Bruce Highway)
- 2024/09972 Direct Sunshine Coast Rail Line

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

Environmental Sustainability Policy

TMR recognises the need for environmental compliance as part of its core business and has an Environmental Sustainability Policy, refer to **Att D**. This policy requires TMR to undertake environmental management activities to support environmental conservation through corporate strategies, documents, assessments, and continual oversight.

Environmental Planning Framework

TMR follows its own Environmental Management System as detailed in its Environmental Processes Manual that is freely available online via TMR's website - www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Environmental-processes-manual. This manual is based on the Plan-Do-Check-Act Model in AS/NZS ISO 14001:2016 and is scalable and adaptable for all TMR projects.

TMR also has its own Technical Standards (MRTS suite) that it follows. These documents are prepared in alignment with State and Commonwealth legislative requirements and are all freely available online via TMR's website - www.tmr.qld.gov.au/business-industry/technical-standards-publications/specifications/3-roadworks-drainage-culverts-and-geotechnical.

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	39407690291
Organisation name	Department of Transport and Main Roads
Organisation address	4000 QLD

Proposed designated proponent details

Name	Mark Weatherley
Job title	Project Director
Phone	0749518555
Email	mackay.environment@tmr.qld.gov.au
Address	Floor 2 Mackay Government Office Building, 44 Nelson Street, Mackay Qld 4740

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	39407690291
Organisation name	Department of Transport and Main Roads
Organisation address	4000 QLD
Representative's name	Mark Weatherley
Representative's job title	Project Director
Phone	0749518555
Email	mackay.environment@tmr.qld.gov.au
Address	Floor 2 Mackay Government Office Building, 44 Nelson Street, Mackay Qld 4740

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.

Same as Referring party information.

Confirmed Proposed designated proponent's identity

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

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

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

No

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

No

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

No

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

No

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

No

1.4 Payment details: Payment allocation

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

Person proposing to take the action

2. Location

2.1 Project footprint

Project Area: 47.01 Ha **Disturbance Footprint:** 26.63 Ha **Avoidance Area:** 3.79 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

A 3.5km corridor, aligned parallel to the existing QR Rail Line in North Mackay

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? *

Tenure

Current land tenure within the Project area includes freehold, leasehold, reserve, water, State and Road parcels as outlined below. Resumptions for the Project will be undertaken during future Project stages. Much of the Project area will ultimately be gazetted as road reserve.

Freehold

- Lot 1 on AP22276
- Lot 101 and 102 on SP115933
- Lot 2 on RP899734
- Lot 1 on RP736456
- Lot 900 on SP261324
- Lot 3 on RP736456
- Lot 4 on RP736458

Road reserve

- Harbour Road
- Glenpark Street
- Coles Road
- Ambrose Way

Lands Lease - Rail

- Lot 41 on SP130198
- Lot 42 on SP130199

State Land

- Lot 257 on C12426
- Lot 25 on SP143212
- Lot 5 on USL26860
- Lot 11 on USL26861
- Lot 14 on USL26861

Water

- Vines Creek

Reserve

- Lot 501 on CI3818
- Lot 990 on SP230942
- Lot 1 on CP858174
- Lot 375 on CP858174
- Lot 266 on CI4237
- Lot 267 on CI4237

3. Existing environment

3.1 Physical description

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

Existing Environment

Project area

The Project area is predominantly low-lying ground (<5m AHD) in tidal zones comprised of mud/sandy mud, mangrove swamps and estuarine deposits. The major tidal waterways intercepted by the Project area are Goosepond and Vines Creek. Goosepond Creek originates from Janes Creek in the west and joins Vines Creek after passing through the suburbs of North Mackay. It becomes tidal before discharging into the Bassett Basin and ultimately into the Pioneer River and the Pacific Ocean.

The Project area contains sections of Ambrose Way, Glenpark Street, Coles Road, Harbour Road and Mount Bassett Cemetery Road. These local roads will require upgrades as a part of the Project.

The Project area also contains sections of the QR Harbour Rail corridor, although no upgrades to the existing rail infrastructure are proposed as a part of the Project.

Adjacent to Project area

North

Mostly consists of marsh/wetland areas with a mix of residential, industrial, and agricultural land uses as well. Key features include:

- Linear infrastructure including public local roads and the QR Harbour Rail corridor.
- Keeleys Road wetland complex.
- Residential areas primarily consisting of suburban developments further north.

South

Largely consists of estuarine wetlands and creeks. Beyond these are a mix of recreational areas, schools, and semi-urban developments. Key features includes:

- Grendon Street Landfill (closed). This landfill was operational from the 1960s until 1982.
- Natural areas including Vines Creek, Goosepond Creek, and the broader Bassett Basin.
- Mackay Christian College School.
- North Mackay levee wall.
- North Mackay Industrial Estate precinct further south.

East

Largely consists of estuarine wetlands, creeks, and other coastal environments. Beyond these are industrial and residential developments associated with the Harbour City Central office precinct, the Port of Mackay, and the Mackay Harbour Beach. Key features include:

- Bayersville Landfill (closed). This landfill was in operation between approximately 1981 and 2004. Remediation works (including site capping) occurred at the Bayersville Landfill in 2011.
- Harbour Road.
- Harbour City Central office precinct.
- Mt Bassett Wastewater Treatment Plant (non operational).
- Mt Bassett cemetery.
- Mangrove forests and tidal flats.
- Docks, shipping terminals, railway station and logistics infrastructure associated with the Port of Mackay further east.

West

Urban, agricultural and natural landscapes. Key features include:

- Norris Road Landfill (closed). This informal site was operational (based on satellite imagery) between 1982 and 1985.

- Linear infrastructure including public local roads and the QR Harbour Rail corridor.
- Mackay North State School.
- Residential and commercial land uses, community parks and nature reserves.
- Sugar cane fields further west.

Previous urban development and encroachment has impacted the condition and habitat availability within the Bassett Basin. Nonetheless, the basin still contains large areas of palustrine and estuarine wetlands that provide important ecological, cultural and flood mitigation benefits.

Land Zoning

Project area

Most of the Project area has a land use of 'marsh/wetland' and is zoned as open space under the Mackay Regional Council Planning Scheme, with the eastern section zoned as special purpose (rail line) and rural. The Project currently covers multiple land parcels as the majority of the corridor has yet to be gazetted as road reserve.

Adjacent to Project area

The western portion of the Project is zoned as special purpose (rail line), open space and rural. The southern boundary of the Project is zoned immediately adjacent as open space, surrounded by low density residential, community facilities and sport and recreation (schools). The northern boundary is zoned immediately adjacent as special purpose (rail line), rural, open space, and low-density residential. The eastern boundary is zoned immediately adjacent as special purpose (dis-used landfill & easements) and open space, with surrounding zoning as low-impact industry and open space.

Natural Events

The Project area has not experienced any recent major natural events other than the widespread tidal inundation that regularly occurs within the Bassett Basin. The most recent severe flooding event occurred in the area in February 2008 (>600mm in 6 hours).

Project Constructability

Att F, Section 6.0, page 7 provides an indicative construction methodology for the Project (Att F will not be made publicly available due to commercial in confidence reasons). In summary, clearing of vegetation will first occur and be limited to the minimum required to construct the Project. As the clearing process along the Project area advances, low flow culverts are proposed to be constructed sequentially across the minor tidal drainage lines. These culverts will be progressively linked by a coarse granular (rock) working platform which will allow access along the alignment to complete embankment and drainage works, minimising the need for temporary access tracks outside the Disturbance area.

While this is occurring the two bridges will be accessed by temporary tracks installed parallel to the bridge superstructures. These access tracks and associated temporary drainage structures will be required for the installation of piles and headstocks. The landing of the Super T girders and deck units onto the headstocks will progress from the top of the bridges using a gantry launching system, involving a temporary mobile frame mounted upon a completed sub-structure to avoid the need for heavy ground works.

The simultaneous construction of both embankment and bridges is planned to occur from approximately five access points. These include:

- Existing Ergon Energy and QR maintenance tracks originating at Coles Road (north) and the Bayersville landfill (north-east).

- Key public roads including Glenpark Street, Harbour Road, and Ambrose Way.
- The constructed MPAR Section 2 alignment.

The use of existing roads and access tracks will be maximised during construction. While all efforts to utilise pre-disturbed land and minimise clearing has and will be made, the Project inevitably will pass through areas of mangroves, salt couch, and meandering tidal drainage lines where temporary and permanent impacts during construction will be required.

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

Traditional Land Use

The Yuwi People traditionally undertook fishing, hunting and gathering within the Project area. Many species found in the Bassett Basin are of high cultural importance to the Yuwi People, and the traditional use of the resources within the broader Bassett Basin continues to this day.

Existing Land Use

Existing infrastructure

The initial development of the adjacent local road network (i.e. Harbour Road and Glenpark Street) was undertaken at some stage prior to 1947. Upgrades to this network have since occurred as the population of Mackay has increased. These roads provide access to northern suburbs including Beaconsfield and Slade Point, as well as the Port of Mackay. Upgrades to some local roads and associated active transport routes form part of the Project.

Coles Road is located in the northern Project area. There is no public access to this section of Coles Road, however it is utilised by QR, Mackay Regional Council and Ergon Energy. Upgrades to Coles Road will likely be required so that it can accommodate machinery and vehicles during construction of the Project.

These local road reserves also accommodate a range of public utility infrastructure, including:

- Ergon Energy overhead lines along Harbour Road, Coles Road and Glenpark Street.
- Telstra and NBN assets located within a shared underground conduit on the northern side of the Harbour Road reserve.
- MRC water mains, aligned parallel to the eastern side of Glenpark Street and the northern side of Harbour Road, with a branch connection crossing Harbour Road to service properties along Mt Bassett Cemetery Road.
- MRC sewer rising mains, located along Coles Road and eventually crossing Harbour Road to run to the former Mt Bassett Sewer Treatment Plant (Lot 355 CI2914).

A Mackay Regional Council operated stockpiling site is located in the eastern Project area adjacent to Harbour Road and the disused Bayersville Landfill. Impacts to this site as required as part of the Project.

A significant portion of the Project area was cleared as apart of construction of the adjacent QR Harbour Rail corridor between 1978 and 1979, refer to **Att G**. This rail line was opened in 1981 to replace a previous railway that ran from the Mackay Fisherman's Wharf, across the Pioneer River and alongside Harbour Road. The QR Harbour Rail corridor is now used to transport commodities to the Port of Mackay for import and export, with a focus on sugar and grain. Upgrades to the QR Harbour Rail corridor do not form part of the Project.

Bassett Basin FHA

The Bassett Basin FHA, of which the Project intersects part of, was formally established in April 1995. This FHA and the associated inshore waters of Mackay supports a variety of recreational, commercial, and traditional fishing resources. The Bassett Basin itself provides foraging habitat and is an important fish nursery. The Bassett Basin also has connectivity to freshwater ponds and freshwater/brackish wetlands to the north (Keeleys Road wetland complex) and west (Goosepond Creek). These areas provide habitat for native species such as barramundi, mullet, tarpon and mangrove jack.

Within the Project area itself, fishing and community access is mostly restricted to trap fishing (ie. crab pots) due to a lack of public access. Refer to **Att J, Section 2.2.2, page 4**. Its social and economic value predominantly stems from its role as a fish nursery rather than a location regularly accessed for recreational or commercial fishing. Refer to **Att J, Section 3.3, page 9**.

As noted in Section 1.2.7 of this referral, revocation of a portion of the Bassett Basin FHA has been proposed by TMR to allow for construction of the Project. TMR is proposing to mitigate the revocation of this area through the addition of quality, connected areas of fish habitat to the FHA. The additional areas have been assessed as containing suitable ecological value for the existing fish communities. Rehabilitation activities within the FHA will also occur. Further information on the proposed revocation is available through TMR's online website: www.yoursay-projects.tmr.qld.gov.au/mackay-port-access-FHAproposal.

Proposed land use

The proposed use for the Project area is for public transport, noting that a significant portion of the Project area is not anticipated to be disturbed during construction.

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

Natural Features

The Project area is dominated by mangrove and saltmarsh communities, refer to **Att K, Table 6, pages 25-26**. Field verified Regional Ecosystems (RE) present within the Project area include:

- 8.1.1: Mangrove closed forest to open shrubland of marine clay plains and estuaries.
- 8.1.3: *Sporobolus virginicus* tussock grassland on marine sediments.
- 8.1.5: *Melaleuca* spp. and/or *Eucalyptus tereticornis* and/or *Corymbia tessellaris* woodland with a ground stratum of salt tolerant grasses and sedges in a narrow zone adjoining tidal ecosystems.

Wetlands of high ecological significance occur to the north of the Project area within the Bassett Basin. These are associated with the mangroves and melaleuca forests of the Keeleys Road wetland complex.

Protected Areas and Reserves

As mentioned in Section 3.1.2 of this referral, the Project area is located within the Bassett Basin FHA. The Bassett Basin is a part of the lower Pioneer River catchment. The Pioneer River and its tributaries are valued for their visual qualities and intrinsic values.

The Norris Road Sport Reserve is partially located within the Project area. The Quarry Hill and Sapphire Court Reserves are located immediately to the south of the Project area.

The boundary of the Great Barrier Reef World Heritage Area (GBRWHA) extends inland along the Pioneer River estuary (to the low water mark) to the south of the Project area. At its nearest point, the Project is located approximately 1.3km north-west of the GBRWHA.

The Project is located approximately 4km from the Great Barrier Reef Marine Park (GBRMP).

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

The topography of the Project area is largely flat. Elevation ranges from 6m to 2m above sea level from west to east.

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.

Comprehensive desktop and field biodiversity investigations have been undertaken for the Project. Details of the methods adopted are described in the following documents:

- **Att H, Section 3, pages 7-9.**
- **Att K, Section 2, pages 9-12.**
- **Att L, Section 3, page 5.**
- **Att M, Section 3, pages 8-10.**
- **Att I, Section 3.2.1, page 9, Section 3.3.1, page 18, Section 3.4.1, page 29, Section 4.1.1, page 34-40,** and **Section 4.2.1, page 41.**

Flora

The potential presence of Commonwealth protected flora is identified in **Att K, Section 3.4, pages 30-31** and **Att L, Section 7.2.2, page 22**.

Desktop searches undertaken in 2020 identified four species listed under the EPBC Act (*Dichanthium setosum*, *Eucalyptus raveretiana*, *Omphalea celata*, and *Phaius australis*) as having the potential to be present.

Desktop searches undertaken in 2024 also identified the Square tassel fern (*Phlegmariurus tetrastichoides*) listed under the EPBC Act as having the potential to be present.

No EPBC Act threatened flora species were identified within the Project area during the 2019 and 2024 field investigations and subsequent habitat assessments have confirmed a low likelihood of occurrence. Consequently, the Project is considered unlikely to cause significant impacts to threatened flora.

Fauna

General

The major terrestrial fauna habitat within the Project area are the mangrove forests of the Bassett Basin. These mangrove forests provide a range of habitat values including:

- Foraging opportunities for predatory wildlife due to the high abundance of benthic macroinvertebrates.
- Periodic abundant flowering to support nectar feeding birds and mammals, and
- Dense habitat structure for sheltering and nest sites for a range of fauna.

Species such as the common brushtail possum (*Trichosurus vulpecula*), rakali (*Hydromys chrysogaster*), and yellow spotted monitor (*Varanus panoptes*) are known to be present and are likely using the area for breeding, refer to **Att M, Section 4.2.3, page 28**. Benthic macroinvertebrates (i.e. crabs, gastropods, bivalves) are also present within the Bassett Basin in abundance and diversity typical of mangrove forests, refer to **Att I, Section 4.3.2, page 55**. Avian and microbat species such as the mangrove gerygone (*Gerygone levigaster*), pied currawong (*Strepera graculina*), the satin flycatcher (*Myiagra cyanoleuca*), and the little bentwing bat (*Miniopterus australis*) were also previously observed hunting and foraging in the Project area and/or the adjacent estuarine reaches of Vines Creek, refer to **Att K, Section 3.5.5, page 45.**

A black flying fox (*Pteropus alecto*) colony is located within the mangrove forest immediately east of Glenpark Street. During ecological surveys undertaken in 2024 a total population of 5,820 individuals were estimated within the roost during the wet/warm season. This population estimation decreased to 2,568 individuals during the cool/dry season, so the roost size is known to fluctuate significantly, refer to **Att H, Section 4.2, pages 12-13**. The roost colony is also co-inhabited with the Australian white ibis (*Threskiornis molucca*) and small numbers of the great egret (*Ardea alba*) and Intermediate egret (*Ardea intermedia*).

Pest fauna known to occur in the Project area include the cane toad (*Rhinella marina*), common myna (*Acridotheres tristis*), northern mallard (*Anas platyrhynchos*), nutmeg mannikin (*Lonchura punctulate*), red-whiskered bulbul (*Pycnonotus jocosus*), spotted dove (*Spilopelia chinensis*), wild dog (*Canis familiaris*), European red fox (*Vulpes vulpes*), feral cat (*Felis catus*), house mouse (*Mus musculus*) and the black rat (*Rattus rattus*).

Migratory and threatened terrestrial species

Several EPBC Act listed migratory and threatened terrestrial fauna species were identified as known to occur or having a moderate-high possibility of occurrence within the Project area as outlined in **Att L, Appendix A, Table A-1, page 75-83**. These include the grey headed flying fox (*Pteropus poliocephalus*), water mouse (*Xeromys myoides*), white-throated needletail (*Hirundapus caudacutus*), eastern curlew (*Numenius madagascariensis*), fork-tailed swift (*Apus pacificu*s), glossy ibis (*Plegadis falcinellus*), and the eastern osprey (*Pandion cristatus haliaetus*). The Project area intersects an area mapped as essential habitat for the vulnerable water mouse.

Targeted surveys for the water mouse were conducted in 2019 and 2024. These surveys involved habitat assessments, daytime searches, Elliot trapping and camera trapping, refer to **Att M, Appendix A, page 54**. The surveys concluded that there was no evidence the Project area or adjacent habitat supports a local population of water mouse. It also identified multiple localised threats to the species including past changes in hydrology, habitat fragmentation, predation, and the use of insecticides for mosquito control. Although no evidence of water mouse was recorded, the habitat assessment determined that the mangrove forests within the Project area provided suitable foraging and dispersal habitat for the species. The surveys also noted that well-defined supralittoral banks, required for the construction of nesting burrows above the high tide level, were limited and generally confined to the Project area's periphery, particularly in locations subject to higher levels of disturbance, such as near the QR Harbour Rail corridor and the Mackay Christian College school oval. As a result, suitable nesting areas were found to be limited throughout the project footprint. Refer to **Att M, Section 4.2.2, page 24.**

No EPBC Act listed threatened terrestrial species were observed within the Project area during the 2019 or 2024 field surveys, refer to **Att K, Section 3.5.4, page 36, Att H, Section 4.2.3, page 15,** and **Att M, Section 4.2.3, page 28**. Although the eastern curlew was recorded in the adjacent sand flats of Vines Creek, habitat within the Project area is not considered suitable for this species. Various flying fox roosts within the broader Mackay areas were also inspected during the 2024 field surveys, with the Bakers Creek roost at Walkerston being the only location where grey headed flying fox were observed. Refer to **Att H, Section 4.2.6, page 19**.

During the 2019 field surveys the nearby Keeleys Road wetland complex was observed to support a number of waterbird species such as ducks, rails, egrets, black-necked stork (*Ephippiorhynchus asiaticus*) and brolga (*Antigone rubicunda*). One species listed as Migratory under the EPBC Act was recorded, the glossy ibis (*Plegadis falcinellus*), refer to **Att K, Section 3.5.5, page 45**. This area also has the potential to occasionally support the Latham's snipe (*Gallinago hardwickii*), sharp-tailed sandpiper (*Calidris acuminata*), red-necked stint (*Calidris ruficollis*), and common greenshank (*Tringa nebularia*), refer to **Att K, Section 3.5.5, page 46***.*

Marine and aquatic species

The major marine and aquatic fauna habitats within the Project area are the intertidal mangrove forests, saltmarsh flats and tidal tributaries of the Bassett Basin.

Several EPBC Act listed aquatic/marine species were identified as possibly occurring within the Project area, refer to **Att I, Table 3.2, page 11**. These include the loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), estuarine crocodile (*Crocodylus porosus*), hawksbill turtle (*Eretmochelys imbricata*) and flatback turtle (*Natator depressus*). Apart from the estuarine crocodile which inhabits mangrove forests, these are all primarily open water marine species, and it is highly unlikely that they would occur in the shallow estuarine and fresh waters found in the Project area.

No EPBC Act listed threatened marine species were observed within the Project area during the 2019 or 2024 field surveys.

Estuarine crocodiles are known to occur in the Bassett Basin in low numbers and have been observed on occasion in Goosepond Creek. There are no known nesting sites or preferred feeding habitats in the Project area, and it is not expected that the Project would interfere with any movements through the site, refer to **Att K, Appendix E, Section 3.1.1, page 8.**

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

Vegetation Communities

The Project area is dominated by mangrove and saltmarsh communities. Field verified REs present within the Project area include:

- 8.1.1: Mangrove closed forest to open shrubland of marine clay plains and estuaries.
- 8.1.3: *Sporobolus virginicus* tussock grassland on marine sediments.
- 8.1.5: *Melaleuca* spp. and/or *Eucalyptus tereticornis* and/or *Corymbia tessellaris* woodland with a ground stratum of salt tolerant grasses and sedges in a narrow zone adjoining tidal ecosystems.

These REs can be broken into three broad habitat classifications as noted in **Att I, Table 4.3, page 42.**

- Intertidal forested wetlands (Mangroves): The mangroves (RE 8.1.1) in the Project area are generally in good health, although health indicators do vary across the Project area. *Ceriops tagal*, *Aegiceras corniculatum*, *Bruguiera* spp. and *Lumnitzera* spp. were the most common mangrove species recorded within the Project area.
- Intertidal marshes: All saltmarsh (RE 8.1.3) sites within the Project area are dominated by *Sporobolus virginicus*. Mangroves are also scattered throughout the saltmarsh communities with isolated recruitment recorded. Saltmarsh communities are in good health.
- Brackish to freshwater swamps: Melaleuca dominated forest (RE 8.1.5) is also present in small patches within the Project area. This community includes species such as *Melaleuca viridiflora*, *Eucalyptus tereticornis*, *Acacia* sp, and *Corymbia tessellaris* on a ground stratum of salt tolerant grasses and sedges such as *Sporobolus virginicus*, *Paspalum* sp, and *Imperata cylindrica*.

Two Threatened Ecological Communities (TEC) also had the potential to be present based on the EPBC Act Protected Matters Search Tool:

- Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland.
- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia.

Field inspections of the Project area undertaken in 2019 and 2024 did not observe any TECs, nor did they consider any TECs likely to be present, refer to **Att L, Table 6-1, pages 18-19.**

Biosecurity Matters

There are four ‘restricted matter’ species under the *Biosecurity Act 2014* known to occur within the Project area. Singapore daisy (*Sphagneticola trilobata*), African tulip tree (*Spathodea campanulata*), and rats tail grass (*Sporobolus* spp.) are identified as a ‘medium’ priority species under the Mackay Regional Council Biosecurity Plan. The other species, lantana (*Lantana camara*) is identified as low priority.

Soils

Soil types

Soils within the Bassett Basin are predominantly waterlogged (saline), soft alluvial clay deposits. They generally have low soil strengths and low erodibility characteristics. Soils outside of the Bassett Basin generally consist of uniform cracking clays and loamy gradational soils with moderate soil strengths and moderate erodibility characteristics.

Acid sulphate soils (ASS)

The majority of the Project area (Bassett Basin) is below 5m AHD, so there is a risk of exposing acid sulphate soils during construction. If disturbed, the oxidation of these soils may create acid which is harmful to the environment if not managed appropriately.

Initial investigations confirmed that Potential Acid Sulphate Soils (PASS) occurs at depths varying from surface level to 1.4m in the mangroves (intertidal flats), most typically at a depth of 0.5m. The depth to PASS was more consistent on the salt couch areas (extratidal flats), occurring between 1.6 to 1.8m below surface level. The PASS was always clay sediments on the intertidal flats and had oxidisable sulfur contents mainly in the order of 0.1 to 1.2%, while the predominantly sandy PASS underlying the extratidal flats was always lower at 0.04 to 0.33%.

Contaminated Land

The Project area contains land parcels listed on the Environmental Management Register (EMR). Land is listed on the EMR if certain types of activities, known as notifiable activities, have been, or are being carried out on the lot. Land is also listed on the EMR if it is known or suspected to be contaminated.

EMR listed parcels within the Project area include:

- The QR Harbour Rail corridor (Lot 41 SP130198 and Lot 42 SP130199) due to possible high arsenic levels.
- The Mackay Regional Council stockpile (Lot 257 CI2426) due to past abrasive blasting activities and the continued use as a stockpiling site.

There are also multiple parcels immediately adjacent to the Project area that are listed on the EMR. These include:

- The Grendon Street landfill (Lot 296 CI3986) due to historical landfilling activities.
- The Bayersville Landfill (Lot 266 CI4237) due to historical landfilling activities.
- The Norris Road Landfill (Lot 501 CI3818) due to historic landfilling activities. Impacts to this site will be required during construction of Section 2 of the MPAR.

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.

Commonwealth Heritage Places Overseas

No Commonwealth heritage places overseas are recognised as having heritage values apply to the Project area.

National (Australian) Heritage

There are no national heritage places located in or adjacent to the Project area. The boundary of the GBRWHA extends inland along the Pioneer River estuary to the south of the Project area. At its nearest point, the Project is located approximately 1.3km north-east of the GBRWHA.

Queensland (State) Heritage

There are no Queensland heritage places located in or adjacent to the Project area.

Local (Mackay Regional Council) Heritage

There are no local heritage places located in or adjacent to the Project area.

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

The Yuwibara People (QCD2020/001, QUD12/2019), hereafter Yuwi People, are the Native Title Holders and Cultural Heritage Party for the Project area. The Yuwi Aboriginal Corporation (YAC) RNTBC is the nominated Cultural Heritage Body.

Assessment of tangible and intangible Indigenous cultural heritage values within the Project area was carried out under two consultation processes.

1. A Cultural Heritage Risk Assessment (CHRA) under the provision of the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines, assessed the Project as a Category 5 (high risk) activity. Further cultural heritage assessment and consultation with Yuwi People was undertaken to identify known and potential Indigenous cultural heritage values/places within the Project area. A summary of Indigenous cultural heritage values identified during the field assessment is provided below in 'Indigenous Cultural Heritage Assessments'.
2. YAC was additionally engaged by TMR to provide a report on the cultural and socio-economic values of the Basset Basin Fish Habitat Revocation and land swap areas, both historical and current to the Yuwi People. A summary of the cultural and socio-economic fisheries values as identified within the YAC Bassett Basin Fish Habitat Area Cultural Considerations Report (refer to **Att N**) are provided below in 'Bassett Basin FHA partial revocation' (Att N will not be made publicly available due to cultural sensitivity reasons).

Indigenous Cultural Heritage Assessments

Refer to **Att P** (Att P will not be made publicly available due to cultural sensitivity reasons).

Bassett Basin FHA partial revocation

Refer to **Att P** (Att P will not be made publicly available due to cultural sensitivity reasons).

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. *

Climate

The Project area has a tropical climate with an annual rainfall around 1,585mm. Winters are warm and dry while summers are hot and wet, with a large proportion of the rainfall occurring from December to March.

Surface Waters

The receiving waterways for the Project area are Vines Creek, Goosepond Creek and their tributaries. Goosepond Creek originates near Glenella/Richmond (north-west of the Mackay CBD) and drains into Vines Creek upstream of Harbour Road in the tidal area known as the Bassett Basin. The broader Goosepond Creek catchment is approximately 75sqkm in total area. It includes large areas under sugar cane cultivation, residential areas, and commercial zones.

Vines Creek originates near Beaconsfield (north of the Mackay CBD) and drains into the Pioneer River downstream of Harbour Road. The broader Vines Creek catchment is approximately 11sqkm in total area and includes residential areas, commercial zones and large open areas.

The Project area is subject to frequent daily tidal flushing. The Mackay area experiences a large tidal range, particularly compared to other locations on the east coast of Australia. The mean spring tide range is approximately 4.56m, while the mean neap range is 2.12m. At its maximum, the tidal range in Mackay can reach close to 6.7m.

Existing Flooding

The Bassett Basin is subject to complex flooding conditions from a range of flood mechanisms, and a key objective of the Project is to improve the flood immunity of the Bruce Highway link between Peak Downs Highway to the Port of Mackay. There is significant cross-catchment connectivity within the Bassett Basin during major flood events, especially between Goosepond Creek and the Pioneer River. For example, Harbour Road is underwater during major events, with a maximum overtopping depth of 0.25m in a 1% AEP Pioneer River flood.

The Pioneer River has a well recorded flood history with documented evidence as far back as 1884. Since that time several serious floods have occurred, with the highest occurring in February 1958 which peaked at a height of 9.14m on the Mackay flood warning gauge at the Forgan Bridge. More recent flooding events have occurred in 2007, 2008, and 2019, although these have not been major events - the Pioneer River only peaked at 7m during the February 2008 flood that was caused by intense local rainfall.

During Pioneer River flood events, the entire length of the QR Harbour Rail corridor embankment within the Bassett Basin is impacted by flood water as the tides rise, and a section of the rail formation will overtop on a 20% AEP event. The rail formation is a key hydraulic control with several culvert structures along the rail alignment largely controlling the flow of the Pioneer River floodwaters into the storage area (Keeleys Road wetland complex) on the northern side of the rail formation, and ultimately to the north of Keeleys Road. The location of these existing rail culverts has helped to inform the location of permanent drainage infrastructure for the Project.

Hydraulics Assessment

An assessment of the hydraulic performance of the concept design has been undertaken**.** This assessment utilised multiple models that considered flood and tidal events in conjunction with climate change. Providing acceptable flood immunity, reducing hydraulic and afflux impacts, and designing for climate change were key focus areas. The findings from the assessment enabled concept design modifications to address potential impacts to nearby land and buildings.

The hydraulic analysis also included initial tidal simulations to evaluate baseline conditions and potential project changes to tidal exchange during mean high water spring and highest astronomical tide events. Parameters that were modelled include peak surface water elevation, water velocity and time of submergence, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons). The findings from the simulations enabled concept design modifications to minimise disruptions to tidal flows and ensure the ongoing tidal flushing of adjacent areas.

Further refinement of the hydraulic model will occur during future Project design phases once updated inputs (ie topographical survey data, updated climate changes estimations, preliminary design) are available.

Groundwater

Groundwater is present at shallow depths within the Project area. Water quality and groundwater depths are largely influenced by the tidal regimes. The Project is located within the Pioneer Groundwater Management Area as defined in the *Water Plan (Pioneer Valley) 2002*.

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	Yes	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
No	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. *

Great Barrier Reef World Heritage Area

The boundary of the GBRWHA extends inland along the Pioneer River estuary to the south of the Project area. At its nearest point the Project is located approximately 1.3km north-east of the GBRWHA, refer to **Att L, Figure 7-1, page 23**.

The Project's concept design includes two bridging structures to minimise the Development footprint and the environmental and hydrological impacts associated with its construction and operation. It also follows the previously disturbed muliti modal corridor (MMC) where the existing QR Harbour Rail corridor is located. However, some indirect impacts to the GBRWHA have the potential to occur, in particular during the construction period from ground disturbing activities.

Possible indirect impacts include:

Temporary indirect impacts

- A decline in water quality of the marine receiving environment as a result of poorly designed erosion and sediment control and exposure of acid sulphate soils.
- Impacts to coastal processes (i.e. tidal flushing, natural sediment transport) during vegetation clearing and/or earthworks activities.
- Releases of waste, sewage, oil, fuel or other toxic substance upstream of the GBRWHA during the construction of the Project.
- A temporary increase in light, noise, and vibration levels upstream of the GBRWHA during construction.

Permanent indirect impacts

- Permanent removal of upstream marine and benthic habitat, including mangrove forests and intertidal marshes.
- Potential changes in upstream tidal flushing regimes and modifications to natural coastal and riverine processes.
- Vehicle usage during road operation potentially impacting local water quality.
- Vehicle usage during road operation causing an increase in noise and light pollution.
- Potential introduction and/or increase in weeds and pest fauna.

Other World Heritage Areas

There are no other World Heritage Areas that have the potential to be impacted by the Project.

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. *

The GBRWHA is listed on the UNESCO World Heritage List for its Outstanding Universal Value (OUV). It was assessed as meeting all four natural World Heritage OUV criteria. A significant impact on the world heritage values of the GBRWHA is where an action may cause one or more of the OUV attributes to be lost, degraded, notably altered, modified, obscured or diminished. An assessment of impact should also consider the effects that a proposed action may have on the integrity of the GBRWHA.

The OUV attributes to be assessed for direct/indirect significant impacts to the GBRWHA include:

- Criterion (vii) – 'contains superlative natural phenomena or areas or exceptional natural beauty and aesthetic importance'.
- Criterion (viii) – 'be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features'.
- Criterion (ix) – 'be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals'.
- Criterion (x) – contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of OUV from the point of view of science or conservation'.
- Integrity – the measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes.

Specific examples of OUV attributes of the GBRWHA that are relevant to the Project area include:

- The Bassett Basin's vast mangrove forests and mangrove diversity (Criterion vii and x).
- The Bassett Basin's unique and varied seascapes and landscapes (Criterion viii); and
- The ecological, physical and chemical processes occurring within the Bassett Basin that contribute to the long-term conservation of marine ecosystems (Integrity).

A significant impact assessment documenting the potential impacts of the proposed action on the GBRWHA values has been prepared. Refer to **Att L, Section 8.2.1, pages 50-51**. The outcome of the assessment is that the Project is considered unlikely to cause a significant impact.

The Project is located outside (>1.3km) of the GBRWHA and is not expected to impact the World Heritage values to the extent that they would be lost, degraded, damaged or notably altered, modified, obscured or diminished. Detailed environmental surveys have guided concept design to avoid more sensitive habitat areas within the Bassett Basin. While disturbance of mangroves and intertidal landscapes will still occur, significant efforts have been made to ensure that they are minimised and are occurring within areas that have been previously impacted where possible. These include:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor. This alignment maximises the distance between the Project and the GBRWHA, and ensures that the Project area is located within the previously disturbed MMC where possible, refer to **Att G**.
- Incorporation of additional bridging within the design. This has reduced the Disturbance footprint and has minimised impacts to existing tidal flushing regimes as demonstrated by pre- and post-development tidal simulations, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Incorporation of road design features that reduce the Disturbance footprint. These include steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Incorporation of water sensitive design to minimise operational water quality impacts. These include swales and ponds, open graded asphalt and vegetated batter slopes within the concept design.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by developing a conceptual construction methodology that maximises use of existing accesses and the

permanent road footprint during construction, refer to **Att F, Section 5.0, pages 6-14** (Att F will not be made publicly available due to commercial in confidence reasons).
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Utilisation of Controlled Modulus Columns (CMCs) rather than traditional piling techniques to improve poor ground while limiting ground disturbance and exposure of PASS.

Refer to Section 4.1.1.10 of this referral for a full list of mitigation measures to reduce potential indirect impacts to the GBRWHA.

Sediment mobilisation will occur temporarily during construction however the implementation of a detailed Erosion and Sediment Control Plan (ESCP) will assist in minimising any short-term impacts on water quality. A detailed baseline water quality monitoring program is currently underway in the Bassett Basin to assist in understanding ambient levels and to derive site specific Water Quality Objectives and trigger levels for the management area. The Bassett Basin is specified as moderately disturbed mid-estuary waters within the Pioneer River and Plane Creek Basins Environmental Values and Water Quality Objectives (DES, 2022), and initial water quality results indicate pre-existing elevated levels of some metals, per- and polyfluoroalkylsubstances (PFAS) and some nutrients.

Initial MUSIC modelling has been completed for the Project to guide the implementation of water sensitive urban design. Further MUSIC modelling will be undertaken during future design stages to identify and address any additional impacts that may result from design development. Innovative techniques such as artificial shellfish reef installation within the Bassett Basin, marine plant rehabilitation activities, and implementing water quality improvements in upper Goosepond Creek have been included in the business case proposal and will be considered further during future design stages.

Hydraulic modelling has also been an integral part of concept design development. Design refinements have been informed by iterative testing of various Project and climate scenarios. This hydraulic analysis also included an assessment of tidal movements to evaluate baseline conditions and potential changes to tidal exchange within the Bassett Basin. Parameters that were modelled during mean high water spring and highest astronomical tide events include peak surface water elevation, water velocity and time of submergence, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons). The results of the assessment suggest only minor changes between the pre- and post-development scenarios.

During construction an EMP will be put in place to manage indirect impacts on adjacent habitat areas (i.e. water quality impacts, spill and sediment management) and regular water quality monitoring will be undertaken. Vegetation clearing within the Project area is to be limited to that necessary to facilitate development.

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. *

The outcome of the assessment indicates that a significant impact to the GBRWHA is unlikely.

There will be no direct impacts to the GBRWHA due to the Project area being outside the mapped boundary, and indirect impacts that may arise will be managed through design and construction planning and the implementation of construction mitigation measures.

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. *

A summary of measures to mitigate potential impacts to the GBRWHA for the planning and design phase are as follows:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor and within the previously disturbed MMC where possible.
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Incorporation of additional bridging (600m long Goosepond Creek Bridge and 300m long Vines Creek Bridge) within the design to reduce the Disturbance footprint and ensure existing tidal flushing regimes are maintained.
- Incorporation of road design features, such as steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by devising a construction methodology that maximises use of existing accesses and the permanent road footprint during construction.
- Where road embankments remain, culverts have been aligned adjacent and parallel to the QR Harbour Rail Line to ensure continued tidal flushing of the palustrine wetlands to the north of the Project area.
- Utilisation of CMCs rather than traditional piling techniques to improve poor ground within the Bassett Basin while limited ground disturbance. CMCs are a displacement type rigid inclusion used to improve poor ground without generating any spoil, therefore limited on ASS/PASS.
- All bridges and culverts will be designed in consideration of fauna sensitive elements as noted within Chapter 6 of TMR's Fauna Sensitive Transport Infrastructure Delivery manual (TMR, 2024).
- Planning work sequencing to reduce the permanent works clearing to as little as possible.
- Landscaping will utilise native species and consider the regional ecosystems present for suitable choices.
- An ESCP will be developed in the planning and detailed design stages in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- An Acid Sulphate Soil Management Plan will be developed for the Project to manage and minimise the disturbance of PASS. Project studies have been undertaken to review how the flow patterns with the tidal environment are impacted. Refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Water sensitive urban design has been incorporated into the design through the use of swales and ponds in drainage channels adjacent to the urban areas to minimise runoff on natural waterways.
- Open graded asphalt and vegetated batter slopes are incorporated into the road design to minimise operational water quality impacts.
- A pilot study has been undertaken to understand the most effective way to remove healthy saltwater couch (*Sporobolus virginicus*) from the upper tidal zone, grow it, and then return it to the Project and other areas.
- Investigations are underway to remediate previously impacted sites within the Bassett Basin to enhance overall water quality of the catchment.
- Investigations will be undertaken to assess the suitability of habitat reef module and artificial shellfish reef installation within the Bassett Basin.
- A trial will be undertaken to simulate the intended landscaping treatment on the embankment batters through the Bassett Basin. The trial will help with understanding the most effective means to minimise erosion and establishing native vegetation (both marine and terrestrial) on the batters.

A summary of measures to mitigate potential impacts to the GBRWHA during the construction phase are as follows:

- An EMP is to be developed for the project.

- All site offices, construction stockpiles and laydown/storage areas will be located within existing cleared or disturbed areas where possible.
- TMR technical standards and specifications will be implemented including MRTS04 General Earthworks, MRTS51 Environmental Management, MRTS52 Erosion and Sediment Control, and MRTS16 Landscape and Revegetation Works.
- Water quality monitoring will be undertaken during construction.
- Dust suppression and monitoring will be in place during construction.
- The duration of in-stream works and temporary waterway barrier works will be minimised.
- All exposed earthworks will be rehabilitated promptly, along with all disturbed areas not required for operation and maintenance activities, which will include marine plant rehabilitation where required.
- Biosecurity measures will include pre-works biosecurity surveys, pest treatment, vehicle and plant wash downs and checks, machinery declarations, and ongoing monitoring.
- Erosion and sediment control measures will be implemented as per an approved ESCP in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- Construction site lighting will be kept to a minimum.

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

No offsets are proposed as a significant impact on the GBRWHA is not expected.

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
No	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. *

Great Barrier Reef World Heritage Area
In May 2007, the Great Barrier Reef - along with other Australian World Heritage sites - was placed on the National Heritage List. The boundary of the GBRWHA extends inland along the Pioneer River estuary to the south of the Project area. At its nearest point the Project is located approximately 1.3km north-east of the GBRWHA, refer to **Att L, Figure 7-1, page 23**.

The Project includes two bridging structures to minimise the Development footprint and the environmental and hydrological impacts associated with its construction and operation. It also follows the previously disturbed MMC where the existing QR Harbour Rail corridor is located. However, some indirect impacts have the potential to occur, in particular during the construction period from ground disturbing activities.

Possible indirect impacts include:

Temporary indirect impacts

- A decline in water quality of the marine receiving environment as a result of poorly designed erosion and sediment control and exposure of acid sulphate soils.
- Impacts to coastal processes (i.e. tidal flushing, natural sediment transport) during vegetation clearing and/or earthworks activities.
- Releases of waste, sewage, oil, fuel, or other toxic substance upstream of the GBRWHA during the construction of the Project.
- A temporary increase in light, noise, and vibration levels upstream of the GBRWHA during construction.

Permanent indirect impacts

- Permanent removal of upstream marine and benthic habitat, including mangrove forests and intertidal marshes.
- Potential changes in upstream tidal flushing regimes and modifications to natural coastal and riverine processes.
- Vehicle usage during road operation potentially impacting local water quality.
- Vehicle usage during road operation causing an increase in noise and light pollution.
- Potential introduction and/or increase in weeds and pest fauna.

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 GBRWHA is listed on the UNESCO World Heritage List for its Outstanding Universal Value (OUV). It was assessed as meeting all four natural World Heritage OUV criteria. A significant impact on the world heritage values of the GBRWHA is where an action may cause one or more of the OUV attributes to be lost, degraded, notably altered, modified, obscured or diminished. An assessment of impact should also consider the effects that a proposed action may have on the integrity of the GBRWHA.

The OUV attributes to be assessed for direct/indirect significant impacts to the GBRWHA include:

- Criterion (vii) – 'contains superlative natural phenomena or areas or exceptional natural beauty and aesthetic importance'.
- Criterion (viii) – 'be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features'.
- Criterion (ix) – 'be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals'.
- Criterion (x) – contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of OUV from the point of view of science or conservation'.
- Integrity – the measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes.

Specific examples of OUV attributes of the GBRWHA that are relevant to the Project area include:

- The Bassett Basin's vast mangrove forests and mangrove diversity (Criterion vii and x).
- The Bassett Basin's unique and varied seascapes and landscapes (Criterion viii); and
- The ecological, physical and chemical processes occurring within the Bassett Basin that contribute to the long-term conservation of marine ecosystems (Integrity).

A significant impact assessment documenting the potential impacts of the proposed action on the GBRWHA values has been prepared. Refer to **Att L, Section 8.2.1, pages 50-51**. The outcome of the assessment is that the Project is considered unlikely to cause a significant impact.

The Project is located outside (>1.3km) of the GBRWHA and is not expected to impact the World Heritage values to the extent that they would be lost, degraded, damaged or notably altered, modified, obscured or diminished. Detailed environmental surveys have guided concept design to avoid more sensitive habitat areas within the Bassett Basin. While disturbance of mangroves and intertidal landscapes will still occur, significant efforts have been made to ensure that they are minimised and are occurring within areas that have been previously impacted where possible. These include:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor. This alignment maximises the distance between the Project and the GBRWHA, and ensures that the Project area is located within the previously disturbed MMC where possible, refer to **Att G**.
- Incorporation of additional bridging within the design. This has reduced the Disturbance footprint and has minimised impacts to existing tidal flushing regimes as demonstrated by pre- and post-development tidal simulations, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Incorporation of road design features that reduce the Disturbance footprint. These include steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Incorporation of water sensitive design to minimise operational water quality impacts. These include swales and ponds, open graded asphalt and vegetated batter slopes within the concept design.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by developing a conceptual construction methodology that maximises use of existing accesses and the

permanent road footprint during construction, refer to **Att F, Section 5.0, pages 6-14** (Att F will not be made publicly available due to commercial in confidence reasons).
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Utilisation of Controlled Modulus Columns (CMCs) rather than traditional piling techniques to improve poor ground while limiting ground disturbance and exposure of PASS.

Refer to Section 4.1.2.10 of this referral for a full list of mitigation measures to reduce potential indirect impacts to the GBRWHA.

Sediment mobilisation will occur temporarily during construction however the implementation of a detailed Erosion and Sediment Control Plan (ESCP) will assist in minimising any short-term impacts on water quality. A detailed baseline water quality monitoring program is currently underway in the Bassett Basin to assist in understanding ambient levels and to derive site specific Water Quality Objectives and trigger levels for the management area. The Bassett Basin is specified as moderately disturbed mid-estuary waters within the Pioneer River and Plane Creek Basins Environmental Values and Water Quality Objectives (DES, 2022), and initial water quality results indicate pre-existing elevated levels of some metals, per- and polyfluoroalkylsubstances (PFAS) and some nutrients.

Initial MUSIC modelling has been completed for the Project to guide the implementation of water sensitive urban design. Further MUSIC modelling will be undertaken during future design stages to identify and address any additional impacts that may result from design development. Innovative techniques such as artificial shellfish reef installation within the Bassett Basin, marine plant rehabilitation activities, and implementing water quality improvements in upper Goosepond Creek have been included in the business case proposal and will be considered further during future design stages.

Hydraulic modelling has also been an integral part of concept design development. Design refinements have been informed by iterative testing of various Project and climate scenarios. This hydraulic analysis also included an assessment of tidal movements to evaluate baseline conditions and potential changes to tidal exchange within the Bassett Basin. Parameters that were modelled during mean high water spring and highest astronomical tide events include peak surface water elevation, water velocity and time of submergence, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons). The results of the assessment suggest only minor changes between the pre- and post-development scenarios.

During construction an EMP will be put in place to manage indirect impacts on adjacent habitat areas (i.e. water quality impacts, spill and sediment management) and regular water quality monitoring will be undertaken. Vegetation clearing within the Project area is to be limited to that necessary to facilitate development.

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. *

The outcome of the assessment indicates that a significant impact to the GBRWHA is unlikely.

There will be no direct impacts to the GBRWHA due to the Project area being outside the mapped boundary, and indirect impacts that may arise will be managed through design and construction planning and the implementation of construction mitigation measures.

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. *

A summary of measures to mitigate potential impacts to the GBRWHA for the planning and design phase are as follows:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor and within the previously disturbed MMC where possible.
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Incorporation of additional bridging (600m long Goosepond Creek Bridge and 300m long Vines Creek Bridge) within the design to reduce the Disturbance footprint and ensure existing tidal flushing regimes are maintained.
- Incorporation of road design features, such as steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by devising a construction methodology that maximises use of existing accesses and the permanent road footprint during construction.
- Where road embankments remain, culverts have been aligned adjacent and parallel to the QR Harbour Rail Line to ensure continued tidal flushing of the palustrine wetlands to the north of the Project area.
- Utilisation of CMCs rather than traditional piling techniques to improve poor ground within the Bassett Basin while limited ground disturbance. CMCs are a displacement type rigid inclusion used to improve poor ground without generating any spoil, therefore limited on ASS/PASS.
- All bridges and culverts will be designed in consideration of fauna sensitive elements as noted within Chapter 6 of TMR's Fauna Sensitive Transport Infrastructure Delivery manual (TMR, 2024).
- Planning work sequencing to reduce the permanent works clearing to as little as possible.
- Landscaping will utilise native species and consider the regional ecosystems present for suitable choices.
- An ESCP will be developed in the planning and detailed design stages in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- An Acid Sulphate Soil Management Plan will be developed for the Project to manage and minimise the disturbance of PASS. Project studies have been undertaken to review how the flow patterns with the tidal environment are impacted. Refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Water sensitive urban design has been incorporated into the design through the use of swales and ponds in drainage channels adjacent to the urban areas to minimise runoff on natural waterways.
- Open graded asphalt and vegetated batter slopes are incorporated into the road design to minimise operational water quality impacts.
- A pilot study has been undertaken to understand the most effective way to remove healthy saltwater couch (*Sporobolus virginicus*) from the upper tidal zone, grow it, and then return it to the Project and other areas.
- Investigations are underway to remediate previously impacted sites within the Bassett Basin to enhance overall water quality of the catchment.
- Investigations will be undertaken to assess the suitability of habitat reef module and artificial shellfish reef installation within the Bassett Basin.
- A trial will be undertaken to simulate the intended landscaping treatment on the embankment batters through the Bassett Basin. The trial will help with understanding the most effective means to minimise erosion and establishing native vegetation (both marine and terrestrial) on the batters.

A summary of measures to mitigate potential impacts to the GBRWHA during the construction phase are as follows:

- An EMP is to be developed for the project.

- All site offices, construction stockpiles and laydown/storage areas will be located within existing cleared or disturbed areas where possible.
- TMR technical standards and specifications will be implemented including MRTS04 General Earthworks, MRTS51 Environmental Management, MRTS52 Erosion and Sediment Control, and MRTS16 Landscape and Revegetation Works.
- Water quality monitoring will be undertaken during construction.
- Dust suppression and monitoring will be in place during construction.
- The duration of in-stream works and temporary waterway barrier works will be minimised.
- All exposed earthworks will be rehabilitated promptly, along with all disturbed areas not required for operation and maintenance activities, which will include marine plant rehabilitation where required.
- Biosecurity measures will include pre-works biosecurity surveys, pest treatment, vehicle and plant wash downs and checks, machinery declarations, and ongoing monitoring.
- Erosion and sediment control measures will be implemented as per an approved ESCP in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- Construction site lighting will be kept to a minimum.

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

No offsets are proposed as a significant impact on the GBRWHA is unlikely.

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 or in close proximity to the Project area.

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	Common name
No	No	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris canutus	Red Knot, Knot
No	No	Calidris ferruginea	Curlew Sandpiper
No	Yes	Caretta caretta	Loggerhead Turtle
No	No	Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
No	Yes	Chelonia mydas	Green Turtle
No	No	Dasyurus hallucatus	Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu]
No	No	Denisonia maculata	Ornamental Snake
No	No	Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
No	No	Egernia rugosa	Yakka Skink
No	Yes	Eretmochelys imbricata	Hawksbill Turtle
No	No	Erythrotriorchis radiatus	Red Goshawk
No	No	Eucalyptus raveretiana	Black Ironbox
No	No	Falco hypoleucos	Grey Falcon
No	No	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	No	Geophaps scripta scripta	Squatter Pigeon (southern)
No	Yes	Hirundapus caudacutus	White-throated Needletail
No	No	Lepidochelys olivacea	Olive Ridley Turtle, Pacific Ridley Turtle
No	No	Limnodromus semipalmatus	Asian Dowitcher
No	No	Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit

Direct impact	Indirect impact	Species	Common name
No	No	Macroderma gigas	Ghost Bat
No	No	Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel
No	Yes	Natator depressus	Flatback Turtle
No	No	Neochmia ruficauda ruficauda	Star Finch (eastern), Star Finch (southern)
No	Yes	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Omphalea celata	
No	No	Orcaella heinsohni	Australian Snubfin Dolphin
No	No	Petauroides volans	Greater Glider (southern and central)
No	No	Phaius australis	Lesser Swamp-orchid
No	No	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)
No	No	Poephila cincta cincta	Southern Black-throated Finch
No	No	Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish
Yes	No	Pteropus poliocephalus	Grey-headed Flying-fox
No	No	Rostratula australis	Australian Painted Snipe
No	No	Sousa sahulensis	Australian Humpback Dolphin
No	No	Sphyrna lewini	Scalloped Hammerhead
No	No	Tringa nebularia	Common Greenshank, Greenshank
No	No	Tyto novaehollandiae kimberli	Masked Owl (northern)
Yes	No	Xeromys myoides	Water Mouse, False Water Rat, Yirrkoo

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland

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. *

Likelihood of occurrence assessments have been undertaken using information obtained from desktop and field investigations, refer to **Att K, Table 9, pages 40-44** and **Att L, Table A1, pages 75-83**. These assessments determined that multiple threatened species have a potential for occurrence within the Project area.

Water Mouse (*Xeromys myoides*)

The water mouse is listed as vulnerable under the EPBC Act. This species is known to occur in the broader Mackay region and there are historical occurrence records to the north (Bucasia and Eimeo, approximately 9km) and south (Sandringham Bay Conservation Park, approximately 20km) of the Project area.

Targeted surveys were conducted in 2019 and 2024 in line with the methodology outlined in **Att M, Appendix A, pages 55-57**. These surveys concluded there was no evidence that the Project area or adjacent habitat currently support a water mouse local population. These surveys identified multiple threats to the species in the local area, including:

- Past changes in hydrological conditions.
- Habitat fragmentation.
- Predation.
- Insecticide use for mosquito control.

Despite no evidence of water mouse, the habitat assessments determined that the surveyed mangrove forests provided suitable foraging and dispersal habitat. However suitable nesting habitat was found to be limited within the Project area, primarily due to the scarcity of well-defined supralittoral banks necessary for nesting burrows which were mostly confined to disturbed edge areas. This reduces the overall availability of suitable nesting sites.

Within the current Disturbance footprint, there is the potential for a direct impact on 10.39ha of potential habitat and 4.56ha of marginal habitat for the species. Refer to **Att M, Section 4.2.2, page 19**.

Potential direct impacts of the Project on the water mouse include:

- Loss of foraging and potential habitat from clearing.
- Habitat fragmentation and/or barriers to movement.
- Decline in habitat tree health from altered flow regimes, weed invasion and disease.
- Impact to habitat potentially considered critical to the survival of the species.
- Interference with the recovery of the species by impacting a potential site for reintroduction.

A significant impact assessment in accordance with the Significant Impact Guidelines 1.1: Matters of National Environmental Significance (DoE, 2013) and the Referral guideline for the vulnerable Water mouse Xeromys myoides (DoE, 2015) was undertaken for the water mouse. This assessment determined the Project has the potential for a significant impact on the species. Refer to **Att M, Section 6.2, pages 36-40.**

Grey-Headed Flying Fox (*Pteropus poliocephalus*)

The grey-headed flying fox is listed as vulnerable under the EPBC Act.

This species is known to occur within the wider Mackay region. The closest occurrence record is 13.5km south-west of the Project area in Walkerston, with the nearest known roost located approximately 57km west of the Project area in Finch Hatton Gorge. While the Project will impact a known black flying fox roost adjacent to Glenpark Street, surveys undertaken in October 2019, May 2020, March 2024, and July 2024 did not record any grey-headed flying fox individuals at the roost. Refer to **Att H, Section 4.2.3, page 15.**

The mangrove and melaleuca forests within the Project area constitute potential foraging habitat for the grey-headed flying fox. These habitats are, however, not considered to constitute habitat critical to the survival of the species. Refer to **Att L, Section 8.2.2, pages 51-54**.

Potential direct impacts of the Project on the grey-headed flying fox include:

- Impacts and fragmentation of vegetation communities not considered to constitute habitat critical to the survival of the species.
- Degradation of surrounding habitat through exposure of acid sulphate soils, pollutant and sediment releases, and the spread of biosecurity matters.
- Reduced availability for suitable roost sites.

A significant impact assessment in accordance with the Significant Impact Guidelines 1.1: Matters of National Environmental Significance (DoE, 2013) and the National Recovery Plan for the grey-headed flying fox (DAWE, 2021) has been undertaken for the species. This assessment determined that a significant impact was unlikely as the impacted vegetation communities were not considered critical foraging, breeding, or roosting habitat. Refer to **Att L, Section 8.2.2, pages 51-54.**

Eastern Curlew (*Numenius madagascariensis*)

The eastern curlew is listed as critically endangered and migratory under the EPBC Act.

This species is known to occur within the broader Mackay region. Although no suitable habitat is present within the Project area, there were sightings of the species within Vines Creek during the October 2019 survey, refer to **Att K, Section 6.1.1, page 63**. Suitable habitat is also present north of the QR Harbour Rail corridor where there are more extensive open areas suitable for waders and shorebirds.

The Project has the potential to result in an indirect impact on the eastern curlew due to:

- Loss and fragmentation of surrounding foraging habitat.
- Degradation of surrounding habitat through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.

Given that habitat within the Project area is not suitable for the species, no significant impacts are expected. Refer to **Att K, Section 6.1.1, page 63**.

White-Throated Needletail (*Hirundapus caudacutus*)

The white-throated needletail is listed as vulnerable and migratory under the EPBC Act.

This species is mapped as known to occur within the Project area. However, there is limited suitable habitat present and it does not breed in Australia. The species is known to spend most of their time in flight. One existing record of the species exists 5km south of the Project area. The white-throated needletail was not recorded during field surveys.

The Project has the potential to result in an indirect impact on the white-throated needletail due to:

- Loss of invertebrate prey through loss and fragmentation of habitat.
- Degradation of surrounding habitat through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.

Given the aerial nature of the species, the absence of critical foraging habitat, and only a moderate likelihood of occurrence within the Project area, no significant impacts are expected. Refer to **Att L, Section 8.2, page 49.**

Marine Turtles

The Project has the potential to result in an indirect impact on the following marine turtle species:

- Loggerhead turtle (*Caretta caretta*). This species is listed as endangered and migratory.
- Green turtle (*Chelonia mydas*). This species is listed as vulnerable and migratory.
- Hawksbill turtle (*Eretmochelys imbricata*). This species is listed as vulnerable and migratory.
- Flatback turtle (*Natator depressus*). This species is listed as vulnerable and migratory.

Potential indirect impacts include:

- Loss and fragmentation of marginal sea turtle foraging habitat.
- Degradation of surrounding habitat through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.

While these species are known to occur in the broader region, none are known to occur within the Project area. All four are primarily open water marine species and are highly unlikely to inhabit the shallow estuarine and freshwater environment found within the Project area.

The Project is therefore considered unlikely to have a significant impact on any marine turtle species. Refer to **Att I, Section 3.3.2, page 23.**

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

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

TMR recognises that the Project has the potential to result in a significant impact on the water mouse. Section 4.1.4.4 of this referral does not provide the option to select this conclusion.

Water Mouse

Field Survey Results

The Referral guideline for the vulnerable water mouse Xeromys myoides (DoE, 2015) identifies primary survey techniques for the species. These include habitat assessments, daytime searches for nesting sites and evidence of foraging, and Elliott or camera trapping. These methods were applied within the Project area across suitable and marginal value habitats to assess the presence of water mouse.

Across three survey campaigns, no evidence of water mouse individuals, nesting structures or identifiable activity (tracks, scats, prey middens) were recorded. A summary of the findings is as follows:

- October 2019: 300 trap nights through the deployment of Elliot traps in suitable habitat. Elliot trapping was then discontinued due to the large numbers of green ants attracted to the pilchards that were used as bait. No water mouse were captured in the Elliot traps. No evidence of any individuals, nesting structures or identifiable water mouse activity (i.e. tracks, scat, prey middens) were observed during habitat assessments and observations. Refer to **Att K, Section 3.5.5, pages 48-49**.
- March 2024: 261 trap nights through the deployment of un-baited camera traps in suitable habitat. No water mouse were captured on the camera traps. No evidence of any individuals, nesting structures or evidence of identifiable water mouse activity was observed during habitat assessments and observations. Refer to **Att M, Section 8, page 50**.
- October/November 2024: 1,385 trap nights through the deployment of un-baited camera traps in suitable habitat. No water mouse were captured on the camera traps. No evidence of any individuals, nesting structures or evidence of identifiable water mouse activity was observed during habitat assessments and observations. Refer to **Att M, Section 8, page 50**.

No confirmed local populations of the water mouse have been recorded within or immediately adjacent to the Project area. The closest known recorded locations are at Bucasia (approximately 9 km north), Cape Hillsborough National Park (approximately 30 km north), and Sandringham Bay Conservation Park (approximately 20 km south). Refer to **Att M, Section 8, page 38**. The Project area is not located at the geographic limit of the species extent of occurrence.

While the Project area contained all suitable habitat features to be considered necessary for water mouse foraging and dispersal, it lacked active water mouse nesting structures and had limited availability of supralittoral banks and/or exposed buttress roots (above the high tide) that could support the species breeding and roosting activities. The existing QR Harbour Rail corridor, surrounding residential development and other infrastructure within the area (e.g. Harbour Road) is likely to have caused fragmentation to any previous or existing population of the species. The confirmed occurrence of dingo/wild dog (*Canis lupus*), European red fox (*Vulpes vulpes*), monitors (*Varanus* sp) and other predatory species within the Project area are also likely posing threats to the water mouse if the species is present. Refer to **Att M, Section 4.2.3, page 28**.

Habitat Critical to the Survival of the Water Mouse

While no evidence of an active population has been confirmed in or adjacent to the Project area, the proposed action will result in direct impacts to water mouse habitat.

The Conservation Advice for the species (DAWE, 2021) notes that “It is not considered practicable to describe habitat critical to the survival of the water mouse”. Regardless, an assessment of the presence of suitable habitat based on the criteria provided in the MNES Significant impact guidelines (DoE, 2013) was

undertaken to assist with the significant impact assessment, refer to **Att M, Table 6-1, pages 37-38**. It identified that impacted habitat is considered critical to the survival of the water mouse as there are areas that are necessary for:

- Activities such as foraging, breeding, roosting, or dispersal; and
- Potential reintroduction or recovery of populations.

The Project will therefore result in the removal of approximately:

- 10.39ha of potential critical habitat; and
- 4.56ha of marginal critical habitat.

Refer to **Att M, Section 4.2.2, page 19**.

Significant Impact Assessment

An assessment of the significant impact criteria identified in MNES Significant impact guidelines (DoE, 2013) was subsequently undertaken, refer to **Att M, Table 6-2, pages 38-40**. It identified that the Project has the potential to:

- Adversely affect habitat critical to the survival of the species; and
- Interfere substantially with the recovery of the species.

Based on the survey data, habitat assessments, and the adopted criteria, TMR considers that the Project has the potential to constitute a significant impact under the EPBC Act, refer to **Att M, Executive Summary, page iii**. While no individuals were detected, the extent and quality of habitat to be removed, the presence of key ecological functions within that habitat, and the potential for the area to support recovery or reintroduction, warrant a precautionary approach to impact assessment.

Other Species

Significant impacts are considered unlikely for all other EPBC Act listed threatened species. Refer to Section 4.1.4.2 of this referral, **Att L, Section 8, pages 49-55** and **Att K, Section 6.1.1, pages 63-65**.

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. *

While the Project has been assessed as having the potential to constitute a significant impact on the water mouse, TMR considers it is not a controlled action for the following reasons:

- No confirmed presence despite extensive targeted surveys. Across multiple survey campaigns using DCCEEW endorsed methodologies (habitat assessments, Elliott trapping, and camera trapping), no water mouse individuals, nest structures or activity evidence (tracks, scats, prey middens) have been recorded within the Project area. Refer to **Att K, Section 3.5.5, pages 48-50** and **Att M, Section 2.2, page 7**. This suggests that if there is a population of the species persevering in the broader Bassett Basin, the habitat within the Project area is lacking key features necessary for the species to thrive.
- The outcome of the previous MPAR referral (EPBC 2020-8783) was that the Project was deemed not a controlled action. Since that time, further detailed water mouse field investigations have been undertaken in the Project area. Despite deploying camera traps for an additional 1,646 trap nights and undertaking more targeted habitat assessments, the investigations did not result in new evidence that the Project area or adjacent habitat supports a local population of water mouse. Refer to **Att M, Section 4.2.3, page 28**.
- Field investigations noted limited presence of well-defined supralittoral banks, tree hollows, and buttress roots above the high tide mark. As such, suitable nesting habitat within the Project area is considered limited. Refer to **Att M, Table 6-1, page 37**.
- The Project area and adjacent habitats have been subject to substantial past impacts and fragmentation. This includes the construction of the adjacent QR Harbour Rail corridor, Bayersville Landfill, Harbour Road and nearby residential development. This activity has resulted in isolating the intertidal habitat within the Project area, with natural tidal connectivity to other areas only remaining via the deeper channels of Vines Creek.
- The water mouse is highly sensitive to hydrological changes. Previous construction of the QR Harbour Rail corridor likely resulted in changes in natural flow patterns between the Bassett Basin and the Keeleys Road wetland complex to the north. Upstream land use changes (i.e. urban development) have further increased stormwater flows and velocities particularly during the wet season.
- The QR Harbour Rail corridor presents a significant physical movement barrier between the Project area and the mangrove habitat within the adjacent Keeleys Road wetland complex. It is uncertain how permeable this barrier would be for a small, mostly ground dwelling mammal such as the water mouse.
- The water mouse is highly susceptible to predation. Evidence collected during the field surveys identified that the European red fox, the dingo/wild dog, and various species of monitors are already common and established across the Project area. Refer to **Att M, Section 4.2.3, pages 28-31**.
- The water rat/rakali (*Hydromys chrysogaster*) and the black rat (*Rattus rattus*) were both confirmed as being present within the Project area, refer to **Att M, Section 4.2.3, pages 31-32**. Interspecific competition between these species and the water mouse may occur if the species exists within the Project area. For example:
    - Black rats breed in trees and will compete with other hollow-dependant species which would include the water mouse should suitable hollows be present. The diet of the black rat is highly varied, and this may also cause interspecific competition between the two species.
    - Rakali feed on a large range of prey, including crustaceans. This overlap in their habitat and diet may potentially cause interspecific competition between the two species.
- Mackay Regional Council conduct regular mosquito control (vector) campaigns in accessible locations within the Project area. These campaigns introduce chemicals and vehicle disturbances that may adversely affect prey resources and water mouse foraging activity.
- The Project area is not located at the geographic limit of the species extent of occurrence. If there is a population of the species persevering in the Project area it is unlikely that any Project impacts would significantly reduce the area of occupancy of the water mouse.

Given the absence of confirmed local populations, the lack of key breeding habitat, extensive historical disturbance, and ongoing threatening processes already operating in the Project area, TMR do not expect the proposed action to have a high likelihood of significantly impacting the water mouse. TMR therefore considers the Project is not a controlled action.

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. *

Avoidance of Impacts

The MPAR progressed through the Options Analysis phase between 2012 and 2013. A multi-criteria analysis (MCA) that included environmental considerations was conducted as a part of this phase to confirm the preferred alignment option for the Mackay Ring Road and the MPAR. The preferred Project alignment was purposefully located adjacent to the existing QR Harbour Rail corridor and the Bayersville Landfill to limit impacts on habitat/tidal connectivity and previously undisturbed marine vegetation. Much of the marine vegetation that will be impacted by the Project was historically cleared when the multi modal corridor was established in the late 1970s and early 1980s, refer to **Att G**.

Alternative Project alignments through the Bassett Basin would impact on undisturbed areas that would likely contain higher quality habitats. Adopting an alternative Project alignment would also require temporary disturbances of larger areas for site access and ancillary works.

During the current business case stage, the concept design was further refined to replace sections of road embankment with bridging in the Bassett Basin. This has resulted in the addition of the 600m long Goosepond Creek and 300m long Vines Creek bridges. These bridges were not included within the 2020 referral (EPBC 2020/8783). These design changes reduces the Disturbance footprint, improves habitat connectivity, and minimises hydraulic impacts.

Additional road design features that avoid habitat impacts include:

- Steepened embankment batters (1 on 2 instead of the preferred 1 on 6).
- Allowance for adequate verge width behind the roadside guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Incorporating into the expected construction methodology the use of existing roads and tracks for site access.
- Coarse granular (rock) working platform within the permanent road footprint to avoid temporary tracks outside the Disturbance footprint, refer to **Att F**, **Section 7, pages 8-10** (Att F will not be made publicly available due to commercial in confidence reasons).

Mitigation of Impacts

A summary of the measures to mitigate potential impacts to the water mouse in the planning and design phases are as follows:

- All bridges and culverts will be designed in consideration of fauna sensitive elements as noted within Chapter 6 of TMR's Fauna Sensitive Transport Infrastructure Delivery manual (TMR, 2024).
- Detailed design will consider the water mouse habitat mapping that has been completed as part of the ecological assessment and aim to further avoid or minimise impacts.
- Works sequencing is planned to reduce the permanent works clearing to as little as possible.
- Landscaping will utilise native species and consider the regional ecosystems present for suitable choices.
- An ESCP will be developed in the planning and detailed design stages in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- Adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- An Acid Sulphate Soil Management Plan will be developed for the Project to manage and minimise the disturbance of PASS. Project studies have been undertaken to review how the flow patterns with the tidal environment are impacted, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Initial MUSIC modelling has been completed for the Project to guide the implementation of water sensitive urban design.

- Open graded asphalt and vegetated batter slopes are incorporated into the embankment design to minimise operational water quality impacts.
- Permanent lighting in the Bassett Basin has been minimised and the use of white lights will be avoided where required.
- Design will limit clearing for permanent works to the greatest extent possible and as close as practical to earthworks limits. Design refinement during future project stages is likely to further reduce the Project's Disturbance footprint.
- A pilot study has been undertaken to understand the most effective way to remove healthy saltwater couch (*Sporobolus virginicus*) from the upper tidal zone, grow it, and then return it to the Project and other areas.
- Further targeted ecology surveys will be undertaken to inform the Project's Offset Management Plan/Biodiversity Offsets Strategy.

A summary of the of measures to mitigate potential impacts to the water mouse during the construction phase are as follows:

- An EMP is to be developed for the project. A Biodiversity Management Plan will incorporate specific requirements for any relevant conservation significant fauna.
- All site offices, construction stockpiles and laydown/storage areas will be located within existing cleared or disturbed areas. Rehabilitation will occur where this is not possible.
- TMR technical standards and specifications will be implemented including MRTS04 General Earthworks, MRTS51 Environmental Management, MRTS52 Erosion and Sediment Control, and MRTS16 Landscape and Revegetation Works.
- Dust suppression and monitoring will be in place during construction.
- Hollow bearing trees and potential water mouse breeding locations (e.g. supralittoral banks, large mangrove with buttress roots) will be retained wherever practicable.
- In-stream works and temporary waterway barrier works will be limited in duration.
- All exposed earthworks will be rehabilitated promptly, along with all disturbed areas not required for operation and maintenance activities, which will include marine plant rehabilitation where required.
- Pre-clearance surveys will be undertaken by suitably qualified fauna experts prior to all vegetation clearing.
- Sequential clearing will occur to allow less mobile fauna to move away from the disturbance areas.
- Fauna spotter catchers will be engaged during all clearing activities to relocate terrestrial and aquatic fauna species when required.
- An established response procedure will be implemented for all wildlife injury or mortality incidents.
- Biosecurity measures will include pre-works biosecurity surveys, pest treatment, vehicle and plant wash downs and checks, machinery declarations, and ongoing monitoring.
- Any fox dens located during pre-clearance surveys or construction will be controlled using a combination of methods including den fumigation and den destruction.
- Erosion and sediment control measures will be implemented as per an approved ESCP in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008). A detailed baseline water quality monitoring program is currently underway in the Bassett Basin to assist in understanding ambient levels and to derive site specific Water Quality Objectives and trigger levels for construction.
- Construction site lighting will be kept to a minimum.

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

No EPBC Act offsets are proposed, as TMR considers the Project not to be a controlled action with respect to significant impacts on threatened species.

TMR is currently investigating potential State offset opportunities and environmental initiatives for the Project that would however contribute to positive outcomes for the water mouse including:

- Demolition and removal of disused/abandoned infrastructure within the Bassett Basin to improve tidal flushing, marine plant recolonisation, and habitat restoration opportunities.
- Rehabilitation works within select land parcels within the Bassett Basin to improve marine plant recolonisation and water mouse habitat.
- Addition of up to eight (8) locations to the Bassett Basin Fish Habitat Area (FHA). The proposal would increase the size of the Bassett Basin FHA by up to 20ha. Rehabilitation activities in some of the proposed parcels would also occur to improve marine plant recolonisation and water mouse habitat.
- Installation of oyster beds/shellfish reefs in Vines Creek to improve water quality and increase biodiversity.
- Installation of habitat reef modules in the Vines Creek or Pioneer River to facilitate fish habitat restoration and increase biodiversity.
- Direct land offsets, such as formalising legal protection over large portions of the adjacent Keeleys Road wetland complex, which contains both suitable and marginal water mouse habitat.

A Biodiversity Offset Strategy/Offset Management Plan will be developed during the Project's detail design stage to address State offset requirements.

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	Common name
No	No	Actitis hypoleucos	Common Sandpiper
No	No	Anous stolidus	Common Noddy
No	No	Anoxypristis cuspidata	Narrow Sawfish, Knifetooth Sawfish
No	Yes	Apus pacificus	Fork-tailed Swift
No	No	Balaenoptera edeni	Bryde's Whale
No	Yes	Calidris acuminata	Sharp-tailed Sandpiper
No	No	Calidris alba	Sanderling
No	No	Calidris canutus	Red Knot, Knot
No	No	Calidris ferruginea	Curlew Sandpiper
No	No	Calidris melanotos	Pectoral Sandpiper
No	Yes	Calidris ruficollis	Red-necked Stint
No	Yes	Caretta caretta	Loggerhead Turtle
No	No	Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover
No	Yes	Chelonia mydas	Green Turtle
No	Yes	Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile
No	No	Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo
No	No	Dermochelys coriacea	Leatherback Turtle, Leathery Turtle, Luth
No	Yes	Eretmochelys imbricata	Hawksbill Turtle
No	No	Fregata ariel	Lesser Frigatebird, Least Frigatebird
No	No	Fregata minor	Great Frigatebird, Greater Frigatebird
No	Yes	Gallinago hardwickii	Latham's Snipe, Japanese Snipe
No	Yes	Hirundapus caudacutus	White-throated Needletail
No	No	Lamna nasus	Porbeagle, Mackerel Shark

Direct impact	Indirect impact	Species	Common name
No	No	Lepidochelys olivacea	Olive Ridley Turtle, Pacific Ridley Turtle
No	No	Limnodromus semipalmatus	Asian Dowitcher
No	No	Limosa lapponica	Bar-tailed Godwit
No	No	Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel
No	No	Megaptera novaeangliae	Humpback Whale
No	No	Mobula alfredi	Reef Manta Ray, Coastal Manta Ray
No	No	Mobula birostris	Giant Manta Ray
No	Yes	Natator depressus	Flatback Turtle
No	Yes	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Orcaella heinsohni	Australian Snubfin Dolphin
No	Yes	Pandion haliaetus	Osprey
No	No	Phaethon lepturus	White-tailed Tropicbird
No	Yes	Plegadis falcinellus	Glossy Ibis
No	No	Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish
No	No	Sousa sahulensis	Australian Humpback Dolphin
No	Yes	Tringa nebularia	Common Greenshank, Greenshank

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. *

Likelihood of occurrence assessments using information obtained from desktop and field-based investigations have been undertaken, refer to **Att K, Table 9, pages 40-44** and **Att L, Table A1, pages 75-83**. These assessments determined that several migratory species have a potential for occurrence within the Project area.

Migratory Shorebirds and Waders

There is very little actual habitat for migratory waders/shorebirds within the Project area, refer to **Att M, Section 3.5.5, page 45**. The most suitable habitat is located outside of the Project area, either within Vines Creek itself, or to the north and northeast of the Project area. Latham's snipe (*Gallinago hardwickii*), sharp-tailed sandpiper (*Calidris acuminata*), red-necked stint (*Calidris ruficollis*), and common greenshank (*Tringa nebularia*) are expected to occur within the palustrine wetlands to the north of the adjacent QR Harbour Rail corridor where there is suitable habitat and previous observation records. Refer to **Att K, Section 3.5.5, pages 45-46.**

There is no roosting habitat present for migratory waders/shorebirds within the Project area.

The potential indirect impacts of the Project on migratory waders/shorebirds include:

- Removal of intertidal vegetation communities, thereby further reducing connectivity between the estuarine wetlands of the Bassett Basin and the adjacent palustrine wetlands of the Keeleys Road wetland complex.
- Degradation of adjacent wetland water quality through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.
- Habitat fragmentation.

Fork-tailed Swift (*Apus pacificus*)

This species was recorded immediately adjacent to the Project area during the 2019 field survey, refer to **Att M, Section 3.5.4, Page 36**. This species is almost exclusively aerial and is likely to utilise numerous habitats within the surrounding area. It is therefore not expected to be directly impacted by the Project, refer to **Att L, Section 8.2, page 49.**

There is no roosting habitat present for this species within the Project area.

The potential indirect impacts of the Project on the fork-tailed swift include:

- Degradation of adjacent wetland water quality through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.
- Habitat fragmentation.
- Loss of invertebrate prey through habitat loss.

Eastern Osprey (*Pandion haliaetus cristatus*)

This species has been previously recorded in surrounding coastal areas, including Vines Creek. Suitable hunting habitat is present within and surrounding the Project area, however no large nesting sites suitable for the species were observed during the 2019 or 2024 field surveys, refer to **Att L, Section 8.2.3, pages 54-55.**

The potential indirect impacts of the Project on the eastern osprey include:

- Removal of intertidal vegetation communities, thereby reducing connectivity between the estuarine wetlands of the Bassett Basin and the adjacent palustrine wetlands of the Keeleys Road wetland complex.

- Degradation of adjacent wetland water quality through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.
- Habitat fragmentation.
- Loss of hunting opportunities through habitat loss.

Glossy Ibis (*Plegadis falcinellus*)

This species was not recorded within the Project area during the 2019 field surveys. A single individual was recorded near an artificial drainage area within the MPAR Section 2 footprint, and several individuals were recorded in wetlands to the north-east of the Project area, refer to **Att K, Section 3.5.4, page 36**.

The habitat available for this species within the Project area is considered marginal, refer to **Att K, Section 3.5.4, page 42**. It is much more likely to occur within the wetlands located north and northeast of the Project area.

The potential indirect impacts of the Project on the glossy ibis include:

- Removal of intertidal vegetation communities, thereby reducing connectivity between the estuarine wetlands of the Bassett Basin and the adjacent palustrine wetlands of the Keeleys Road wetland complex.
- Degradation of adjacent wetland water quality through exposure of acid sulphate soils, pollutant and sediment releases, and changes to local drainage patterns.
- Habitat fragmentation.

Estuarine Crocodile (*Crocodylus porosus*)

The estuarine crocodile is known to inhabit mangrove forests in Mackay. There is suitable feeding habitat present with the Project area and the broader Bassett Basin. The species has previously been observed on occasion in Goosepond Creek and Vines Creek, refer to **Att L, Section 8.2.3, pages 54-55** and **Att I, Section 3.3.2, page 23**.

There are no known nesting sites in the Project area.

The potential indirect impacts of the Project on the estuarine crocodile include:

- Removal of intertidal vegetation communities, thereby reducing connectivity between the estuarine wetlands of the Bassett Basin and the adjacent palustrine wetlands of the Keeleys Road wetland complex.
- Habitat fragmentation.
- Loss of prey through habitat loss.
- Increased intraspecific competition through habitat loss.

White-Throated Needletail (*Hirundapus caudacutus*)

Refer to Section 4.1.4.2 of this referral for an assessment of potential impacts on the white-throated needletail.

Eastern Curlew (*Numenius madagascariensis*)

Refer to Section 4.1.4.2 of this referral for an assessment of potential impacts on the eastern curlew.

Marine Turtles

Refer to Section 4.1.4.2 of this referral for an assessment of potential impacts on marine turtles.

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

No

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

The Project area does not represent important habitat for any migratory species, and it is therefore unlikely that the proposed action will substantially modify, destroy or isolate an area of important habitat for any of these species. Habitats that occur within the Project area are also well represented in the local area and broader region.

Nearby observations of migratory bird species are associated with the adjacent palustrine wetlands of the Keeleys Road wetland complex and estuarine mudflats/sandflats of Vines Creek. Neither of these habitats occur within the Project area.

Although previous observations of the estuarine crocodile have occurred within the vicinity of the Project area, there is no indication that the area contains an 'ecologically significant' proportion of the population of the species. There is also no nesting habitat within the Project area.

The proposed action is unlikely to result in an invasive species that is harmful to any migratory species becoming established. Feral animals such as wild dogs and foxes are already established in Bassett Basin and the proposed action is unlikely to introduce additional invasive threats.

The proposed action is also unlikely to seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species as the Project area is not known to support a significant proportion of a population of a listed migratory species. Refer to **Att K, Section 6.1.2, pages 66-67** and **Att L, Section 8.2.3, pages 54-55.**

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

No

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

The outcome of the assessment indicates that a significant impact to migratory species is unlikely. Refer to **Att K, Section 6.1.2, pages 66-67** and **Att L, Section 8.2.3, pages 54-55.**

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. *

Avoidance of Impacts

The MPAR progressed through the Options Analysis phase between 2012 and 2013. A multi-criteria analysis (MCA) that included environmental considerations was conducted as a part of this phase to confirm the preferred alignment option for the Mackay Ring Road and the MPAR. The preferred Project alignment was purposefully located adjacent to the existing QR Harbour Rail corridor and the Bayersville Landfill to limit impacts on habitat/tidal connectivity and previously undisturbed marine vegetation. Much of the marine vegetation that will be impacted by the Project was historically cleared when the multi modal corridor was established in the late 1970s and early 1980s, refer to **Att G**.

Alternative Project alignments through the Bassett Basin would impact on undisturbed areas that would likely contain higher quality habitats for migratory species. Adopting an alternative Project alignment would also require temporary disturbances of larger areas for site access and ancillary works.

During the current business case stage, the concept design was further refined to replace sections of road embankment with bridging in the Bassett Basin. This has resulted in the addition of the 600m long Goosepond Creek and 300m long Vines Creek bridges. These bridges were not included within the 2020 referral (EPBC 2020/8783). These design changes reduces the Disturbance footprint, improves habitat connectivity, and minimises hydraulic impacts.

Additional road design features that avoid habitat impacts include:

- Steepened embankment batters (1 on 2 instead of the preferred 1 on 6).
- Allowance for adequate verge width behind the roadside guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Incorporating into the expected construction methodology the use of existing roads and tracks for site access.
- Coarse granular (rock) working platform within the permanent road footprint to avoid temporary tracks outside the Disturbance footprint, refer to **Att F**, **Section 7, pages 8-11** (Att F will not be made publicly available due to commercial in confidence reasons).

Mitigation of Impacts

A summary of the measures to mitigate potential impacts to migratory species in the planning and design phases are as follows:

- All bridges and culverts will be designed in consideration of fauna sensitive elements as noted within Chapter 6 of TMR's Fauna Sensitive Transport Infrastructure Delivery manual (TMR, 2024).
- Works sequencing is planned to reduce the permanent works clearing to as little as possible.
- Landscaping will utilise native species and consider the regional ecosystems present for suitable choices.
- An ESCP will be developed in the planning and detailed design stages in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- Adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- An Acid Sulphate Soil Management Plan will be developed for the Project to manage and minimise the disturbance of PASS. Project studies have been undertaken to review how the flow patterns with the tidal environment are impacted, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Initial MUSIC modelling has been completed for the Project to guide the implementation of water sensitive urban design.
- Open graded asphalt and vegetated batter slopes are incorporated into the embankment design to minimise operational water quality impacts.

- Permanent lighting in the Bassett Basin has been minimised and the use of white lights will be avoided where required.
- Design will limit clearing for permanent works to the greatest extent possible and as close as practical to earthworks limits. Design refinement during future project stages is likely to further reduce the Project's Disturbance footprint.
- A pilot study has been undertaken to understand the most effective way to remove healthy saltwater couch (*Sporobolus virginicus*) from the upper tidal zone, grow it, and then return it to the Project and other areas.

A summary of the of measures to mitigate potential impacts to migratory species during the construction phase are as follows:

- An EMP(C) is to be developed for the project. A Biodiversity Management Plan will incorporate specific requirements for any relevant conservation significant fauna.
- All site offices, construction stockpiles and laydown/storage areas will be located within existing cleared or disturbed areas. Rehabilitation activities will occur where this is not possible.
- TMR technical standards and specifications will be implemented including MRTS04 General Earthworks, MRTS51 Environmental Management, MRTS52 Erosion and Sediment Control, and MRTS16 Landscape and Revegetation Works.
- Dust suppression and monitoring will be in place during construction.
- In-stream works and temporary waterway barrier works will be limited in duration.
- All exposed earthworks will be rehabilitated promptly, along with all disturbed areas not required for operation and maintenance activities, which will include marine plant rehabilitation where required.
- Pre-clearance surveys will be undertaken by suitably qualified fauna experts prior to all vegetation clearing.
- Sequential clearing will occur to allow less mobile fauna to move away from the disturbance areas.
- Fauna spotter catchers will be engaged during all clearing activities to relocate terrestrial and aquatic fauna species when required.
- An established response procedure will be implemented for all wildlife injury or mortality incidents.
- Biosecurity measures will include pre-works biosecurity surveys, pest treatment, vehicle and plant wash downs and checks, machinery declarations, and ongoing monitoring.
- Any fox dens located during pre-clearance surveys or construction will be controlled using a combination of methods including den fumigation and den destruction.
- Erosion and sediment control measures will be implemented as per an approved ESCP in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008). A detailed baseline water quality monitoring program is currently underway in the Bassett Basin to assist in understanding ambient levels and to derive site specific Water Quality Objectives and trigger levels for construction.
- Construction site lighting will be kept to a minimum.

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

No offsets are proposed as a significant impact on migratory species is unlikely.

4.1.6 Nuclear

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

No

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

The Project does not involve any nuclear activities.

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. *

There are no Commonwealth Marine Areas within or in close proximity to the Project area.

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? *

Yes

4.1.8.2 Briefly describe why your action has a direct and/or indirect impact on this protected matter. *

Great Barrier Reef Marine Park

Around Mackay, the boundary of the Great Barrier Reef Marine Park (GBRMP) is located offshore and at its closest point is mapped approximately 4km from the Project area, refer to **Att L, Figure 7-1, page 23**.

The Project includes two bridging structures to minimise the Development footprint and the environmental and hydrological impacts associated with its construction and operation. It also follows the previously disturbed MMC where the existing QR Harbour Rail corridor is located. However, some indirect impacts have the potential to occur, in particular during the construction period from ground disturbing activities.

Possible indirect impacts include:

Temporary indirect impacts

- A decline in water quality of the marine receiving environment as a result of poorly designed erosion and sediment control and exposure of acid sulphate soils.
- Impacts to coastal processes (i.e. tidal flushing, natural sediment transport) during vegetation clearing and/or earthworks activities.
- Releases of waste, sewage, oil, fuel or other toxic substance upstream of the GBRMP during the construction of the Project.
- A temporary increase in light, noise, and vibration levels upstream of the GBRMP during construction of the Project.

Permanent indirect impacts

- Permanent removal of upstream marine and benthic habitat, including mangrove forests and intertidal marshes.
- Potential changes in upstream tidal flushing regimes and modifications to natural coastal and riverine processes.
- Vehicle usage during road operation potentially impacting local water quality.
- Vehicle usage during road operation causing an increase in noise and light pollution.
- Potential introduction and/or increase in weeds and pest fauna.

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

No

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

An action is likely to have a significant impact on the environment of the GBRMP if there is a real chance or possibility it will:

- Modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat in the GBRMP.
- Have a substantial adverse effect on a population of a species or cetacean.
- Result in a substantial change in air quality or water quality.
- Result in a known or potential pest species being introduced or becoming established in the GBRMP.
- Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment.
- Have a substantial adverse impact on heritage values of the GBRMP.

The Project is located well outside of the GBRMP and is not expected to affect the aforementioned values to the extent that they would be significantly impacted. Refer to **Att L, Section 8.2.1, pages 50-51** for the significant impact assessment completed in accordance with the MNES Significant Impact Guidelines (DoE, 2013)**.** Detailed environmental surveys have guided concept design to avoid more sensitive habitat areas within the Bassett Basin. While disturbance of mangroves and intertidal landscapes will still occur, significant efforts have been made to ensure that they are minimised and are occurring within areas that have been previously impacted where possible. These include:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor. This alignment maximises the distance between the Project and the GBRMP, and ensures that the Project area is located within the previously disturbed MMC where possible, refer to **Att G**.
- Incorporation of additional bridging within the design. This has reduced the Disturbance footprint and has minimised impacts to existing tidal flushing regimes as demonstrated by pre- and post-development tidal simulations, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Incorporation of road design features that reduce the Disturbance footprint. These include steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Incorporation of water sensitive design to minimise operational water quality impacts. These include swales and ponds, open graded asphalt and vegetated batter slopes within the concept design.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by developing a conceptual construction methodology that maximises use of existing accesses and the permanent road footprint during construction, refer to **Att F, Section 5.0, pages 6-14** (Att F will not be made publicly available due to commercial in confidence reasons).
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Utilisation of CMCs rather than traditional piling techniques to improve poor ground while limiting ground disturbance and exposure of PASS.

Refer to Section 4.1.8.10 of this referral for a full list of mitigation measures to reduce potential indirect impacts to the GBRMP.

Sediment mobilisation will occur temporarily during construction however the implementation of a detailed Erosion and Sediment Control Plan (ESCP) will assist in minimising any short-term impacts on water quality. A detailed baseline water quality monitoring program is currently underway in the Bassett Basin to assist in understanding ambient levels and to derive site specific Water Quality Objectives and trigger levels for the management area. The Bassett Basin is specified as moderately disturbed mid-estuary waters within the Pioneer River and Plane Creek Basins Environmental Values and Water Quality Objectives (DES, 2022), and initial water quality results indicate pre-existing elevated levels of some metals, per- and polyfluoroalkylsubstances (PFAS) and some nutrients.

Initial MUSIC modelling has been completed for the Project to guide the implementation of water sensitive urban design. Further MUSIC modelling will be undertaken during future design stages to identify and address any additional impacts that may result from design development. Innovative techniques such as artificial shellfish reef installation within the Bassett Basin, marine plant rehabilitation activities, and implementing water quality improvements in upper Goosepond Creek have been included in the business case proposal and will be considered further during future design stages.

Hydraulic modelling has also been an integral part of concept design development. Design refinements have been informed by iterative testing of various Project and climate scenarios. This hydraulic analysis also included an assessment of tidal movements to evaluate baseline conditions and potential changes to tidal exchange within the Bassett Basin. Parameters that were modelled during mean high water spring and highest astronomical tide events include peak surface water elevation, water velocity and time of submergence, refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons). The results of the assessment suggest only minor changes between the pre- and post-development scenarios.

During construction an EMP will be put in place to manage indirect impacts on adjacent habitat areas (i.e. water quality impacts, spill and sediment management) and regular water quality monitoring will be undertaken. Vegetation clearing within the Project area is to be limited to that necessary to facilitate development.

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

No

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

The outcome of the assessment indicates that a significant impact to the GBRMP is unlikely.

There will be no direct impacts to the GBRMP due to the Project area being outside the mapped boundary, and indirect impacts that may arise will be managed through design and construction planning and the implementation of construction mitigation measures.

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

A summary of measures to mitigate potential impacts to the GBRMP for the planning and design phase are as follows:

- Ensuring the Project is located adjacent to the existing QR Harbour Rail corridor and within the previously disturbed MMC where possible.
- Ensuring that adequate room is included within the Project area to allow for best practice erosion and sediment controls to be installed during construction.
- Incorporation of additional bridging (600m long Goosepond Creek Bridge and 300m long Vines Creek Bridge) within the design to reduce the Disturbance footprint and ensure existing tidal flushing regimes are maintained.
- Incorporation of road design features, such as steepened embankment batters (1 on 2 instead of the preferred 1 on 6) and an allowance for adequate width behind the road guardrail to negate the need for permanent maintenance access tracks beyond the toe of the road embankment.
- Ensuring that temporary disturbances (i.e. construction tracks, ancillary facilities) are minimised by devising a construction methodology that maximises use of existing accesses and the permanent road footprint during construction.
- Where road embankments remain, culverts have been aligned adjacent and parallel to the QR Harbour Rail Line to ensure continued tidal flushing of the palustrine wetlands to the north of the Project area.
- Utilisation of CMCs rather than traditional piling techniques to improve poor ground within the Bassett Basin while limited ground disturbance. CMCs are a displacement type rigid inclusion used to improve poor ground without generating any spoil, therefore limited on ASS/PASS.
- All bridges and culverts will be designed in consideration of fauna sensitive elements as noted within Chapter 6 of TMR's Fauna Sensitive Transport Infrastructure Delivery manual (TMR, 2024).
- Planning work sequencing to reduce the permanent works clearing to as little as possible.
- Landscaping will utilise native species and consider the regional ecosystems present for suitable choices.
- An ESCP will be developed in the planning and detailed design stages in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- An Acid Sulphate Soil Management Plan will be developed for the Project to manage and minimise the disturbance of PASS. Project studies have been undertaken to review how the flow patterns with the tidal environment are impacted., refer to **Att O, Section 7.2, pages 3-4** (Att O will not be made publicly available due to commercial in confidence reasons).
- Water sensitive urban design has been incorporated into the design through the use of swales and ponds in drainage channels adjacent to the urban areas to minimise runoff on natural waterways.
- Open graded asphalt and vegetated batter slopes are incorporated into the road design to minimise operational water quality impacts.
- A pilot study has been undertaken to understand the most effective way to remove healthy saltwater couch from the upper tidal zone, grow it, and then return it to the Project and other areas.
- Investigations are underway to remediate previously impacted sites within the Bassett Basin to enhance overall water quality of the catchment.
- Investigations will be undertaken to assess the suitability of habitat reef module and artificial shellfish reef installation within the Bassett Basin.
- A trial will be undertaken to simulate the intended landscaping treatment on the embankment batters through the Bassett Basin. The trial will help with understanding the most effective means to minimise erosion and establishing native vegetation (both marine and terrestrial) on the batters.

A summary of measures to mitigate potential impacts to the GBRMP during the construction phase are as follows:

- An EMP is to be developed for the project.
- Site offices, construction stockpiles and laydown/storage areas will be located within existing cleared or disturbed areas. Where this is not possible, rehabilitation activities will occur.

- TMR technical standards and specifications will be implemented including MRTS04 General Earthworks, MRTS51 Environmental Management, MRTS52 Erosion and Sediment Control, and MRTS16 Landscape and Revegetation Works.
- Water quality monitoring will be undertaken during construction.
- Dust suppression and monitoring will be in place during construction.
- The duration of in-stream works and temporary waterway barrier works will be minimised.
- All exposed earthworks will be rehabilitated promptly, along with all disturbed areas not required for operation and maintenance activities, which will include marine plant rehabilitation where required.
- Biosecurity measures will include pre-works biosecurity surveys, pest treatment, vehicle and plant wash downs and checks, machinery declarations, and ongoing monitoring.
- Erosion and sediment control measures will be implemented as per an approved ESCP in accordance with the standards outlined in the IECA Best Practice ESC Guidelines (IECA, 2008).
- Construction site lighting will be kept to a minimum.

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

No offsets are proposed as a significant impact on the GBRMP is unlikely.

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

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

No

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

The Project is not related to a large coal mining or coal seam gas development.

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. *

There is no Commonwealth land within or in close proximity to the Project area.

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 Project does not impact any Commonweath 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:

- Threatened Species and Ecological Communities (S18)

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)
- 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. *

Strategic Rationale and Project drivers

The broader MPAR is a vital infrastructure investment aimed at enhancing freight efficiency, improving road safety, and driving regional economic growth. The current urban road network is inefficient for heavy vehicle movements, leading to increased congestion, higher transport costs, and safety risks. The Project is driven by several key factors including:

Freight Efficiency and Supply Chain Reliability

- Mackay's economy heavily depends on road freight, particularly for mining equipment, agriculture, and bulk exports.
- The existing freight routes are inefficient, requiring freight vehicles to navigated urban streets, signalised intersections, and lower-speed zones to access the Port of Mackay.
- MPAR will establish a high-standard freight corridor, reducing travel times and ensuring reliable access to national and international markets.

Urban Congestion and Safety Improvements

- Heavy vehicle traffic currently shares roads with general commuters, leading to delays, heightened crash risks, and reduced transport efficiency.
- By redirecting freight to a higher speed dedicated route, the Project will reduce congestion, improve travel times, and enhance road safety for all road users.

Flood Resilience and Network Reliability

- The Project will provide a more flood-resilient freight route, reducing economic losses during extreme weather events.

Economic Growth and Industry Support

- The Port of Mackay is a critical economic hub, supporting key industries such as mining, agriculture, and tourism.
- Enhanced connectivity to the industries in the Bowen Basin, industrial precincts such as Paget, and the Mackay Freight Rail Terminal will facilitate business expansion, job creation, and investment in the region.

Alignment with Government Priorities

- The MPAR aligns with key state and federal transport strategies, ensuring strategic investment in Queensland's economic and infrastructure development

MPAR Planning Activities

Multiple studies and investigations have been undertaken to determine the most appropriate alignment for a direct freight route to the Port of Mackay. These have included:

Report to the Co-Ordinator General, Multi Modal Corridor (MMC) (1977)

As noted within Section 1.2.7 of this referral, a feasibility study was undertaken by Ullman and Nolan as far back as the 1970s to determine the desirability, environmental acceptability and method of implementation of a MMC to link Bakers Creek, Erakala and the Mackay Harbour. Ultimately the decision was made to establish and build the MMC based on studies showing a significant increase in traffic over the next several decades. Additionally, the Port was forecast to become more diverse in its export commodities over the coming decades and an increase in traffic (both road and rail) was forecast. The study outlined four possible alignments (referred to as 'schemes') for the MMC. Each of the alignments is described below:

1. Scheme A – Base case or direct route which assumed that no corridor roads will be constructed, and the railway facilities will be re-established as far as possible in their present location except for the

Brisbane St railway bridge, which would be relocated further down the Pioneer River off Byron Street.

2. Scheme B – Retaining the railway station and goods yards in the centre of Mackay city and providing access to the Mackay Harbour by a new line from Erakala to the Harbour to be built by the end of 1980, replacing the existing link between Brisbane Street and Vines Creek.
3. Scheme C – Shifting the railway station and goods yard out of City to Paget Junction, constructing a rail and road bridge across the Pioneer River at Foulden, and constructing a rail link from Erakala to the Harbour and a road link from the Peak Downs Highway to the Bruce Highway and ultimately to the Mackay Harbour.
4. Scheme D – Shifting the railway station and goods yard to Te Kowai, constructing a rail link from Bakers Creek to Te Kowai and bypassing Paget Junction, constructing a rail and road bridge across the Pioneer River at Foulden, and constructing a rail link from Erakala to the Harbour and a road link from the Peak Downs Highway to the Bruce Highway and ultimately to the Mackay Harbour.

The four different alignments can be seen in **Att C**.

From this feasibility study, Scheme C was identified as the preferred option as:

- Acquisition of land only amounted to 76.2ha.
- It was considered the cheapest engineering solution.
- It was considered to have the least impacts on the drylands of the Mackay Harbour area.
- It was considered to have the least problems for future railway terminal arrangements for the bulk sugar terminal organisations.
- At that time, Ullman and Nolan were of the opinion that there would be no significant impact to the area in terms of noise pollution, aesthetics and damage to wetlands.
- This scheme provided a relatively easy incorporation into overpasses (without having to construct individual overpasses specifically for the road and rail corridors) that were predicted to be completed at the Mackay City Gates before 1995 based on increased traffic volumes in the area.
- Mackay City Council (now Mackay Regional Council) was in objection to having rail transport run directly through the city.

The QR Harbour Rail corridor was then constructed along the Scheme 3 MMC alignment. Although construction of a freight road did not also occur within the established MMC at this time, sufficient land was acquired to accommodate this project at some stage in the future.

Options Analysis for Mackay Ring Road Stage 1 and 2 (2012)

As noted within Section 1.2.7 of this referral, during 2012-2013 TMR carried out a planning investigation to evaluate a range of potential solutions for the long-term Mackay Ring Road identified in the 1977 feasibility study. The study separated the scope of the Mackay Ring Road into two stages:

- Mackay Ring Road Stage 1 (referred to now as the Mackay Ring Road).
- Mackay Ring Road Stage 2 (referred to now as the MPAR).

This study concluded that containing the MPAR alignment within the pre-established MMC was still preferable as it would provide the following benefits:

- Improved connectivity and freight efficiency between the industrial centres (Paget, Rosella, Racecourse Mill) and the Port of Mackay as a result of reductions in peak journey times.
- Improved commuter connectivity between homes and jobs and improvements in urban congestion.
- Improved safety through freight traffic travelling on more appropriate routes.
- Minimisation of impacts on urban and agricultural areas as a result of the pre-established MMC.
- Ability to compliment government, community and industry development proposals.
- Ability to integrate with the overall road network to provide a whole-of-network approach to urban congestion management.
- Ability to protect national network functionality.

Mackay Port Access Road Business Case (2019 - Present)

A preliminary environmental alignment analysis was undertaken as a part of the current Project business case phase to identify the constraints and impacts of alternative alignments specifically through the Bassett Basin. This analysis involved a high-level desktop assessment utilising both qualitative and quantitative analysis techniques and focused exclusively on identifying environmental constraints. It did not consider other critical factors such as constructability, financial impacts, geotechnical suitability, hydraulic impacts, and road geometry.

The analysis concluded that the current alignment's greater length, when compared to alternatives, may result in a larger permanent road footprint. However, the current alignment was expected to have the least impact on habitat connectivity and public amenity as it is located immediately adjacent to the existing QR Harbour Rail corridor and the Bayersville Landfill. Much of the marine vegetation that will be impacted by the current alignment was historically cleared when the multi modal corridor was established in the late 70s and early 80s, refer to **Att G**. Alternative routes through the Bassett Basin would impact on previously undisturbed areas that would likely contain higher quality habitat, while routes to the south of the Bassett Basin would likely have unacceptable social impacts (IE significant land resumptions, land rezoning, increased noise and emissions in urban areas, removal of the North Mackay Levee).

Other benefits of the current Project alignment when compared to alternatives include:

- Locating the road near the QR Harbour Rail corridor, Bayersville Landfill, and the Mackay Regional Council stockpile compound allows for a joint maintenance strategy, combining access points to address the challenges of asset recovery and maintenance within the Bassett Basin.
- Reducing edge effects on surrounding habitats by concentrating infrastructure in close proximity to existing disturbances, limiting habitat fragmentation.
- Keeping the road alignment close to the outer perimeter of the existing Bassett Basin FHA, thereby reducing the extent of the FHA that needs to be revoked for the Project.
- Avoiding the historical Grendon Street landfill to minimise impacts to known contaminated areas.
- Avoiding constructing infrastructure near the main channel of Vines Creek.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - MPAR Overview Plan.pdf Overview of the proposed Mackay Port Access Road, split into the three sections as a part of a staged delivery	16/07/2025	No	High

1.2.5 Information about the staged development

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - MPAR Overview Plan.pdf Overview of the proposed Mackay Port Access Road, split into the three sections as a part of a staged delivery	16/07/2025	No	High
#2.	Document	Att B - TMR Mackay Whitsunday District Strategic Projects.pdf Strategic State transport infrastructure projects delivered, or planned to be delivered, in the Mackay area.	17/07/2025	No	High

1.2.7 Public consultation regarding the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att C - 1977 Multi Modal Corridor Study-Digitised Assessed Alignments.pdf A digitised version of the alignments assessed during the 1977 study of the proposed Multi Modal Corridor	17/07/2025	No	High
#2.	Document	Att E - Bassett Basin FHA Proposed Revocation Fact Sheet.pdf Fact sheet and map of the proposed changes to the Bassett Basin Fish Habitat Area	06/02/2025	No	High
#3.	Document	Att P - Redaced First Nations Engagement Information.pdf First Nations engagement that has been redacted from the referral application as it contains Indigenous and Culturally sensitive information	15/10/2025	Yes	High
#4.	Link	Mackay Port Access, Bruce Highway to Mackay - Slade Point Road (Stage 1) https://www.tmr.qld.gov.au/projects/mackay-port-..			High
#5.	Link				

		Mackay Port Access, Bruce Highway to Mackay - Slade Point Road (Stage 1) https://www.tmr.qld.gov.au/projects/mackay-port-..			High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att D - TMR Environmental Sustainability Policy.pdf Department of Transport and Main Roads Environment and Sustainability Policy	01/10/2021	No	High
#2.	Link	Environmental processes manual https://www.tmr.qld.gov.au/business-industry/Tec..			High
#3.	Link	Technical publications - Category 3 https://www.tmr.qld.gov.au/business-industry/tec..			High

3.1.1 Current condition of the project area's environment

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	07/06/2024	Yes	Medium

3.1.2 Existing or proposed uses for the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area from construction of the QR Harbour Rail corridor	17/07/2025	No	High
#2.	Document	Att J - Social Commercial and Cultural Values of the Proposed Revocation Area Report.pdf Assessment of the social, commercial	17/10/2024	No	High

		and cultural values of the proposed Fish Habitat Revocation Area	
#3.	Link	Mackay Port Access Fish Habitat Area revocation proposal https://www.yoursay-projects.tmr.qld.gov.au/mack..	High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	03/09/2020	No	High

3.2.1 Flora and fauna within the affected area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att H - Flying Fox Survey Report.pdf A report outlining the assessments undertaken at the Glenpark Street flying fox roost	12/09/2025	No	High
#2.	Document	Att I - Existing Habitats and Environmental Values of the Proposed Revocation Area Report.pdf An assessment of the aquatic ecosystem health of the Bassett Basin Fish Habitat Revocation Area	16/09/2024	No	High
#3.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	03/09/2020	No	High
#4.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#5.	Document	Att M - Water Mouse Survey Report.pdf A report on the assessments undertaken for the water mouse (Xeromys myoides) for the project	12/09/2025	No	High

3.2.2 Vegetation within the project area

	Type	Name	Date	Sensitivity	Confidence

#1.	Document	Att I - Existing Habitats and Environmental Values of the Proposed Revocation Area Report.pdf An assessment of the aquatic ecosystem health of the Bassett Basin Fish Habitat Revocation Area	16/09/2024	No	High
#2.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att N - Cultural Considerations Report.pdf Report prepared by the Yuwi Aboriginal Corporation in relation to the proposed FHA revocation	01/06/2024	Yes	High
#2.	Document	Att P - Redaced First Nations Engagement Information.pdf First Nations engagement that has been redacted from the referral application as it contains Indigenous and Culturally sensitive information	14/10/2025	Yes	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.1.2 (World Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

4.1.1.6 (World Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document				

		Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	06/06/2024	Yes	Medium
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area from construction of the QR Harbour Rail corridor	16/07/2025	No	High
#3.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#4.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.1.10 (World Heritage) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.2.2 (National Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

4.1.2.6 (National Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	06/06/2024	Yes	Medium
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing	16/07/2025	No	High

		disturbances within the Project area from construction of the QR Harbour Rail corridor			
#3.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#4.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.2.10 (National Heritage) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att H - Flying Fox Survey Report.pdf A report outlining the assessments undertaken at the Glenpark Street flying fox roost	12/09/2025	No	High
#2.	Document	Att I - Existing Habitats and Environmental Values of the Proposed Revocation Area Report.pdf An assessment of the aquatic ecosystem health of the Bassett Basin Fish Habitat Revocation Area	16/09/2024	No	High
#3.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	02/09/2020	No	High
#4.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#5.	Document	Att M - Water Mouse Survey Report.pdf A report on the assessments	12/09/2025	No	High

undertaken for the water mouse (Xeromys myoides) for the project

4.1.4.5 (Threatened Species and Ecological Communities) Why you consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	02/09/2020	No	High
#2.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#3.	Document	Att M - Water Mouse Survey Report.pdf A report on the assessments undertaken for the water mouse (Xeromys myoides) for the project	12/09/2025	No	High

4.1.4.9 (Threatened Species and Ecological Communities) Why you do not think your proposed action is a controlled action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	02/09/2020	No	High
#2.	Document	Att M - Water Mouse Survey Report.pdf A report on the assessments undertaken for the water mouse (Xeromys myoides) for the project	12/09/2025	No	High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	06/06/2024	Yes	Medium
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area from construction of the QR Harbour Rail corridor	16/07/2025	No	High

#3.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.5.2 (Migratory Species) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att I - Existing Habitats and Environmental Values of the Proposed Revocation Area Report.pdf An assessment of the aquatic ecosystem health of the Bassett Basin Fish Habitat Revocation Area	16/09/2024	No	High
#2.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	02/09/2020	No	High
#3.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#4.	Document	Att M - Water Mouse Survey Report.pdf A report on the assessments undertaken for the water mouse (Xeromys myoides) for the project	12/09/2025	No	High

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

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf An assessment of the biodiversity values of the 2013 MPAR concept design footprint	02/09/2020	No	High
#2.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

4.1.5.9 (Migratory Species) Why you do not think your proposed action is a controlled action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att K - 2020 Ecology Report_Abridged Version.pdf	02/09/2020	No	High

		An assessment of the biodiversity values of the 2013 MPAR concept design footprint			
#2.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

4.1.5.10 (Migratory Species) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	07/06/2024	Yes	Medium
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area from construction of the QR Harbour Rail corridor	16/07/2025	No	High
#3.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.8.2 (Great Barrier Reef) Why your action has a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High

4.1.8.6 (Great Barrier Reef) Why you do not consider the direct and/or indirect impact to be a Significant Impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att F - Indicative Construction Methodology Technical Note.pdf Technical note that documents the current anticipated construction methodology for the Project	06/06/2024	Yes	Medium
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area	16/07/2025	No	High

		from construction of the QR Harbour Rail corridor			
#3.	Document	Att L - Ecology Report Addendum.pdf An addendum to the 2020 Ecology Report based on the updated Project design	12/09/2025	No	High
#4.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.1.8.10 (Great Barrier Reef) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att O - Excerpt from Hydraulics Report.pdf An abridged version of the Hydraulics Assessment that summarises potential changes in tidal exchanges	04/09/2025	Yes	Medium

4.3.8 Why alternatives for your proposed action were not possible

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att C - 1977 Multi Modal Corridor Study-Digitised Assessed Alignments.pdf A digitised version of the alignments assessed during the 1977 study of the proposed Multi Modal Corridor	16/07/2025	No	High
#2.	Document	Att G - 1982 Satellite Imagery.pdf Satellite imagery from 1982 showing disturbances within the Project area from construction of the QR Harbour Rail corridor	16/07/2025	No	High

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	39407690291
Organisation name	Department of Transport and Main Roads
Organisation address	4000 QLD
Representative's name	Mark Weatherley
Representative's job title	Project Director
Phone	0749518555
Email	mackay.environment@tmr.qld.gov.au
Address	Floor 2 Mackay Government Office Building, 44 Nelson Street, Mackay Qld 4740

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

☑ Check this box to confirm these are the correct identification details. *

☑ By checking this box, I, **Mark Weatherley of Department of Transport and Main Roads**, 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. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.

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.

Same as Referring party information.

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

☑ Check this box to confirm these are the correct identification details. *

☑ I, **Mark Weatherley of Department of Transport and Main Roads**, 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, **Mark Weatherley of Department of Transport and Main Roads**, the Person proposing the action, consent to the designation of **Mark Weatherley of Department of Transport and Main Roads** as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.

✓ 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. *

☑ Check this box to confirm these are the correct identification details. *

☑ I, **Mark Weatherley of Department of Transport and Main Roads**, 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. *

You may receive automated notifications that aim to assist you in tracking the progress of your project. You can opt out of these notifications by updating your communication preferences on your profile.