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Manuwarra Red Dog Highway: Annual Project Sustainability Report 2021

This annual report covers the period from December 2020 to July 2021. A previous annual sustainability report was prepared for the Project for November 2019 to November 2020.

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Stakeholder Engagement Lead: James.Nelson@jacobs.com

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About this Report

This report has been prepared by the Manuwarra Red Dog Highway Stage 4 Project team on behalf of Main Roads Western Australia. This report forms part of Main Roads' annual sustainability reporting which is integrated into its Annual Report. Key topics reported in this document have been determined through a materiality process that adheres to the Infrastructure Sustainability Council of Australia (ISCA) rating v2.0, see the Methodology section for more information.

The Manuwarra Red Dog Highway Stage 4 Project is aligned with the ISCA Planning rating framework (version 2.0).

Introduction

The Manuwarra Red Dog Highway (formerly Karratha – Tom Price Road) is a 269 km road linking the regional centres of Karratha and Tom Price in the Pilbara Region of Western Australia. The road provides crucial connectivity between these centres, as well as access to significant tourism destinations and mine sites in the region. However, use of this valuable route is currently restricted with 40% of the road unsealed and unable to safely sustain high volumes of traffic and freight. While safer sealed routes do exist, they compromise time efficiency, stretching over 550 km and adding at least another three hours to the journey. The lack of a safe and time efficient transport option adversely affects the residents and businesses of Karratha, Tom Price, Paraburdoo, and the wider Pilbara Region and is a major inhibitor to investment and growth in the tourism and mining sector.

The Manuwarra Red Dog Highway Stage 4 Project is building approximately 110 km of new sealed road, to deliver a safe, sealed route between Karratha and Tom Price.

The Project team's vision is for **"reliable, sustainable, resilient infrastructure, delivered in an engaging way, that builds connectivity, relationships and prosperity in the region"**. The team is committed to delivering a Project that achieves the best sustainable outcome and provides a positive social, environmental, and economic legacy for future generations.



Figure 1 Project area

Overview

The Manuwarra Red Dog Highway consists of four stages: Stages 1 to 3 have already been completed; and Stage 4 is currently in the planning and design phase, see **Figure 2**. Sealing of the final 110 km section of road is expected to commence in mid-2022. The State and Federal Government have committed a total of \$265 million to enable the completion of the final stage of Manuwarra Red Dog Highway. The road is being built to improve:

- access to Millstream Chichester National Park and Karijini National Park, helping boost tourist traffic in the heart of the Pilbara
- travel time savings
- connectivity between Karratha, Roebourne, Tom Price, Paraburdoo and Newman
- safety
- access to hospitals and medical services, businesses, and shopping, education and service centres
- reduce maintenance and travel costs
- regional tourism opportunities
- reliability of road journeys by reducing road closures, particularly during wet season

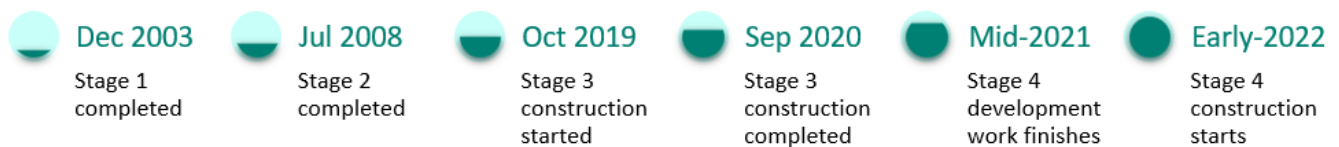


Figure 2 MRDH Project timeline

The Manuwarra Red Dog Highway Stage 4 Planning phase is being delivered by Main Roads Western Australia (Main Roads) with support from key partners Jacobs, Arup, Cardno (KBR) and WSP. The Manuwarra Red Dog Highway Stage 4 Project is supported by two design teams; the Coolawanyah Section base case design is being delivered by Jacobs, whilst both the Hamersley and Tom Price sections are being delivered by KBR.

Key Stakeholders include:

- Federal and State governments
- State government agencies
- Local governments
- Traditional Owners
- Environmental regulators
- Residents and businesses
- Roads users
- Emergency services
- Mining companies
- Pastoral stations
- Industry bodies
- Freight industry
- Visitor centres.

A comprehensive list of stakeholders is provided in **Appendix 3**.

The Project website can be found at: <https://www.mainroads.wa.gov.au/Projects-initiatives/Projects/regional/karratha-tom-price/>.

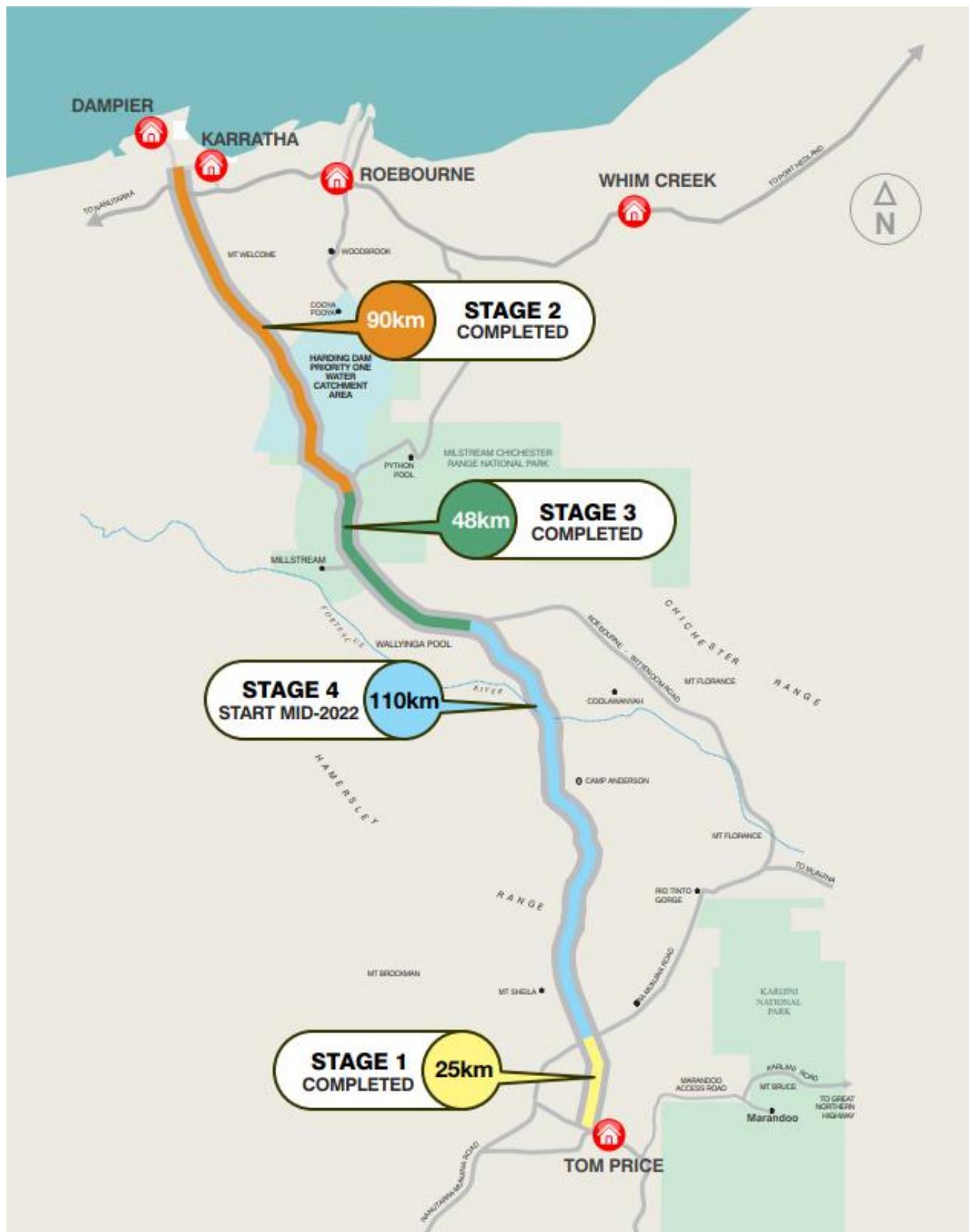


Figure 3 Project overview

Overall approach to Sustainability in Project Development

Main Roads has registered Manuwarra Red Dog Highway for a Planning rating under the ISCA Infrastructure Sustainability (IS) v2.0 rating process. The Project team has developed a sustainability strategy for the Project that 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 award is being targeted.

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 supported by a team of sustainability professionals.

The Manuwarra Red Dog Highway Stage 4 Project has a Sustainability Management Plan that is aligned with Main Roads’ Sustainability Policy (see **Appendix 5**). The Sustainability Management Plan provides the framework for integration of sustainability into all Project activities for Manuwarra Red Dog Highway. It captures the vision and objectives that set the strategic direction for the Project. Focus on these areas will allow the Project to achieve sustainability outcomes beyond business as usual and leave a positive legacy in the Region. As part of the Planning phase, targets have been set by the Project. The targets are tracked, with percentage complete updated monthly. For Project objectives and targets, see **Figure 4**.

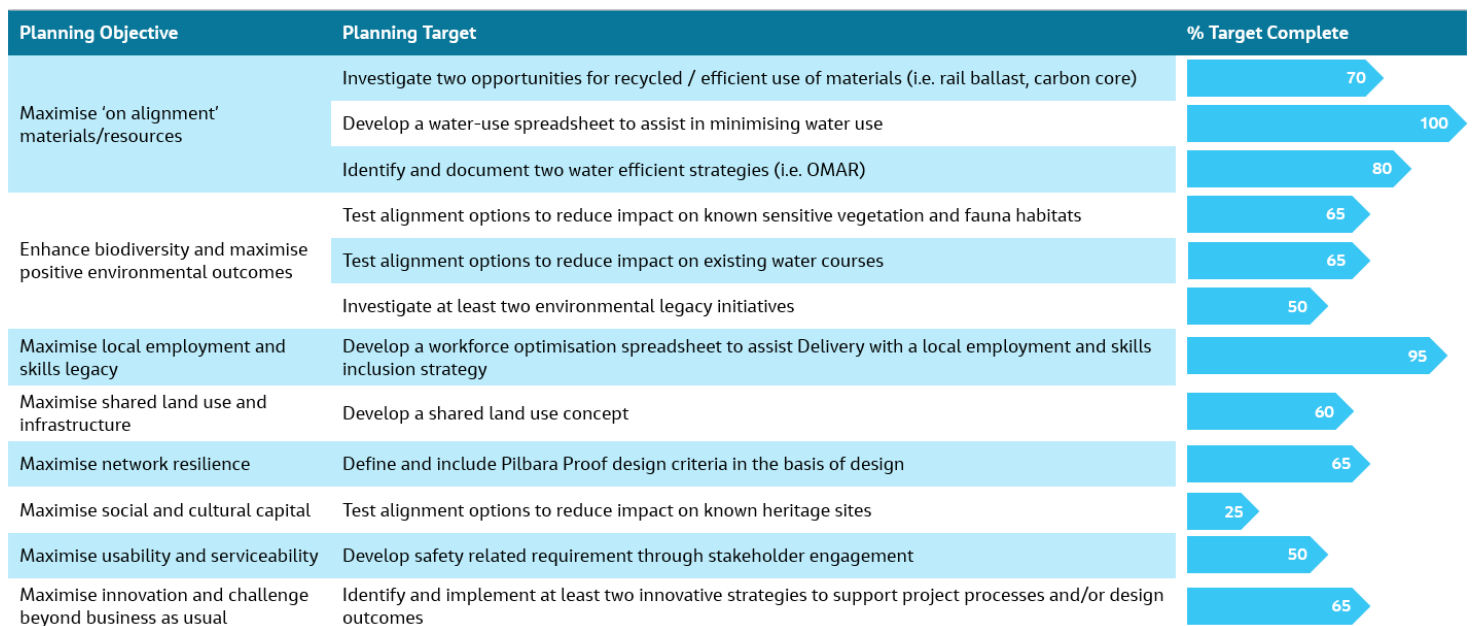


Figure 4 Planning targets percent complete

Methodology

A materiality assessment was undertaken at the start of the project to identify the important sustainability issues for the project. The materiality assessment was informed by Main Roads’ standard process. The priority sustainability topics for the project have been mapped to the United Nations (UN) Sustainable Development Goals (**UN Goals**) using the Main Roads assessment against the UN Goals. The mapping process then identified the positive and negative impacts the project may have on the UN Goals. The process is aligned to the requirements of the IS Rating scheme.

The process involved:

- Review of background information for social, environmental and economic aspects

- Lessons learned workshop output review
- Preliminary sustainability workshop, including key external stakeholder input review
- Mapping of UN Goals against the project’s value chain
- Materiality workshop
- Engagement and review process to finalise material issues.

The materiality assessment will be reviewed at least annually throughout the project lifecycle, and at key project milestones:

- At the start of the Develop phase (following Planning phase)
- At the start of the procurement phase for the delivery contract.

Material Sustainability Issues

A series of workshops has been held with both internal and external stakeholders to identify key issues and opportunities for the project. The project’s impact on the 17 UN Goals has been assessed across the Project, as seen below.

The process described above has resulted in the identification of a number of ‘material’ issues, or focus areas being identified for the project as listed in **Table 1**. The process provided the basis for development of the project’s vision, objectives, and targets.

Table 1 Material Sustainability Issues

Issue	Description	IS Credits	UN Goals
Responsible use of resources	Encouraging ‘circular economy’ and reducing cost of materials	Rso-1 and Rso-4, Ecn-5, Ene-1, Wat-1, Wat-2	UN Goal 12
Partnerships and collaboration	Local knowledge, Pilbara partners, win-wins	Rso-1, Sta-1 and Sta-2	UN Goal 17
Reliable, sustainable, resilient infrastructure	‘Pilbara proof’ (able to withstand the Pilbara climate and weather); survivability	Res-1 and Res-2	UN Goal 9
Employment and economic growth enabled by the project	Opportunities in construction and operation	Ecn-5, Wfs-1, Wfs-2	UN Goal 8
Water quality and hydrological regime	Avoiding or reducing impacts on priority groundwater reserves and avoiding excessive disruption to hydrological regimes	Env-1, Eco-1, Wat-1, Wat-2	N/A
Positive project legacy	Responsible consideration of social, land clearing and heritage management and enhancement	Leg-1, Lea-1, Her-1, Inn-1	N/A
Safety	Responsible consideration of social management and enhancement		UN Goal 3

United Nations Goals

The Project is in Planning phase, therefore performance against the UN Goals is not yet fully realised. However, planned and ongoing activities that outline the Project’s expected performance against the relevant United Nations Goals are outlined in **Figure 5**. Each UN Goal relates to a Planning target. The relevant Planning targets are outlined in each of the UN Goals below. The Planning targets and their percentage of completion are outlined in **Figure 4**.

UN Goal 3 Good Health and Wellbeing	
<p>Positive Impacts</p> <ul style="list-style-type: none"> Improved access to health services. Road safety will be improved with a sealed road and shorter travel times. 	<p>Negative Impacts</p> <ul style="list-style-type: none"> Road safety needs to be considered in the design including higher traffic speeds, higher volumes of traffic and a variety of vehicles using the road.
<p>Manuwarra Red Dog Highway Stage 4 Planning Phase Performance</p> <ul style="list-style-type: none"> Ongoing stakeholder engagement to develop safety related requirements. Road safety investigations have commenced and will continue through the design phase to deliver a safe road. The Planning target <i>"Define and include Pilbara Proof design criteria in the basis of design"</i> will help deliver a resilient road that improves access to health services. 	

UN Goal 6 Clean Water and Sanitation	
<p>Positive Impacts</p> <ul style="list-style-type: none"> Water conservation / reduced water consumption by being innovative compared to "business as usual" design and construction 	<p>Negative Impacts</p> <ul style="list-style-type: none"> High water use during construction, but minimal operational needs. Potential for increased water
<p>Manuwarra Red Dog Highway Stage 4 Planning Phase Performance</p> <ul style="list-style-type: none"> The project has identified the need to protect the Millstream aquifer. The following targets have been progressed to incorporate water efficiency opportunities into the Planning phase: <ul style="list-style-type: none"> Develop a water use spreadsheet to assist in minimising water use. Identify and document 2 water efficient strategies Develop a shared land use concept The Planning target <i>"Test alignment options to reduce impact on existing water courses"</i> contributes towards protecting water resources. 	

UN Goal 8 Decent Work and Economic Growth	
<p>Positive Impacts</p> <ul style="list-style-type: none"> The project can support and facilitate business opportunities in the region during construction. Economic growth in the region is encouraged by providing a faster route between Karratha and Tom Price. 	<p>Negative Impacts</p> <ul style="list-style-type: none"> None identified during Planning phase.
<p>Manuwarra Red Dog Highway Stage 4 Planning Phase Performance</p> <ul style="list-style-type: none"> The Planning target <i>"Develop a workforce optimisation spreadsheet to assist Delivery with a local employment and skills inclusion strategy"</i> is being progressed. The Wintawari Guruma and Yindjibarndi Business Development and Culture Inclusion Frameworks include commitments to work through local business and employment opportunities with Traditional Owners. 	

UN Goal 9 Industry, Innovation and Infrastructure	
<p>Positive Impacts</p> <p>A resilient road design that avoids overengineering is required. The road increases the resiliency of infrastructure in the region and improves industry and community mobility. The road will contribute to economic growth in the region.</p>	<p>Negative Impacts</p> <p>Road design needs to minimise negative impacts to business such as the severance of pastoral leases. Road network maintenance can interrupt business activities. Road maintenance must enable ongoing access for pastoralists and mining companies.</p>
<p>Manuwarra Red Dog Highway Stage 4 Planning Phase Performance</p> <ul style="list-style-type: none"> Innovation is a strong focus of the project team, and this is documented in the team's vision and sustainability charter. Main Roads management encourages the project team to challenge business as usual and look for innovative solutions. Progress against the target <i>"Define and include Pilbara Proof design criteria in the basis of design"</i> includes collecting stakeholder and community feedback about roads being "Pilbara proof" and using that feedback to help inform road planning. The Planning target <i>"Investigate two opportunities for recycled / efficient use of materials"</i> is exploring innovative ways to deliver the road. The project team also has a specific Planning target to <i>"Identify and implement at least two innovative strategies to support project processes and/or design outcomes."</i> 	

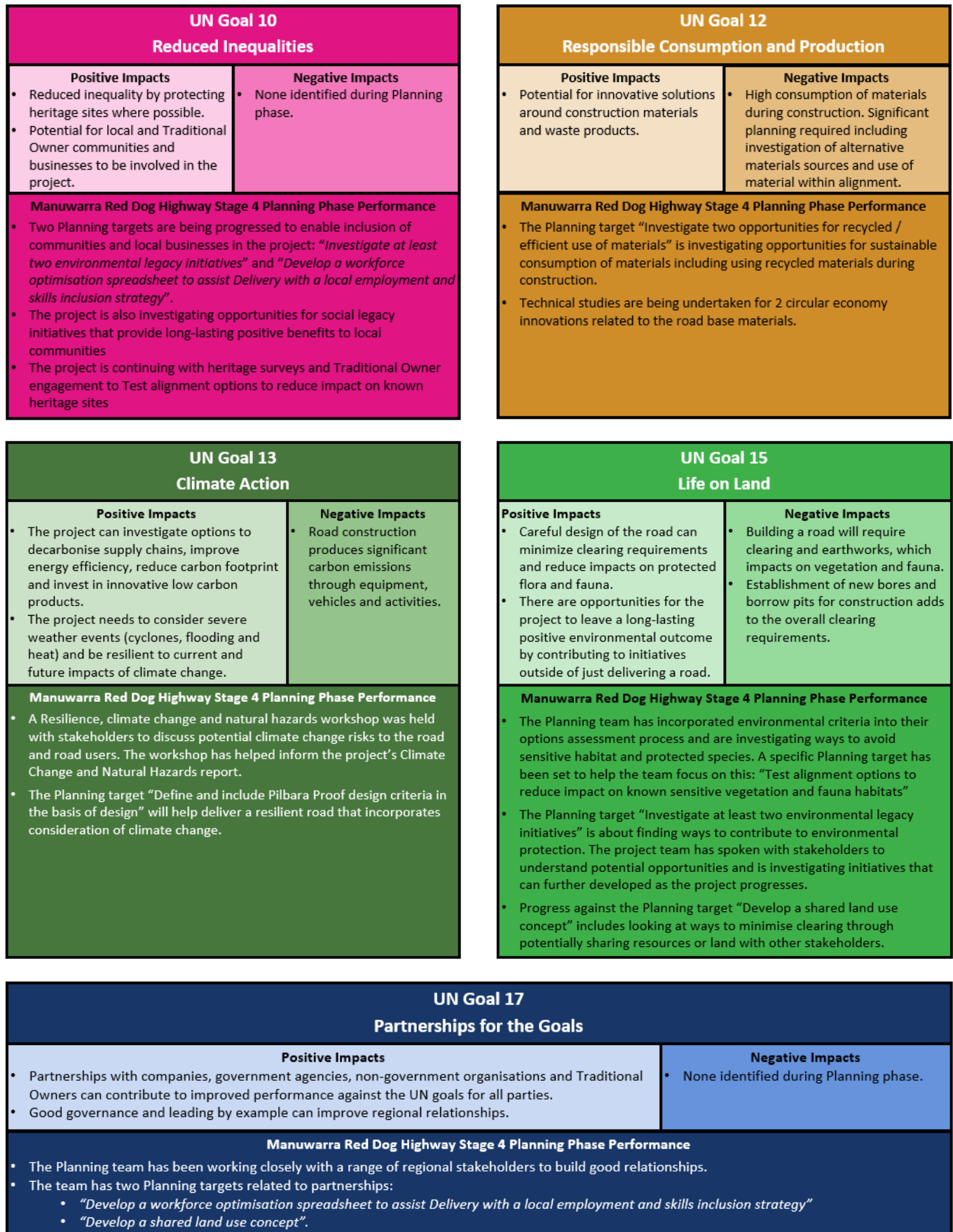


Figure 5 UN Goal Performance

Environmental Aspects



Figure 6 Sturt's Desert Pea (*Swainsona formosa*)

Environmental context

The Project is located in the Pilbara region of Western Australia within the Shire of Ashburton. The Shire has historically been used for pastoral land, mining, tourism, and conservation.

Vegetation within the Development Envelope lies within the Beard (1975) Fortescue Botanical District (Pilbara Region) and is further divided into the Fortescue Valley and Hammersley Plateau subdivisions.

The Project traverses the *Themeda* sp. Hamersley Station Threatened Ecological Community (TEC). The vegetation community is listed as a vulnerable (Category A) TEC by the Western Australian Department of Biodiversity, Conservation and Attractions (DBCA) but is not listed for the purposes of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The Project also traverses a known occurrence of the Priority Ecological Community 'Brockman Iron cracking clay communities of the Hamersley Range'.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and Western Australian *Biodiversity Conservation Act 2016* listed flora and fauna species and ecological communities that may be

impacted by the Project are listed in **Appendix 1** and **Appendix 2**.

The Fortescue River and associated tributaries intersect the Project area in the northern part of the road. Weelamurra Creek also intersects the Project area and has been lodged (not yet registered) as a heritage site. Caves Creek intersects the Project area in the southern section of the road.

The Millstream wellfield is located approximately 100 km south of Karratha. Along with water from the Harding Dam Catchment Area and the Bungaroo Creek Water Reserve, it supplies the West Pilbara Water Supply Scheme. This scheme supplies water to Karratha, Dampier, Roebourne, Wickham, Point Samson, Cape Lambert, and the Burrup Peninsula. The Millstream wellfield and surrounding area is encompassed by a water reserve (the Millstream Water Reserve (West Pilbara) Public Drinking Water Resource Area [Millstream Water Reserve]) and associated Priority 1 and Priority 2 Groundwater Protection Areas. The Project is located partially within both of these priority drinking water areas.

The Project proposes to use the Pilbara Environmental Offsets Fund (PEOF) to facilitate offsets for Stage 4. The PEOF was established to invest in strategic conservation projects in the Pilbara region to improve vegetation and species habitat impacted by development. The fund delivers environmental offset projects in partnership with Traditional Owners, conservation agencies, industry and government. This enables the delivery of larger and more strategic landscape-scale projects than would occur if individual offset projects were delivered independently, leading to better biodiversity conservation outcomes (DWER, 2019).



Figure 7 Typical Landscape of Manuwarra Red Dog Highway

Environmental Management

Manuwarra Red Dog Highway Stage 4 will require clearing of approximately 550 ha of native vegetation and the temporary clearing of an additional 100 ha.

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

- *Environmental Protection Act 1986* Section 38 referral to the Western Australia (WA) Environmental Protection Authority (EPA)
- *Environment Protection and Biodiversity Conservation Act 1999* referral to the Commonwealth Department of Agriculture, Water and Environment (DAWE)
- *Aboriginal Heritage Act 1972* Section 18 consent
- Licences to construct bore and abstract water
- Bed and banks permit.

A Preliminary Environmental Impact Assessment (PEIA) was undertaken to evaluate the potential environmental impacts of the Project. Following this, Stage 4 was referred to both the WA EPA and Commonwealth DAWE for environmental approvals.

In December 2020, the WA EPA decided to assess the Project based on Referral Information. In January 2021, the EPA issued a notice requiring further information. Documents are currently being prepared for the EPA and will be submitted in late 2021. The documents will be displayed during a public review period of 4 weeks. Further information can be found on the [WA EPA website](#).

The Department of Agriculture, Water and the Environment (DAWE) has ruled that the Project is a controlled action. The Project will require assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* before it can proceed. The Project will be assessed by preliminary documentation. Preliminary documentation will be submitted in late 2021.

The following management plans are being developed for Manuwarra Red Dog Highway Stage 4 to manage potential impacts:

- Aboriginal Heritage Management Plan
- Fauna Action Management Plan (Commonwealth)
- Fauna Management Plan (WA)
- Vegetation and Weed Management Plan
- Surface Drainage Management Plan.

Water Management

Water management is a priority issue for Manuwarra Red Dog Highway Stage 4. Managing water consumption is critical, due to the proximity of the Millstream Water Reserve (West Pilbara) Public Drinking Water Resource Area.

Drinking water in the Pilbara is mainly groundwater and the Millstream Water Reserve services several key localities in the Pilbara region. The Development Envelope overlaps this water reserve, including areas listed partially as Priority 1 and Priority 2 drinking water areas.

Water is required for the construction phase of the Project, namely for dust suppression and material conditioning (substrate engineering/compaction). To support water efficiency and use of suitable water sources during the construction phase, a preliminary water supply strategy has been developed. The strategy outlined recommendations for further tasks to ensure sustainable water management during construction phase of the Project.

A water-optimisation spreadsheet has been developed. The spreadsheet is a tool that allows the project to understand the water requirements during construction. It also enables the assessment of different options to help the Project understand how water-use can be reduced. The project has identified some opportunities for the reduction of water use and these will be further investigated for feasibility as the project progresses.

Materials & Recycling

Two resource efficiency workshops have been undertaken. The aim of both workshops was to explore circular economy options associated with materials, waste products, and maximising reuse and efficiency. The outcomes of both workshops were incorporated into the Project targets in line with the Project objective of maximising online resources and materials. These targets will be progressed in the detailed design stage, and then reviewed before being allocated to the construction stage.

A Resource Efficiency Strategy has been completed for the Project. The strategy is aligned with Keeping WA Moving and Main Roads commitments including the Main Roads Sustainability Policy. The Resource Efficiency Strategy aligns its objectives with the Manuwarra Red Dog Highway Stage 4 Project vision, and with the aim outlined in the Main Roads Recycling Materials Guide, 2021:

'A key aim of the use of materials in road construction is to support the circular economy in Western Australia (WA) and where possible to support up-cycling, avoid down-cycling and keep materials circulating within the economy, reducing the need for more raw, virgin materials.'

The Resource Efficiency Strategy includes high-level estimates of the materials and resources needed for Stage 4, which has allowed the Project team to identify opportunity areas to meet the Project's resource efficiency objectives. These estimates will be refined during the design phase of the Project. The opportunity areas are outlined in **Table 2**.

Table 2 Resource efficiency opportunity areas identified

Resource efficiency opportunity areas	
Waste (Resource Outputs)	Minimisation of waste generation
	Maximised onsite reuse of reusable waste material
	Maximised offsite reuse of reusable waste where onsite solutions cannot be identified
	Deconstruction/disassembly/adaptability of the asset
	Beneficial reuse of existing onsite materials
	Beneficial reuse of waste materials by nearby Projects/assets
Materials (Resource Inputs)	Optimisation of overall materials use
	Minimised use of virgin materials
	Maximised use of local materials
	Maximised use of materials that can be reused or recycled
	Beneficial reuse of material outputs from nearby Project/assets
	Maximised use of material inputs with recycled content
	Minimised environmental and social impact of logistics

Note:

Economic Aspects

At a glance

Economic Aspect	Total for Project
Funding	\$265m
Current No. of vehicles per day	TBC – New Road
Forecast Travel Time Saving	20 minutes – 4 hours*
Forecast Increase of vehicle capacity	TBC - New Road
Forecast Increase in cycling and pedestrian facilities (i.e. increase in PSP length)	N/A - Remote

* Note that we have considered a number of different routes to compare the travel time savings against, as some of the current roads require permits, are un-sealed, or are closed in the event of small rainfall



Figure 8 Project area

Economic context

Manuwarra Red Dog Highway is a Nationally important strategic investment. It will enormously improve linkages between major service centres and stimulate economic activity in the Pilbara, a powerhouse of the Australian economy and a burgeoning tourist destination, and in addition deliver significant social and community benefits. Compared to alternative sealed routes, distances and travel times will be approximately halved.

The Pilbara region is a globally significant mining and energy region, boasting a wealth of resource endowments, dynamic communities, rich Aboriginal culture and stunning natural landscapes. An upgraded road will enable much easier access to major tourism destinations such as Karijini National Park and open the potential for tourism product such as Aboriginal cultural experiences and day trips from Karratha.

Reliability of access in the cost to move personnel to and from mines are significant for the mining industry. A sealed road could enable some mines to be serviced on a Drive-in Drive-out (DIDO) rather than a Fly-in Fly-out (FIFO) basis and would positively impact on the economics of bringing in supplies and equipment.

An upgraded road will substantially reduce the distance and cost of travel for remote communities. These factors, plus the impact of road closures, significantly impact communities, including Aboriginal communities, and make it much more difficult for them to access health, education, and employment opportunities.

Key Economic Outcomes

The benefits that would arise from upgrading and sealing the road are summarised below:

- Major travel time savings
- Reductions in vehicle operating costs
- Improved safety
- Improved economic outcomes, especially mining and tourism, resulting from reduced travel costs, certainty of travel, and availability of new options
- Better access to education, health, and employment opportunities
- Potential of being able to replace FIFO mining operations with DIDO.

Options Assessment

During the Planning phase, options assessment has focused on potential high-risk areas of the Project and challenging the 'base case' assumptions of these areas. By reviewing the 'base case' assumptions at this early stage of the Project, and testing changes to these assumptions, small changes in alignment and design parameters can lead to large construction and maintenance savings; whilst providing a robust road that meets the needs of the local and regional communities.

The key outcome sought from the Options Assessment process is to provide a formal, objective and documented process in which key decisions regarding road alignment and road design parameters are interrogated using balanced environmental, social, and economic criteria. An Options Assessment framework outlining a Multi-Criteria Analysis Tool was developed and used by the Project team.

The assessment process to date was undertaken by a team of Project representatives from technical, social, economic, sustainability and environmental disciplines who evaluated each option against the Project objectives and identified the preferred option(s) to take forward to final concept and/or for Project development consideration. These preferred options may not necessarily be lowest cost solutions; however, they are fit-for-purpose solution(s) that best align across the Project objectives to

support Project success. Most options have not been finalised. In-principle agreement from stakeholders, including Traditional Owners, will be required prior to identifying the final and preferred solution.

Resilience

Climate Resilience

Resilient transport infrastructure plays a vital role in the resiliency of a region. Manuwarra Red Dog Highway Stage 4 is aimed at improving resiliency against climate and natural hazards, shocks and stresses and the role it can play in contributing towards the resilience of the Pilbara region by considering the complex and interdependent systems that bind them together. In alignment with UN Goal 13, the project can investigate options to decarbonise supply chains, improve energy efficiency, reduce carbon footprint, and invest in innovative low carbon products.

A combined approach was taken to assessing risks to resilience for Manuwarra Red Dog Highway Stage 4, covering both climate and natural hazard risks as well as other shocks and stressors. A resilience and climate/natural hazard workshop was held in November 2020 with a broad range of internal and external stakeholders. The aim of the workshop was to develop shared understanding of resilience and how it applies to the Project and the Pilbara region. The workshop also aimed to identify the key resilience challenges across Manuwarra Red Dog Highway Stage 4 and their implications to the region.

The outputs of the workshop supported the development of draft management measures for the identified shocks, stressors and climate risks. These management measures are currently in draft format and are undergoing refinement with the Project team.

Water Resilience

Water resources are scarce and infrastructure Projects play a vital role in efforts to conserve water. The Project conducted two workshops in May 2021 to identify initiatives to reduce the water footprint for the Project. The first workshop focused on identifying alternatives to source water from non-potable sources and the second workshop focused on identifying initiatives to reduce the water demand from construction related activities. Water reduction initiatives will be considered further as the Project progresses.

Social Aspects

At a glance

Social Aspect	Year to 30 June	Total for Project
Community Satisfaction to Project	No unmanaged community concerns escalated during Planning Phase.	
No. of Stakeholders engaged with during project development	84 documented engagements including workshops and community events.	
No. of complaints	No documented complaints regarding Stage 4 project to date	
No. of legacy commitments	Nil to date.	Nil to date.
No. of heritage sites in project vicinity	Heritage surveys incomplete, alignment yet to be finalised.	
No. of heritage sites significantly impacted		



Figure 9 Project area

Social context

The Manuwarra Red Dog Highway Stage 4 Project has prioritised stakeholder engagement efforts early in the Project to construct a resilient and sustainable road that meets the need of all users.

The highway will play an important strategic role in improving connecting communities across City of Karratha and Shire of Ashburton. The highway may potentially affect the use of the land by pastoral stations, traditional owners and mining activities. The majority of social benefit will be received from communities and businesses that may use the highway to improve reliability and duration of travel times between regional centres. Reducing the geographical isolation of these remote regional centres is

expected to improve social amenity through better access to social and medical services, sporting, educational and employment opportunities.

External stakeholder feedback regarding the road’s context and its interrelationship with external influences was provided in 2019. Stakeholders helped define the role of the road in the context of local, regional, state, and international communities as per **Table 3**. Ongoing liaison with stakeholders throughout 2021 confirmed that these topics remained relevant, with stakeholders’ areas of concern evolving through the Planning Phase on the basis that the Project was proceeding, refocusing on areas of concern relevant to the delivery phase. This focused more heavily on the stakeholder impacts to be mitigated through design and construction – including pastoral impacts, cultural heritage consideration, local and traditional owner economic opportunities and consideration for exploration and mining leases.

Table 3 The role of Manuwarra Red Dog Highway

Roles of the Road in the Context of Community
Not the only road – pastoral use
Safe and efficient access - fatigue management
Missing link between earlier stages at Tom Price
Construction contracts
Business growth
Develop region
Save money
Reliability of access
Connects urban centres and National Parks with a sealed public road
Opportunities for the Port
Mine operations
Social connectivity – sports and family connections
Asbestos risk removal

Community & Stakeholder Engagement

Stakeholder consultation has continued with regards to the Manuwarra Red Dog Highway Stage 4 since 2019. Stakeholder consultation has continued through the Planning Phase and is expected to continue through the Deliver and Operations Phases.

A Communication and Stakeholder Engagement Strategy (CSES) has been developed to achieve the following outcomes:

- Stakeholder satisfaction with the engagement process – felt involved / had influence;
- Identify, address, and resolve stakeholder issues;
- Positive reputation for Main Roads and its Project management;

- Build strong, ongoing relationships with the local community, generating trust and confidence in Main Roads and their vision for the road network.

As the Manuwarra Red Dog Highway Stage 4 Project relies on a wide range of stakeholder participation from across government agencies, private sector and the wider community, early engagement can help Main Roads be better informed about stakeholder concerns, issues, and challenges. A comprehensive list of stakeholders is provided in **Appendix 3**.

Main Roads reviewed lessons learned following the completion of Stage 3 of Manuwarra Red Dog Highway to review stakeholder perceptions of the success of the Stage 3 Project. A number of opportunities for improvement to stakeholder engagement were identified and considered when developing the CSES for the Manuwarra Red Dog Highway Stage 4 Project. Some of the key learnings were requests for early and ongoing engagement with key stakeholders, through planning, design development, procurement strategy development and delivery strategy development. To facilitate this early input from stakeholders to maximise potential stakeholder benefits, a number of strategic workshops were undertaken in the Pilbara to facilitate attendance by regional stakeholders, and through web based virtual workshops to manage COVID-19 restrictions for regional and vulnerable community access.

The project has been engaging with Traditional Owners throughout the planning phase. An understanding of the governance structure for Traditional Owner engagement and participation in the Stage 4 project has been documented in frameworks which are being put in place. Reference groups and working groups are also currently being formed with Traditional Owners.

Stakeholders participated in social and environmental legacy workshops to identify legacy needs and opportunities that could provide long-lasting positive outcomes to the region.

A resilience, climate change and natural hazard workshop was held with stakeholders to assess risks that these areas might pose for the Project and for communities using the road. This workshop helped inform the Project’s Resilience Plan and Climate and Natural Hazard Report.

An additional resource efficiency workshop was held with internal stakeholders to review key material inputs, outputs (waste), and opportunity areas. The purpose of the workshop was to identify circular economy opportunities to reduce the potential environmental footprint of the Project, maintain resilience and durability of road while keeping costs down.

Stakeholder input is being sought on many areas to provide input into the design. These negotiables have been revised on several occasions throughout the Planning and Definition Phase to reflect progression of alignment decisions, field survey information and feedback from stakeholders. The list of current negotiables at the end of June 2021 is detailed in **Table 4**.

Table 4 Stakeholder negotiables

Negotiables as at June 2021
Stakeholder led innovations
Stakeholder led legacy idea
Name suggestions
Environmental offset opportunities

Negotiables as at June 2021
Potential social offsets and win-win outcomes
Traditional owner and other local business opportunities
Input into construction methodology
Directional signage and branding
Water sourcing opportunities
Industry collaboration opportunities
Material supply
Defining 'Pilbara Proof'
Alignment definition
Roadside amenities
Avoidance of Traditional Owner heritage sites
Mitigation of Environmental Impacts

As the Manuwarra Red Dog Highway Stage 4 Project progresses, it is expected that these negotiables will evolve alongside the alignment refinement.

To date, stakeholder involvement or input that has influenced development of the Manuwarra Red Dog Highway Stage 4 Project includes:

- Agreement on the Highway interface with the FMG rail bridge (Eliwana Arch);
- Eastern Guruma representatives input into the corridor selected near Hamersley Homestead;
- Defining of the 'Pilbara Proof' concept;
- Safety and Technical recommendations for the Highway to remain on the western side of the existing rail line;
- Freight industry preference that the Highway will accommodate RAV10 vehicles;
- Workforce planning;
- Signage strategies; and
- Community feedback on the naming of the Manuwarra Red Dog Highway.

It is expected that further incorporation of stakeholder feedback will be involved in the optioneering process to minimise potential impacts on cultural heritage sites, future extractive industry operations, pastoral station sterilisation and interaction with local road networks.

Addressing community concerns

The Project team undertook an evaluation of stakeholder engagement effectiveness in November 2020 to assess if engagement objectives were being achieved, identify opportunities for improvement and collate feedback from stakeholders on the level in which they felt their input had influenced the Project.

Although a number of negotiables have been documented where stakeholder input has influenced the Project, feedback from the evaluation process highlighted which stakeholders wanted a greater influence

during the planning, development, and delivery phases of the Project.

As the Project transitions through planning and development to delivery phases, it is expected that the focus will shift to mitigating specific stakeholder concerns of the alignment impacts, through to managing broader community concerns on how to maximise local opportunities and maximise positive regional legacy outcomes through the Project construction.

A stakeholder engagement summary report has been prepared at the completion of the Planning phase to capture key methods for sharing information, summarising key stakeholder and community concerns, as well as outlining how community and stakeholder concerns have been addressed to date. This summary report will assist in the planning for the delivery phase of the Manuwarra Red Dog Highway Stage 4 Project.

Heritage

Main Roads engaged Juluwarlu Group Aboriginal Corporation (JGAC), along with Stevens Heritage Services and Gavin Jackson Cultural Resource Management, to conduct ethnographic and archaeological heritage surveys with Traditional Owners over the northern sections (Coolawanyah and Hamersley) of the alignment corridor. Wintawari Guruma Aboriginal Corporation (WGAC), along with Yulur Heritage, were engaged to conduct surveys with Eastern Guruma Traditional Owners over the Hamersley section and the southern section (Tom Price).

The surveys identified and mapped the extent of archaeological or ethnographic heritage sites that exist within the alignment corridor so as to enable Main Roads to avoid them where possible. The surveys will also result in Yindjibarndi and Eastern Guruma Traditional Owners' recommendations on the management of those sites.

Workforce Development

The Pilbara region is one of the healthiest, buoyant, and well-paid labour markets in Australia; both for local and First Nations employment. The Pilbara region supports 63,850 jobs and an economic output of \$76.711 billion, an increase of \$9billion over the last year. In the 2020 to 2021 economic recovery from COVID-19, an exceptional pipeline of major construction and engineering work has been developed (close to \$140b in the pipeline, informed by PDC.). This is generating an unprecedented demand for skills and labour in the Pilbara region, resulting in skill shortages across WA and major difficulties for the type of infrastructure projects that Main Roads commission. Short term accommodation is also extremely limited in the Karratha region, creating scheduling issues for the progression of geotechnical and heritage reviews, as well as implications for the base case FIFO workforce strategy.

14% of the Pilbara population are Aboriginal people (8308 identified as Aboriginal in 2016). There is a sustained downwards trend on Pilbara unemployment (~2.6%, from 3.2% the same time last year). A diversified mining, engineering and construction industry sector continues to provide extensive opportunities for Traditional Owner entities and Aboriginal people (across the Pilbara - approximately 4200 employed in mining, approximately 1000 in civil and engineering construction) and extremely optimistic outlooks for significant mining and engineering construction projects. The high cost of living in the region means that potential local employees are reluctant to shift if the roles are short term, and there is a lack of short-term accommodation. As this regional labour market becomes more hyper-competitive, Main Roads is now regularly using the information from the Project's Workforce Sustainability Team to manage the forward Stage 4 Project outlook and strategy.

The Manuwarra Red Dog Highway Stage 4 Project workforce strategy approach, guided by the Project sustainability vision, has successfully created a focus within the project leadership group on how the workforce strategy and analysis contributes to maximising social and cultural opportunities and the

delivery of a resilient 'Pilbara proof' asset. This approach is now underpinned by a 'workforce sustainability' management capability within the Project, and the development and implementation of new workforce planning tools and systems.

The Manuwarra Red Dog Highway Stage 4 workforce strategy now delivers the following:

- A workforce strategy, model, and action plan to secure the right economic legacy outcomes (skills, workforce, and services) for the project across the entire program lifecycle to 2023-24;
- The development, implementation and support for an innovative workforce analytics tool (the Workforce Optimisation Tool) that maps the Manuwarra Red Dog Highway Stage 4 Project lifecycle workforce and salary data to enhance the ongoing workforce management and decision-making for the Stage 4 workforce, from Develop through to Delivery stages;
- Utilisation of the Workforce Optimisation Tool to inform the delivery strategy for the Project, in order to maximise local, Traditional Owner and community legacy opportunities;
- Design and support of a highly networked project organisation design and leadership model, consisting of the introduction of Team leads (discipline heads) to manage work streams in a very flat structure, the development of a Project Charter, Mission, Objectives and values statement and integration of high performance team practices;
- The selection and retention of a highly diverse workforce for the select phase of the project over November-June 2020 (~30% female), with the managed transition for some consultants into project leadership roles to manage the base case design over October 2020-June 2021 as well as the creation of a specific role for an early career engineer (as a Design Interface Lead);
- Leading workforce planning practices and tools aligned to the ISCA v2.0 Planning rating scheme workforce credits, a first for Main Roads, leading to early strategic competitive intelligence on Pilbara skills availability.

Wintawari Guruma and Yindjibarndi Business Development and Culture Inclusion Frameworks were finalised in 2021, which outline how Traditional Owners will be engaged and involved with the Project to shape the Project outcomes. The framework documents also outline the processes for planning business and workforce development across the Project phases; and how cultural (ethnographic) awareness and appreciation will be included in the Project.

Appendix 1 - List of Protected Areas Project interfaces with:

- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) Threatened Ecological Community (Category A)
- Brockman Iron cracking clay communities of the Hamersley Range - Priority 1 (Priority Ecological Community)
- The Millstream Water Reserve (West Pilbara) Public Drinking Water Resource Area [Millstream Water Reserve] and associated Priority 1 and Priority 2 Groundwater Protection Areas.

Appendix 2 - Protected fauna and flora species and habitat

Protected flora species:

- *Goodenia nuda* (Priority 4).
- *Goodenia* sp. East Pilbara (Priority 3)
- *Barbula ehrenbergii* (Priority 1)
- *Calotis squamigera* (Priority 1)
- *Indigofera ixocarpa* (Priority 2)
- *Paspalidium retiglume* (Priority 2)
- *Scaevola* sp. Hamersley Range basalts (S. van Leeuwen 3675) (Priority 2)
- *Acacia daweana* (Priority 3)
- *Acacia effusa* (Priority 3)
- *Astrebla lappacea* (Priority 3)
- *Dampiera anonyma* (Priority 3)
- *Eragrostis crateriformis* (Priority 3)
- *Eremophila magnifica* subsp. *velutina* (Priority 3)
- *Fimbristylis sieberiana* (Priority 3)
- *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (Priority 3)
- *Olearia mucronata* (Priority 3)
- *Owenia acidula* (Priority 3)
- *Ptilotus subspinescens* (Priority 3)
- *Sida* sp. Hamersley Range (K. Newbey 10692) (Priority 3)
- *Stylidium weeliwolli* (Priority 3)
- *Acacia bromilowiana* (Priority 4)
- *Goodenia nuda* (Priority 4)
- *Lepidium catapycnon* (Priority 4)
- *Ptilotus trichocephalus* (Priority 4)

Protected fauna species:

- Northern Quoll (*Dasyurus hallucatus*) - Endangered under the EPBC Act and BC Act
- The Pilbara Leaf Nosed Bat (*Rhinonicteris aurantia*) (Pilbara form) - Vulnerable under the EPBC Act and BC Act. Potential foraging habitat for the species within the Project area.
- Ghost Bat (*Macroderma gigas*) - Vulnerable under the EPBC Act and BC Act
- Olive Python (*Liasis olivaceus barroni*) - Vulnerable under the EPBC Act and BC Act.
- Curlew Sandpiper (*Calidris ferruginea*) - Critically Endangered under the EPBC Act and BC Act.
- Australian Painted Snipe (*Rostratula australis*) - Endangered under the EPBC Act and BC Act.
- Night Parrot (*Pezoporus occidentalis*) - Endangered under the EPBC Act and Critically Endangered under the BC Act.

Appendix 3 – List of Stakeholders to the Project

Stakeholder

Federal Government

Federal Minister for Infrastructure and Transport, Hon Michael McCormack

State Government

Minister for Transport, Hon Rita Saffioti

Premier Mark McGowan

Minister for Regional Development Alannah MacTiernan

State Local Members

Kevin Michel, MLA - Member for Pilbara

Hon. Kyle McGinn, MLC - Member for Mining and Pastoral Region

State Government Agencies

- Department of Transport (DoT)
- Department of Planning, Lands and Heritage (DPLH)
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Health (DoH)
- Department of Water and Environment Regulation (DWER)
- Pilbara Development Commission (PDC)
- Department of Mines, Industry, and Safety (including Worksafe) (DMIRS)
- Water Corporation/Service providers
- Regional Development Australia (RDA)

Federal Government Agencies

- Department of Agriculture, Water and the Environment (DAWE)

Mining Companies

Rio Tinto Iron Ore (RTIO)

Mineral Resources Limited (MRL)

Balla Balla Infrastructure (BBI)

Fortescue Mining Group (FMG)

Emergency Services

- St John Ambulance
- Department of Fire and Emergency Services (FESA)
- WA Police

Local Governments

Shire of Ashburton

City of Karratha

Industry Bodies

Freight and Logistics Council of WA

Western Transport Federation

Visitor Centres

Karratha Visitor Centre

Tom Price Visitor Centre

Businesses

Local businesses

Businesses (construction related)

Aboriginal Businesses

Local Communities

Sporting groups

Schools

Churches

Road Users

Residents within Karratha/Tom Price/Paraburdoo who may use the road

Tourists/Visitors

Environmental Groups

Pastoral Stations

Coolawanyah

Hammersley Station

Aboriginal Corporations

Wintawari Garuma Aboriginal Corporation

Yindjibarndi Aboriginal Corporation

Appendix 4 – Sustainability Dashboard for Project Development

Environment

Aspect	Total for Project
Actual clearing to date (ha)	0
Actual rehabilitation/revegetation to date (ha)	0
Total water use for Project to date (kl)	0
Total energy use for the Project to date (MJ)	0
Total GHGs for the Project to date (t CO _{2-e})	0
Total imported materials used (t)	0
Total recycled materials used (t)	0

Social

Social Aspect	Total for Project
No. of Stakeholders engaged with during Project development	N/A
No. of Legacy commitments	N/A
No. of heritage sites in Project vicinity	Surveys incomplete
No. of heritage sites significantly impacted	Surveys incomplete
Existing number of traffic safety incidents within Project boundary	N/A
Forecast number of traffic safety incidents within Project boundary	N/A
% of women in Project development workforce	N/A
% indigenous in Project development workforce	N/A
% of people with disabilities in Project development workforce	N/A
Number of hours training during Project development	N/A
Number of development employees and apprentices during Project development	N/A
Number of employees (FTEs) sourced from local community for Project development	N/A
Safety metrics during Project development i.e. ROSMA crash metric reduction target	N/A

Economic

Economic Aspect	Total for Project
Project spend to date	N/A
Project spend to date by significant Project activities including key contracts to deliver activities	N/A
Number of people employed by supply chain during Project development	N/A
Number of suppliers engaged during Project development	N/A
Number of Indigenous Enterprise during Project development	N/A
Number of Disability Enterprise during Project development	N/A
Buy Local Spend during Project development	N/A

Appendix 5 – Main Roads WA Sustainability Policy

MAIN ROADS WESTERN AUSTRALIA

JULY 2016

Sustainability Policy

We are committed to **developing a transport network that meets social, economic and environmental needs.**

Transport is essential to the development of Western Australia and plays a vital role in creating competitive economies and liveable, inclusive communities by enabling the movement of people and freight.

Intent

- Within the sphere of influence of road-based transport improve the overall outcomes of the transport system
- Address the implications of climate change for Main Roads with consideration of our customers and stakeholders
- Reduce the environmental footprint of our business
- To be informed of environmental, economic, cultural, political and social issues impacting us
- Ensure our key sustainability aspects are considered within our decisions
- Look for ways to maximise whole of government revenue
- Reduce our on-going operational costs

Objectives

- Deliver a road-based transport system that improves community amenity, mobility and travel choice whilst reducing indirect environmental impacts
- Develop an appropriate response and adapt to our changing climate
- Reduce our impact on the natural environment by focusing on emissions, pollution, waste, land use and resources
- Develop a culture of sustainability within our organisation, our industry and our community
- Ensure high standards in governance by measuring and reporting our sustainability performance against our key sustainability aspects
- Create opportunities for innovation in funding and financing for road infrastructure development and maintenance



Peter Woronzow

A/Managing Director of Main Roads

This policy is reviewed every two years or as required to ensure it complies and is relevant to legislative and business obligations.



Appendix 6 – Glossary of Terms

Term	Definition
CSES	Community and Stakeholder Engagement Strategy
DAWE	Department of Agriculture, Water and Environment
Develop Phase	Includes the development of the alignment and reference design, as well as development of plans that enable the successful delivery and implementation of the Project. The Project delivery method is determined, procurement options and the preliminary estimates are prepared.
Deliver Phase	Includes development of the preliminary (or tender) design, then detailed design and delivery of the Project to agreed time, cost and scope. A delivery partner may be selected at this point where a design and construct delivery method is employed.
EPA	Environmental Protection Authority
ISAP	Infrastructure Sustainability Accredited Professional
ISCA	The Infrastructure Sustainability Council of Australia
IS Rating Scheme	Infrastructure Sustainability (IS) rating scheme comprises: <ul style="list-style-type: none"> ▪ The IS rating tools for Planning, Design and As Built and Operation ▪ ISCA education and training programs (including the IS Accredited Professional program) ▪ Working and Advisory Groups.
IS Rating Tool	The IS rating tool is the tangible part of the scheme, used to undertake assessment. It comprises: <ul style="list-style-type: none"> ▪ The IS Technical Manual ▪ IS rating tool scorecard (IS Scorecard) ▪ IS Materials Calculator – a calculator used to measure performance in the Materials category (Design & As-Built and Operations only)
Main Roads	Main Roads Western Australia
Objective	The desired result or outcome that the Project is trying to achieve
PEIA	Preliminary Environmental Impact Assessment
Pilbara proof	Pilbara Proof refers to a resilient road design that acknowledges the unique hydrology considerations of the Pilbara. It provides a fit for purpose approach that maximises service availability, minimises requirements for post flooding maintenance requirements, and provides a value for money approach to delivering critical road facilities in the Pilbara.
Planning Phase	Includes the Project development corridor, a wide corridor that provides sufficient room for options for the road alignment. It also includes alignment definition, some options assessment and the development of plans that enable the successful planning of the Project.
Recycled	A used item is processed into a totally new product via an energy consuming process.
Reused	The practice of reutilising an item into same or a different use after the original purpose is filled.
Target	A measurable and realistic level of performance for a specified performance indicator.
Vision	A sentence or short paragraph describing the aspirations for the Project that underpin strategic planning.