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MANDURAH ESTUARY BRIDGE DUPLICATION: Annual Project Sustainability Report 2022

Prepared by Jacobs

This annual report covers the financial year period covering 2021/22.

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About this Report

Purpose

This report has been prepared by the Jacobs project team on behalf of Main Roads Western Australia, for the Mandurah Estuary Bridge Duplication (MEBD) Project. This report forms part of Main Roads' annual sustainability reporting which is integrated into the organisation's Annual Report. The report content is prepared in accordance with Global Reporting Initiative (GRI) principals. Material topics reported in this report have been determined through a materiality process that adheres to the Infrastructure Sustainability Council (ISC).

The MEBD Project is aligned with the ISC Planning Rating v2.0 framework.

Introduction

The Mandurah Estuary Bridge Duplication involves construction of a new bridge adjacent to the existing bridge on Mandurah Road, to remove the existing traffic bottleneck (ie northbound lane currently only accommodates one lane of traffic) and provide a continuous four-lane dual carriageway. The new bridge will also include a shared path to improve connectivity and a universally accessible recreational fishing platform to encourage fishing for all.

The $110 million Project is jointly funded by the State and Federal Governments.

The Project vision is to produce a "*connected, accessible and quality bridge and fishing platform that delivers a positive legacy by embracing local culture, improving habitat and amenity, and enhancing sense of place*". Targets for the planning phase address the United Nations Sustainability Development Goals and include obtaining priority sustainability approvals from environment, heritage and planning sectors.

Highlights

Sustainability highlights to date within the planning phase are:

- Ongoing community and stakeholder engagement.
- Completion of sustainability workshops with Project team and external stakeholders.
- Sustainability Management Plan developed.
- Development and tracking against Project planning targets.
- Development of opportunities register, incorporating beneficial sustainable outcomes.

Project Overview

Lakelands Lake Clifton Road crosses the Mandurah Estuary over the existing bridge, connecting the suburbs of Erskine and Dudley Park. The road is a popular link facilitating traffic movement between suburbs on the western side of the Mandurah Estuary to the Mandurah Train Station and the Kwinana Freeway (access via Mandjoogoordap Drive – see **Figure 1**).

Currently the road comprises four-lane dual carriageway, apart from the Mandurah Estuary Bridge crossing, which requires northbound vehicles to merge into one lane. The median then terminates on the southern side of the bridge to cross the estuary with a three-lane configuration (ie one lane northbound and two lanes southbound). This configuration, coupled with steadily increasing annual traffic volumes, results in a high proportion of rear end crashes and queuing extending on the southern approach of the bridge.

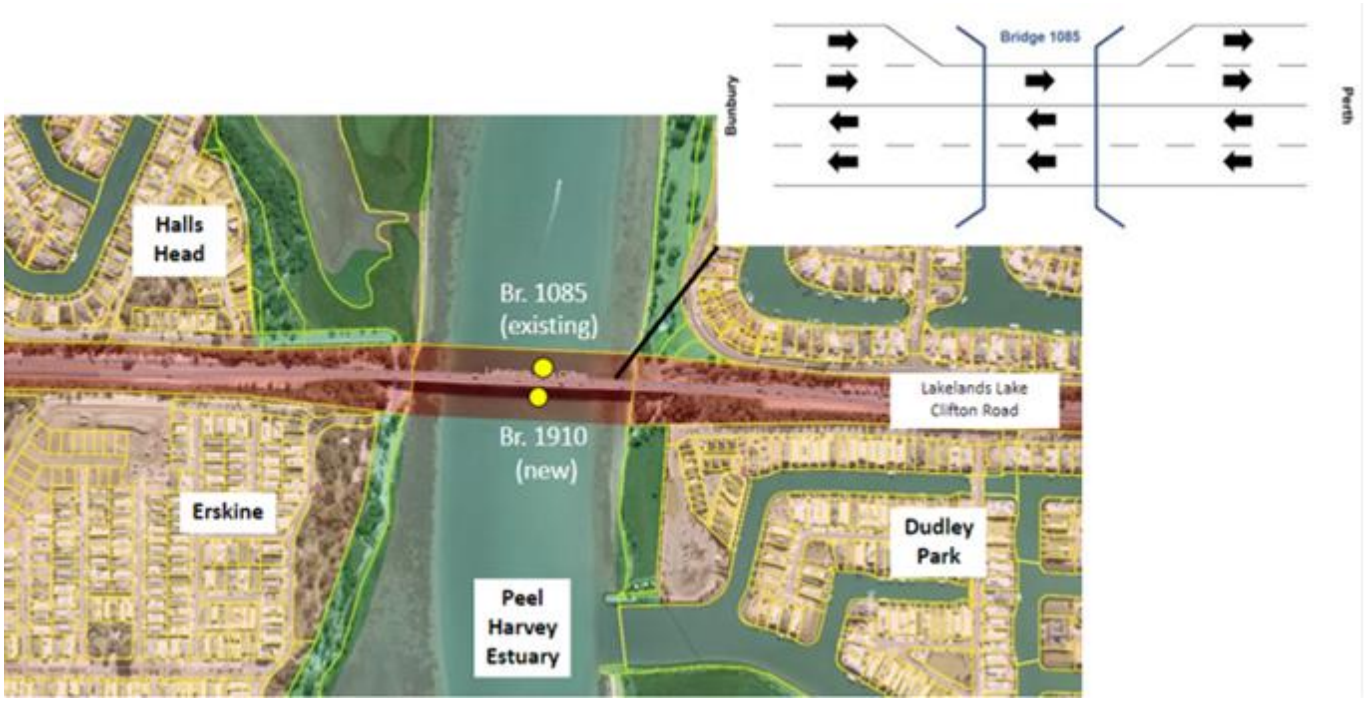

Figure 1 Mandurah Estuary Bridge Duplication Location

Originally built in the mid-1980s to accommodate the lower traffic volumes of the time, Mandurah Estuary Bridge was designed and constructed to accommodate an additional upstream bridge when required. With a continually increasing population in the wider Mandurah region, the requirement for duplication of the existing bridge has now been reached.

The new bridge will complement the existing bridge (in design), reducing traffic congestion and travel times, and improving cycling and pedestrian access.

Key stakeholders identified for the Project include:

- State and Federal Governments
- State Government agencies
- City of Mandurah

- Adjacent residents and business/commercial premises
- Traditional Owners
- Environmental groups (ie Peel Harvey Catchment Council)
- Cycling and fishing groups
- Estuary users
- Emergency services
- Utility service providers

A comprehensive list of stakeholders is provided within **Appendix 3 – List of Stakeholders to the Project**.

Subject to statutory approvals, construction work is expected to commence in 2023, with an 18 to 24 month construction duration. This would be delivered via a Design and Construct contract (**Figure 2**).

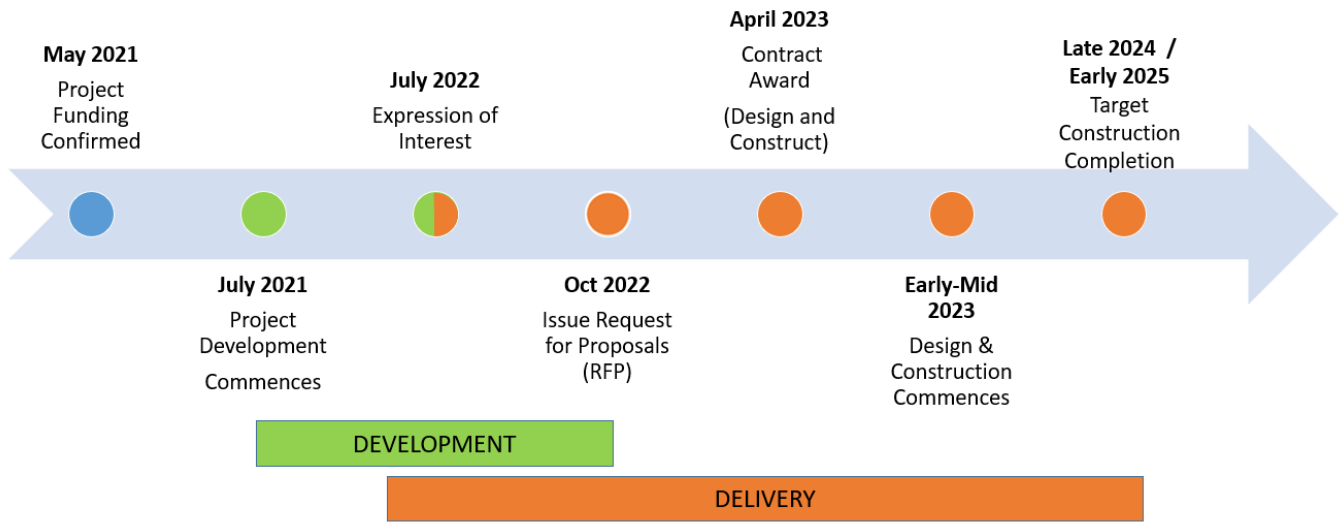

Figure 2 Project Milestones and Timeframes

The project website can be found at: https://www.mainroads.wa.gov.au/projects-initiatives/all-projects/regional/mandurah-estuary-bridge-duplication/

Overall approach to Sustainability in Project Development

Main Roads has registered the MEBD Project for a Planning rating under the ISC Infrastructure Sustainability (IS) v2.0 rating tool. The Project team has developed a sustainability strategy for the Project which focuses on achieving the best sustainable outcomes with guidance from the IS rating tool, which provides a framework for integrating sustainability across the Project. A Bronze rating is being targeted for the MEBD.

The project has a dedicated Sustainability Lead who is an Infrastructure Sustainability Accredited Professional (ISAP) and reports directly to the Main Roads Project Manager. The Sustainability Lead is part of the integrated Project team and is supported by a team of sustainability professionals.

A Sustainability Management Plan has been prepared for the MEBD Project and is aligned with the overarching Main Roads Sustainability Policy . The Sustainability Management Plan provides the framework for the integration of sustainability into all project activities and captures the vision and objectives that set the strategic direction for sustainability on the project.

Project Vision, Objectives and Targets

Developed collaboratively with the Project's development team, the Project's vision is to create a *connected, accessible and quality bridge and fishing platform that delivers a positive legacy by embracing local cultures, improving habitat and amenity, and enhancing sense of place.*

Project objectives are:

- Enhance and integrate the existing use of the Estuary 'place'.
- Protect and enhance the local environmental features.
- Improve accessibility, capacity, connectivity and safety for all users.
- Maximise business and employment opportunities for local communities.
- Deliver a high-quality outcome that is socially and environmentally sustainable and responds to the context and character of the area.
- Deliver a durable, resilient, low maintenance bridge that delivers value for money across all project phases.

Focus on these areas will enable the Project to achieve positive sustainable outcomes beyond business as usual, with a focus of leaving a positive legacy for the Peel region.

As part of the planning phase, sustainability targets were set by the Project, with the intention of facilitating the achievement of the Project objectives. A list of the targets and their completion status is provided within **Figure 3**.

Figure 3 Planning sustainability targets and completion status

Planning Objective	Planning Target	% Target Complete
Enhance and integrate the existing uses of the Estuary 'place'	Investigate and document at least five opportunities for enhancing or adding to the existing facilities and/or amenities within the project area.	100%
	Develop a Cultural Context and Place Narrative document for use on the project that reflects the unique place histories and heritage and describes the community's interaction with the site over time.	30%
Protect and enhance the local environmental features	Investigate and document at least three opportunities for enhancing the local terrestrial and/or estuarine environmental features within the project area.	100%
Improve accessibility, capacity, connectivity, and safety for all users	Investigate at least three solutions to pre-existing connectivity gaps or problems within the project area, ensuring no loss of existing passive recreation connectivity.	100%
	Align planning of the new path network with WA Department of Transport Long Term plans and City of Mandurah infrastructure plans.	100%

Planning Objective	Planning Target	% Target Complete
Maximise business and employment opportunities for local communities	Engage with identified local businesses early in planning of works to plan activities and identify three opportunities to minimise the potential impacts the project may have on local businesses.	65%
	Develop an Aboriginal Business Participation Strategy during the development phase.	100%
	Identify at least three business/employment opportunities in conjunction with local businesses, organisations and/or community groups.	55%
Deliver a high-quality outcome that is socially and environmentally sustainable and responds to the context and character of the area.	Investigate two opportunities for reducing the embodied carbon within concrete for non-structural concrete items compared to the base case.	100%
	Identify at least three energy use and carbon emissions reduction opportunities.	100%
	Investigate and document at least three strategies for minimising noise impacts on marine fauna within or adjacent to the project area.	100%
Deliver a durable, resilient, low maintenance bridge that delivers value for money across all project phases.	Document and leverage lessons learnt from existing bridge maintenance to identify at least five opportunities to reduce MEBD maintenance.	100%
	Fortnightly engagement between Delivery Team and South-West Region, to ensure the contract documentation meets the needs and requirements of the asset management team.	100%

Material Sustainability Issues

Key sustainability issues for MEBD were identified and prioritised as part of a multi-disciplinary Materiality Assessment Workshop held on 16 December 2021.

The following key identified material sustainability topics were identified, based on the significance of impact and their importance to stakeholders:

- Accessibility and connectivity.
- Resilience and climate change.
- Benthic habitats, wetlands and water quality.
- Recreational use.
- Urban and landscape design.
- Local business/job opportunities.
- Noise and vibration.

United Nations (UN) Sustainable Development Goals (SDGs)

Key material sustainability topics and associated Project objectives have been mapped to relevant UN SDGs and are provided within **Figure 4** below.

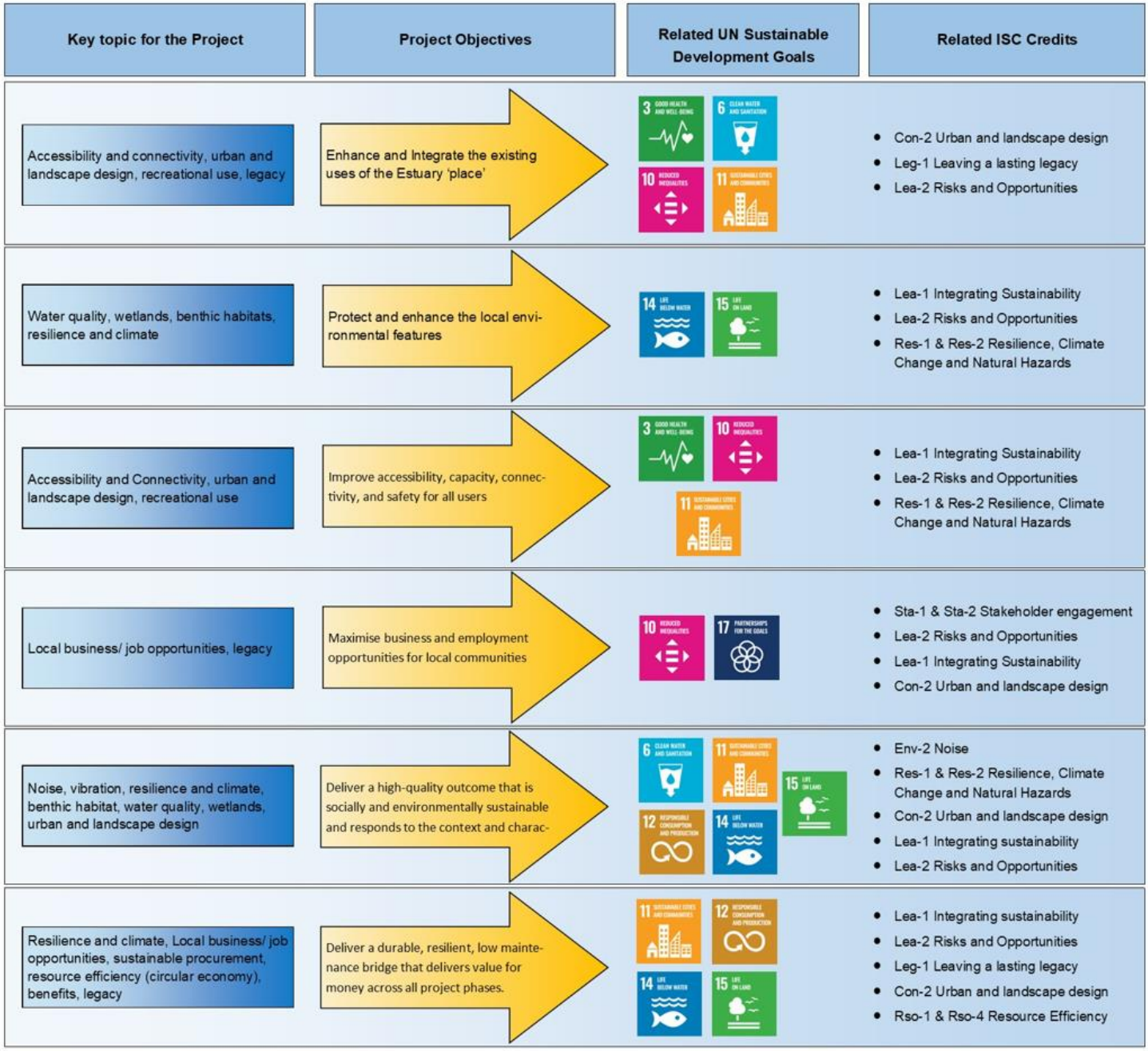

Figure 4 Project objectives and material sustainability topics mapped to UN SDGs

Economic Aspects

Key Economic Context

Duplication of the Mandurah Estuary Bridge is a significant investment in the road network of the Peel region. It will improve traffic flow within the regional centre of Mandurah, which is regarded as one of Australia's fastest growing regional centres. The new bridge will improve transport links in the area, as well as provide more efficient access to surrounding residential, retail, commercial and community services and facilities.

Key industries and business stakeholders include retail mobile businesses using the carparks adjacent to the bridge (ie mobile coffee vans), estuary based business who travel under the bridge as well as wider businesses either side of the Mandurah Estuary Channel, as the bridge provides one of the only two access points over the Estuary.

It is expected that more than 500 local jobs will be created and supported during the Project, creating a pipeline of work for local businesses. This will include those who are directly employed in the bridge construction, as well as the procurement of local goods and services such as cement and aggregate suppliers.

The bridge will be constructed to minimise impacts to surrounding businesses wherever practicable. This will include maintaining access to commercial premises, maintaining navigation for vessels, minimising road/lane closures, erection of signage, and regular ongoing stakeholder and community engagement.

Several economic elements were ranked as key materiality issues during stakeholder engagement for the MEBD, including accessibility and connectivity and local business and job opportunities. As such, the following Project objectives were created to ensure these issues were given appropriate consideration and investigation:

- *Improve accessibility, capacity, connectivity, and safety for all users; and*
- *Maximise business and employment opportunities for local communities.*

A list of the Project targets and their completion status, including those related to economic aspects, is provided within Figure 3.

A summary of economic performance and aspects for the Project are detailed in **Table 1**.

Table 1 Summary of Economic Aspects

ECONOMIC ASPECT	TOTAL FOR PROJECT
Funding Received	$110 million
Current number of vehicles per day (2020/21)	34,300 vehicles
Forecast Travel Time Saving (northbound)	3 minutes
Forecast number of vehicle volumes per day (2041)	49,700 vehicles
Forecast increase in cycling and pedestrian facilities (ie increase in PSP length)	1 kilometre

Key Economic Outcomes

Key economic benefits that would arise from duplicating the Mandurah Estuary Bridge are as follows:

- A reduction in traffic congestion, particularly northbound traffic flow.
- Improved connectivity for cycling and pedestrian access, through construction of a new shared path to Principal Shared Path standards (PSP).
- Improved safety outcomes, through a reduction in rear end crashes and vehicle queuing.
- Better infrastructure access to Estuary users, via the universally accessible fishing platform.
- Employment opportunities for the local workforce
- Improved freight productivity

Sustainable Transport

Consideration has been given to future proofing of the MEBD as part of project resilience workshops (with participation from external stakeholders) and production of a Resilience Plan. This includes design of the bridge to accommodate the continued increase in traffic volumes and ability for the bridge, once operational, to be converted to a six-lane dual carriageway in the future (in conjunction with the existing bridge). The new bridge would also add redundancy and options for traffic management, should one of the two existing bridges (Mandurah Traffic Bridge and Mandurah Estuary Bridge) be inaccessible.

A Pedestrian and Cycling Connectivity Study has been completed, reviewing connectivity and design issues that should be considered and addressed. This included a review of key user groups and identification of key connectivity and design constraints and opportunities. The Project base case will involve construction of a 4-metre-wide shared path to be included as part of the bridge structure, in turn providing a higher-quality alternative to the current shared path across the existing bridge structure. The new path will improve connectivity to the existing pedestrian and cycling network and existing bus stops on the southern side of Lakelands Lake Clifton Road.

Options Assessment

Given the significant constraints on the approach to the Estuary crossing (ie existing residential areas and roads), the location of the bridge duplication is constrained to immediately south of the existing Mandurah bridge.

A constructability review was undertaken in 2021, examining different bridge types and construction methodologies including teeroff, incremental launch, precast segmental, cast insitu and balanced cantilever (cast insitu) super structure options. An incremental launch from the abutments was

recommended as the most suitable construction methodology, given the limited impact to all users (ie navigation channel, fishing platform, shared path), a reduction in large deliveries required to the construction site, and having the new bridge closely match the form of the existing structure (ie so that it blends in with the surrounding environment).

Environmental Aspects

Environmental Context

Terrestrial areas of the MEBD project area consist mostly of planted vegetation while remnant native vegetation occurs as isolated patches of trees and sparse shrubs. A biological survey of the locality indicated that none of the trees located within the project area have hollows that are suitable for Black Cockatoo breeding habitat. In fact, in an attempt to reduce environmental impacts, the boundary of the project area was modified to avoid both trees with suitable hollows and other large remnant trees. Clearing of areas mapped as Flooded Gum Woodland and Sheoak Forest has also been avoided by the amended project area. These vegetation assemblages which represent low quality foraging habitat for the Carnaby's Cockatoo and Forest red-tailed black cockatoo will not be impacted by the proposal.

Indirect evidence of foraging by the Forest Red-tailed Black Cockatoo in the form of chewed *Corymbia calophylla* (Marri) fruits was noted outside of the project area. No direct or indirect evidence of other significant fauna species were observed during the biological survey. There are also no records of significant flora or ecological community in the proposed footprint. The Subtropical and Temperate Coastal Saltmarsh Threatened Ecological Community (TEC), which occurs on salt marshes, are found in the vicinity of the project area. However, there will be no direct and indirect impacts to this community.

The biological survey showed that the project area extends over a section of the Mandurah estuary which lies within the Peel-Yalgorup wetland system. This system is classified as a 'Wetland of International Importance' under the Ramsar Convention on Wetlands Ramsar wetland. According to findings of the biological survey, terrestrial areas within the project area are not likely to support migratory species outside of transient visits due to a lack of suitable habitat. Migratory birds are anticipated to be largely limited to the riparian heath vegetation which does not occur within the project area.

A benthic habitat assessment undertaken in the Mandurah estuary indicated that the project area supports a seagrass community which is narrow and restricted to the shallower margins. The remaining extent of the project area was found to comprise a bare substrate with no visible macrophytes or benthic

communities. Construction works associated with the bridge piers will be implemented such that impacts to the seagrass community is kept to a minimum.

Environment Protection and Biodiversity Conservation Act 1999 and *Biodiversity Conservation Act 2016* listed flora and fauna species and ecological communities that will potentially be impacted by the MEBD are provided in **Appendix 1 – List of Protected Areas within and in the vicinity of the Project** and **Appendix 2 - Protected fauna and flora species and habitat**.

No known declared weeds or contaminated sites are present within the terrestrial footprint of the MEBD.

Wetlands are present immediately northwest and southeast of the MEBD, and include two A Class Nature Reserves:

- Samphire Cove (Reserve No. R45089), approximately 40 metres north. This area is known for its bird life and presence of the Subtropical and Temperate Coastal Saltmarsh TEC.
- Creery Wetland Reserve (Reserve No. R46661) approximately 350 metres southeast.

As outlined above, the Mandurah Estuary crosses the project area and is a Ramsar wetland of international importance and Conservation Category Wetland (Mandurah Estuary, UFI 15229). The brackish water body situated in the vicinity of the project area, is home to a wide range of birds and marine species, including migratory birds, crabs, finfish (of which support a large commercial fishery) and dolphins. A resident population of 90 bottlenose dolphins are known to live within the Mandurah Estuary. Water quality in the estuary varies, having a large seasonal variability.

A list of the Project targets and their completion status, including those related to the environment, is provided within **Figure 3**.

Environmental Management

An Environmental Impact Assessment (EIA) was undertaken of the existing environment and activities associated with MEBD. The assessment outlined the potential impacts that the project may have on key environmental aspects.

MEBD will require the clearing of approximately 1.10 ha of parkland areas supporting both isolated native and introduced trees and 5.97 ha of vegetation planted for landscaping purposes. Most of the construction disturbance footprint will comprise already cleared land (12.78 ha), occupied by existing roads, tracks/path, parking and bare areas.

The following environmental or heritage approvals, permits or licences are needed for implementation of the Project:

- Licence Approval from Department of Water and Environmental Regulation (DWER) for site investigations and works under the *Waterways Conservation Act 1976*
- Approval from DWER under Part V of the *Environmental Protection Act 1986*
- Section 18 Approval under the *Aboriginal Heritage Act 1972* for impacts to Registered Aboriginal Sites

Due to the small scale of the Project and the fact that there will be no significant impacts to low impacts to the surrounding environment, the Project will not require referral to the Western Australian Environmental Protection Authority (EPA). Similarly, the EIA determined that the Project is unlikely to

impact on Matters of National Environmental Significance. As such, referral under the EPBC Act will also not be required.

Comprehensive Environmental Management Plans (EMPs) will be developed for MEBD Project, in accordance with Main Roads' certified Environmental Management System (EMS), prior to the construction phase commencing.

The headings below, provide a brief overview of the key environmental risks for the Project, identified with Project specialists and external stakeholders as part of the Materiality Assessment Workshop.

Nearshore Environment Management

Due to the proximity to significant wetlands such as Samphire Cove, and areas mapped as the Subtropical and Temperate Coastal Saltmarsh TEC, the nearshore environmental management will be a key consideration for the Project. Reducing potential indirect impacts to these areas will be managed under the Construction Environmental Management Plan. This would include measures such as the use of silt curtains during installation of in-water pylons as well as construction methodologies which minimise the disturbance footprint (ie incremental launch of the bridge super structure from either abutment).

The environmental elements of benthic habitats and wetlands were identified as material sustainability issues for the Project and, as such, the Project objective *to protect and enhance local environmental features* has been created to address this issue. Targets will be developed during the delivery phase, to measure progress against this objective.

Water Management

Appropriate surface water management will be particularly pertinent during the design and construction phases of the Project, given the work will occur within the Peel Harvey Estuary and pass near to Class A nature nearshore reserves (ie Samphire Cove). The use of bioretention basins (with supporting Gross Pollutant Traps, GPTs) are proposed for inclusion within the bridge design. These are particularly efficient at removing nutrients, prior to runoff then entering the Estuary.

To support water efficiency and use of sustainable water sources during the construction phase, a review of water source and water reduction opportunities has been undertaken by the Project team. The investigation outcomes will be shared with the design and construction teams as an information document to assist their own water source and optimisation opportunities. Specific water saving initiatives that are being explored, include the reuse of treated recycled wastewater, the use of dust suppression additives and water saving efficiency technologies (ie waterless urinals, push taps etc).

Climate Change Assessments

Resilience workshops, including participation with external stakeholders, were held for the Project which included a review of potential climate change risks. A Climate Change and Natural Hazard Risk Register was then developed for components of the Project that may be vulnerable to the potential effects of such hazards, along with proposed treatment (management) measures of priority climate change risks.

Example climate change adaptation controls for the MEBD include a bridge design that is appropriate for future flood events, road drainage that is sufficient for an increase in high-flow, short duration rainfall events, and computer model testing for extreme weather conditions.

Carbon Emissions and Energy Management

A review of expected energy use and greenhouse gas emissions was undertaken for the MEBD, including the identification and measuring of energy and carbon emission reduction opportunities. Key emission sources of Greenhouse Gases (GHGs) for the construction phase will include fuel use of mobile and stationary construction equipment, land clearing of existing vegetation, site offices, waste disposal and electricity use.

Potential GHG reduction opportunities were identified for the Project and include the use of photovoltaics on site offices, use of solar lighting towers/generators, and small scale portable solar panels. The use of solar lighting towers is expected to provide emission savings of 1.1 tonne CO_2e over the Project, based on modelled emissions. These opportunities will be further investigated during detailed design and construction phases, and all adopted low-emission measures will be documented within appropriate delivery documents.

Resilience and climate change (of which GHG reduction ties in) were identified as material sustainability issues for the Project and, as such, the Project objective *to deliver a high-quality outcome that is socially and environmentally sustainable and responds to the context and character of the area* has been created to address this issue. Targets will be developed during the delivery phase, to measure progress against this objective.

Materials and Recycling

To identify resource efficiency opportunities for the MEBD, several workshops were undertaken to identify resource efficiency opportunity areas. These were discussed as part of materiality assessments, resource efficiency and framework sustainability workshops, which were then incorporated into an overall Project Resource Efficiency Strategy.

Identified resource efficiency opportunities included investigating the use of sustainable materials within constructed noise walls (ie walls made from recycled plastic bottles), donation of felled timber for local artists for reuse as furniture and art pieces, and reuse of existing approach road lighting poles and LED lights.

Outputs from these workshops have subsequently fed into the Project targets (see above), in line with the Project objective of delivering *a high-quality outcome that is socially and environmentally sustainable and responds to the context and character of the area*.

All resource efficiency opportunities to date have been recorded within the Project's Opportunities Register.

Noise and Vibration Management

The management of potential noise and vibration emissions from pile driving and general construction activities will be of particular importance, given the proximity of nearby residential receptors, business premises and impacts to marine fauna (particularly dolphins). A noise modelling and vibration assessment is currently ongoing, the outcomes of which will be used to develop appropriate construction methodologies to minimise significant adverse impact upon the surrounding environment.

Noise and vibration were identified as an important construction issue, during engagement with external stakeholders. As such, this is addressed within the Project objective to *protect and enhance local environmental features*.

Social Aspects

Social Context

MEBD has prioritised engagement of stakeholders earlier within the planning stage of the Project. The importance of a prompt and comprehensive engagement strategy has been recognised to construct a resilient and sustainable bridge that meets the needs of all users.

External stakeholder feedback regarding the bridge's context and its interrelationship with external influences was provided during a preliminary sustainability workshop. Workshop participants felt that integrating sustainability well into the Project would help the local waterway, people of Mandurah and wider road/bridge users, the environment, design and operational outcomes for the bridge itself, the economy and future generations.

Several social elements were ranked as key issues during stakeholder engagement for the MEBD including recreational use, urban and landscape design and local business/job opportunities. As such, the following Project objectives were created to ensure these issues were given appropriate consideration and investigation:

- *Enhance and integrate the existing uses of the Estuary 'place'.*
- *Improve accessibility, capacity, connectivity, and safety for all users.*
- *Maximise business and employment opportunities for local communities.*

A summary of social performance and aspects for the Project are detailed in **Table 2**.

Table 2 Summary of Social Aspects

SOCIAL ASPECT	TOTAL FOR PROJECT
No. of Stakeholders groups engaged with during project development	156
No. of heritage sites in project vicinity	2
Existing number of crashes within project boundary (over 5 years to 2020)	126

Community and Stakeholder Engagement

Stakeholder engagement has been undertaken for MEBD since 2021 and has been formalised via a dedicated Project Communications and Stakeholder Engagement Strategy. The strategy has been developed to ensure:

- stakeholders are informed about the Project
- stakeholders have the opportunity the provide input into the Project, and
- stakeholder input is used in the Project to guide decision-making.

In achieving the engagement objectives, Main Roads will seek the following outcomes:

- stakeholder satisfaction with the engagement process – felt involved/had influence
- identify, address and resolve community and stakeholder issues
- positive reputation for Main Roads and its project management, and
- positive community relationships and social capacity for the future phases of the project.

A comprehensive list of stakeholders is provided within **Appendix 3 – List of Stakeholders to the Project**.

Stakeholder input has been, and continues to be sought across several areas, to help influence the reference design and objectives of the MEBD, namely:

- resource efficiency and industry collaboration opportunities;
- stakeholder led innovations;
- local and Aboriginal opportunities;
- water sourcing opportunities;
- the supply of construction materials, equipment and local workforce;
- amenities surrounding the bridge;
- lessons learnt from similar Projects;
- urban design and landscape framework;
- ways to mitigate construction impacts to the community; and
- accessible fishing platform design elements and location (ie form, shade, surface materials).

To date, stakeholder involvement or input that has influenced development of MEBD includes:

- the opportunity to explore local projects that provide artificial seabed habitat for native mussels

- location and design elements of the new universal access fishing platform
- path connections
- services impact and future allowances
- drainage
- navigation considerations
- heritage consultation
- accessibility considerations
- fishing platform location, configuration and design elements
- preferences for stakeholder communication channels
- site investigations
- project approvals

A list of the Project targets and their completion status, including those related to social aspects, is provided within Figure 3.

Addressing Community Concerns

A comprehensive list of key stakeholder requirements (over 100, including design requirements, assessment criteria and opportunities) has been identified through stakeholder meetings and issues/sustainability workshops. These continue to be reviewed during Project development, to mitigate potential issues and to inform the Project's Scope of Works and Technical Criteria.

The engagement action plan within the Communication and Stakeholder Engagement Strategy uses the following tools, to assist with prioritising negotiable stakeholder issues:

- briefings and meetings
- MySay Transport digital engagement(surveys)
- stakeholder workshops
- drop-in sessions, and
- communication materials, including project updates and Project website updates.

Key topics raised as part of stakeholder engagement to date, include:

- fishing platform requirements, facilities, access and parking
- pedestrian path connectivity to existing and new facilities
- vegetation removal
- site investigations
- protecting and enhancing the Estuary environment, and

- construction impacts (ie traffic, path users, navigation channel, noise and vibration and out of hour works).

Heritage

Two Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage site will be impacted by the MEBD, namely DPLH Place ID 32696 (Djilba [Peel Harvey Estuary]) and Place ID 18168 (Bird Dreaming Area). Main Roads will seek consent under Section 18 of the *Aboriginal Heritage Act 1972* for disturbance of these sites, prior to construction works commencing.

The State Heritage Register and City of Mandurah Municipal Inventory records the Mandurah Estuary waterbody as a site of heritage significance, listed on the local heritage register.

Main Roads have commenced early engagement with the following Aboriginal groups, regarding heritage sites, the surrounding environment and potential employment opportunities:

- Nidjalla Waanga Mia
- Winjan Aboriginal Corporation
- Bindjareb (Pinjarup) Noongar representatives
- Local Aboriginal businesses.

An Cultural Context and Narrative Report will be produced, to describe the cultural, spiritual, and historic significance for the MEBD and its general proximity. A Heritage Interpretation Strategy is also being developed which aims to inspire project designers and urban planners to create themes and concepts in a generative (rather than prescriptive) sense during the Project Development and Design processes.

An Aboriginal Business Participation Plan Requirements Report is also being prepared during the development phase.

Community Amenity – Urban and Landscape Design

The Project area is adjacent to areas of public space, such as the foreshore and nearby environmental conservation areas. These areas are used for passive open space recreation and water-based activities. The surrounding areas are considered to function as places of high value social amenity.

An Urban and Landscape Design Framework is being developed for the Project, to assist the planning and management of urban and landscape design related factors, and to provide guidance for the later design and delivery/construction stages.

Several project elements are included within the work scope to address and enhance existing community amenity. These include:

- a new universally accessible fishing platform and associated infrastructure
- new shared paths and connections
- revegetation
- improved access to the existing carpark
- integration of hard infrastructure into the existing landscape (ie noise/retaining walls), and
- protection of the environment elements.

Enhancement and integration of the existing uses of the Estuary 'place' were considered key issues for stakeholders. A specific Project objective is in place to address these issues. The design of the new bridge reflects the same shape and material of the existing bridge, to ensure it blends in appropriately with the existing environment.

Diversity

The integrated Project team has committed to promoting workforce diversity across the MEBD Project. A focus area includes increasing the opportunities for Aboriginal people.

An Aboriginal Participation Plan Requirements Report is currently being developed, to assist in identifying suitable opportunities for Aboriginal people within the construction workforce (and supporting services) and setting participation targets.

Workforce Development

The MEBD is situated within the Peel region, regarded as one of Australia's fastest growing regional centres. Over 60 per cent of the regional population reside within greater Mandurah. The City of Mandurah had an estimated population of just under 81,000 people in 2016. This is forecast to grow to approximately 120,000 by 2036. The region has access to relatively affordable housing, good transport and communication links and a wide-ranging array of retail, commercial and community services and facilities.

Most of the workforce are employed in primary education and iron ore mining (3.3 per cent), followed by supermarket and grocery stores (3 per cent) and aged care services (2.9 per cent). Unemployment in the region is currently 10.9 per cent.

Local business and employment opportunities were identified as key topics during stakeholder engagement for MEBD. As such the following objective has been included to ensure they are given an appropriate level of focus '*Maximise business and employment opportunities for local communities'*.

An Aboriginal Participation Plan Requirements Report is also being prepared during the development phase. The Strategy will outline how:

- Traditional owners will be engaged and involved with the project, to shape the project's outcomes
- Aboriginal business and workforce development will be planned and implemented across the Project phases, and
- Cultural (ethnographic) awareness and appreciation will be included into the Project.

Appendix 1 – List of Protected Areas within and in the vicinity of the Project

- R 45089 ("Samphire Cove") – A Class Nature Reserve, located approximately 40m from the proposed works.
- Subtropical and Temperate Coastal Saltmarsh Threatened Ecological Community (TEC) (within Samphire Cove, as well as 2 m south of the proposed disturbance footprint).
- R 46661 ("Creery Wetland Reserve") –A Class Nature Reserve, located approximately 350 m from the proposed works.
- Peel Yalgorup Ramsar Wetland of International Importance.
- Peel Inlet Waterbody Conservation Category Wetland (CCW), UFI 15229.

Appendix 2 - Protected fauna and flora species and habitat

Protected flora species:

- None identified within the project area

Protected fauna species:

- *Calyptorhynchus banksii naso*, Forest Red-tailed Black Cockatoo (FRBC) (Vulnerable under the EPBC Act and BC Act)

Appendix 3 – List of Stakeholders to the Project

Stakeholders
State Government Minister for Transport, Hon Rita Saffioti Director General Transport, Peter Woronzow
Federal Government Previous Coalition Government Labor Government
Federal Local Member Andrew Hastie (Lib) Canning
State Local Member Lisa Munday (Lab) Dawesville David Templeman (Lab) Mandurah
Government Agencies Office of Environmental Protection Authority Public Transport Authority (PTA) Department of Aboriginal Affairs Department of Transport (Urban Mobility / Maritime) Department of Biodiversity, Conservation and Attractions Department of Planning, Lands and Heritage Department of Water and Environmental Regulation Department of the Environment and Energy (DoTEE (Federal)) Office of the Government Architect State Heritage Office Fisheries WA Tourism WA West Australian Planning Commission Peel Development Commission Department of Parks and Wildlife
Local Government Authority City of Mandurah
Indigenous Nidjalla Waanga Mia Winjan Aboriginal Corporation Bindjareb (Pinjarup) Noongar representatives Local Aboriginal businesses

Stakeholders
Environment Groups Peel Harvey Catchment Council Friends of Samphire Cove Conservation Council of WA Friends of Samphire Cove Peel Preservation Group Mandurah Environment and Heritage Group Estuary Guardians Birdlife Birds Australia The Nature Conservancy Australia
Emergency Services St John Ambulance Department of Fire and Emergency Services (FESA) WA Police
Utility Service Providers ATCO Gas Alinta Energy Telstra Water Corporation Western Power Telcos / Service Providers (ie NBN, Optus, AARNET)
Property Owners / Residents Local landowner/occupiers Tenants
Developers Mirvac
Businesses Local businesses
Special Interest, Community and Business Groups Westcycle Fishability Group (Mandurah) Peel Regional Leaders Forum Peel Development Commission Peel Chamber of Commerce and Industry Mandurah and Peel Tourism Organisation Fishers with Disabilities Association

Stakeholders
RecfishWest Mandurah Licenced Fisherman's Association Mandurah Communities page - facebook Mandurah Notice Board - facebook group Our Dawesville Community - facebook group South West Community Notice Board - Facebook Group Visit Mandurah Mandurah Over 55 Cycle Club Winjan Rangers
Estuary Users Boating WA Unmotorised Paddlecraft membership groups Mandurah Licensed Fisherman's Association Mandurah Off-shore Fishing and Sailing Club Blue Lighting Charters Port Bouvard Charters Mandurah Over 55 Kayak Club Mandurah Vikings Dragon Boat Club Rowing WA Various businesses, clubs and societies
Cyclist Groups WestCycle Local groups
Media West Australian (Perth) Community Newspaper Group (Mandurah Coastal Times) Mandurah Mail Southern Telegraph GWN
Community (Suburbs) (Adjacent) Dudley Park, Erskine, Bouvard, Halls Head, Dawesville (Surrounding) Clifton, Coodanup, Falcon, Greenfields, Herron, Lakelands, Madora Bay, Mandurah, Meadow Springs, Parklands, San Remo, Silver Sands and Wannanup.