



Smart Freeway Mitchell Southbound Hester Avenue to Warwick Road Project Annual Sustainability Report

This annual report covers the period from 1/07/2021 to 30/06/2022. This is the second annual report to be prepared for the project. Previous annual sustainability report included [2020-2021]

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Disclaimer

All information was true and accurate at date of publication. Data is subject to change pending audits, verifications, and reviews.

Abbreviations and Acronyms Table

Abbreviation	Full Form
CRG	Community Reference Group
DBCA	Department of Biodiversity, Conservation and Attractions
EMP	Environmental Management Plan
GHG	Green House Gas
GRI	Global Reporting Initiative
H2HJV	Hodges to Hepburn Joint Venture
HSE	Health Safety Environment
HWA	Hester to Warwick Alliance
ha	Hectare(s)
IAP2	International Association for Public Participation
IEO	Index of Education and Occupation
IFC	Issued For Construction
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
ISC	Infrastructure Sustainability Council
ITS	Intelligent Transport Systems
kL	Kilolitre
km	Kilometre(s)
KPI	Key Performance Indicator
LED	Light Emitting Diode
LCA	Lifecycle Assessment
LTIFR	Lost Time Injury Frequency Rate
m	Metre(s)
Main Roads	Main Roads Western Australia
NCR	Non-conformance Report
NEC4	New Engineering Contract, fourth generation
GJ	Megajoule; Gigajoule: unit of energy which is equivalent to 1 billion Joules
PSP	Pedestrian Shared Path
RAP	Reclaimed Asphalt Pavement
SCM	Supplementary Cementitious Materials
SMART	Specific, Measurable, Achievable, Realistic and Timely
SWTC	Scope of Work and Technical Criteria
tCO ₂ e	Tonnes of carbon dioxide equivalent
TEC	Threatened Ecological Community
UN	United Nations

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1 About this Report

1.1 Purpose

This report has been prepared for the Smart Freeway Mitchell Southbound Hester Avenue to Warwick Road Project (herein 'the Project'). This report was compiled by the Project team on behalf of Main Roads Western Australia (herein after 'Main Roads'). This report will accompany the Main Roads Annual Sustainability Report 2021/2022 and will ultimately be integrated into the Main Roads Annual Report. The report content is prepared in accordance with Global Reporting Initiatives (GRI) principles. This report summarises the sustainability initiatives and potential environmental, social, and economic impacts of the Project. Material topics presented in this report have been determined through the Infrastructure Sustainability Council's (ISC) materiality process.

This report does not contain content that is obligated to be reported by another stakeholder, these are managed through separate processes as required by the individual stakeholder e.g., Environmental Protection Authority, Department of Water and Environmental Regulation, Clean Energy Regulator.

1.2 Sustainability Statement

While the Project has faced some challenges since commencing, the Hodges to Hepburn Joint Venture (H2HJV) team remains committed to achieving positive sustainability outcomes for road users and the communities that surround this transformative infrastructure, which will:

- Promote the efficient use of resources through the reduction of energy, materials and water used, both during construction and operation.
- Explore urban and landscape design opportunities to achieve green infrastructure, ecological enhancement and community well-being.

"The delivered solution will contribute over the long term towards greater local and regional resilience" – Jason Gavranic Project Director

1.3 Highlights

The sustainability highlights that the Project is tracking towards are:

- The use of recycled materials during construction including Reclaimed Asphalt Pavement (RAP). The Project is including at least 5% RAP within the dense graded asphalt intermediate course and is investigating the use of RAP of up to 10%. The incorporation of recycled products will significantly reduce the carbon footprint of the road as asphalt is the Projects most significant material quantity.
- The Project liaised with Community members regarding a proposed amenity wall along Twickenham Drive in Kingsley. This consisted of a door-knocking exercise which resulted in strong community feedback that the amenity wall should not be constructed, in favour of keeping the present vegetation. From this, the Project made a recommendation to Main Roads and ultimately got the amenity wall removed from the Design. This initiative saved taxpayers money and involved local community to influence design for a positive outcome for residents.

2 Project Overview

The Mitchell Freeway is a critical transport corridor connecting Perth's growing northern suburbs with the Central Business District (CBD), Reid Highway, Kwinana Freeway and beyond. The Mitchell Freeway currently carries some of the highest traffic demands in Perth seeing up to 180,000 vehicles each day. The Mitchell Freeway is currently known for unreliable traffic performance, which negatively affects Perth's operational capacity (Infrastructure Australia, 2022). As the city continues to develop, demand has outstripped the capacity of the freeway system, highlighting the need to manage the flow of motorists onto, through and out of the freeway corridor to optimise its performance. To address this, the Project will be undertaking the 'Smart Freeway Mitchell Southbound: Hester Avenue to Warwick Road project.

During this reporting period, the Project has undergone a significant change in delivery structure. In February 2022, one of the Project's joint venture partners (WBHO) went into voluntary administration and subsequently withdrew from the Project. This provided the Project with an opportunity to revisit key elements of its delivery method, with an alliance contracting arrangement being negotiated between NRW Contracting Pty Ltd (NRW) and Main Roads. As of June 30th, 2022, the Project team is still operating as a Joint Venture under a New Engineering Contract, fourth generation (NEC4) contract. All previous stakeholder engagement and design input remains in place. For more information please refer to the Main Roads Project website ([here](#)).

The Project will widen key bottlenecks on the Mitchell Freeway southbound through the construction of a third lane, roll out Smart Freeway technology and upgrade the Principal Shared Path (PSP) network for pedestrians and cyclists. The Project will help alleviate congestion and improve road safety by reducing stop-start conditions often associated with peak period traffic incidents. This congestion reduction focused project will improve transport efficiency for road users across the northern corridor network, reducing peak period travel times and vehicle associated emissions. The Project forms part of a suite of transport infrastructure improvements designed to support the expansion of Perth's fast growing outer northern suburbs.

Smart Freeway technology includes modified entry ramps with co-ordinated traffic signals and overhead electronic signs which can display speed reductions and let commuters know when a lane ahead is closed. Further information surrounding the Smart Freeway Technology can be found [here](#).

2.1 Locality and Scope

The Project is operating within the boundaries of two Local Government Authorities, the City of Joondalup and the City of Wanneroo.

The Project works include all investigation, design and construction required to construct a third southbound freeway lane between Hodges Drive and Hepburn Avenue. In addition, Project works include construction of an auxiliary lane between the Hepburn Avenue entry ramp and Warwick Road, and an upgrade to the principal shared path between Ocean Reef Road and Warwick Station. The works also include the installation of a Smart Freeway system from Hester Avenue to Warwick Road. The Project location and scope are shown in blue, in Figure 1.

Smart Freeway Mitchell Southbound: Hester Avenue to Vincent Street



Figure 1 Project Location and Scope

The Scope of Works includes:

- Construction of a third southbound lane from Hodges Drive to Hepburn Avenue, adjacent to the freeway median.
- An extra lane from Hepburn Avenue exit ramp to Warwick Road entry ramp, to provide a safe distance for motorists to enter or exit the freeway.
- Smart Freeway technology - coordinated ramp signals and modifications to entry ramps from Hester Avenue to Warwick Road.
- Emergency stopping bays and an emergency breakdown lane.
- Noise and amenity walls where required.
- Concrete barriers adjacent to the rail reserve from Hodges Drive to Reid Highway.
- Safety barriers adjacent to the verge from Hodges Drive to Warwick Road.
- Shared path construction and upgrades to provide continuous path from Ocean Reef Road to Warwick Train Station.

2.2 Value and Funding

The \$76 million freeway upgrade Project is jointly funded by the Federal (\$38 million) and State (\$38 million) governments. The Project is also delivering the northern portion of the \$140 million Smart Freeway Project from Hester Avenue to Vincent Street, which is jointly funded by the Australian (\$70 million) and State (\$70 million) governments. The expected construction completion date is set for late 2023. Landscaping and Intelligent Transport System (ITS) testing and commissioning are expected to be completed by late 2023.

2.3 Delivery Agents/Partners/Contractors

The Mitchell Freeway Southbound upgrade was awarded in February 2021 by Main Roads to the H2H joint venture comprising NRW and WBHO. As WBHO went into voluntary administration in February 2022, the Project is in the process of negotiating an Alliance contract between NRW and Main Roads as of June 30th, 2022, which will operate as the Hester to Warwick Alliance (HWA).

Key subcontractors involved in the design and construction of the Project are:

- Designers (WSP Australia Pty Ltd, BEST Consultants Pty Ltd, WGAWA Pty Ltd)
- Electrical and ITS (DM Roads Pty Ltd)
- Asphalt installation (Roads 2000 Pty Ltd)
- ITS hardware (HMI Technologies)
- Pavement materials (WA Limestone and Boral)
- Structural Steel Gentries Supply (Fremantle Steel).

2.4 Project Timeline

Table 1 summarises key project and sustainability milestones for the Project.

Table 1 Project Timeline

Milestone	Date
Contract Award	February 2021
First Annual Sustainability Report Submission	July 2021
First Bi-Annual Sustainability Presentation	August 2021
Second Annual Sustainability Report Submission	August 2022
Second Bi-Annual Sustainability Presentation	September 2022
Design Phase Completion	September 2022
Construction Phase Completion	June 2023
Third Bi-annual Sustainability Presentation	February 2023
Third Annual Sustainability Report	July 2023
Fourth Bi-annual Sustainability Presentation	August 2023
ITS Commissioning Completion	October 2023
Practical Completion	October 2023
Final Annual Sustainability Report	July 2024
Landscaping Commencement	March 2024

Over the reporting period, the below activities have progressed:

- Installation of concrete crash barrier along the median
- Installation of drainage network and upgrades along median
- Separation of live freeway traffic from the median using rigid steel barriers and reducing trafficable lanes down to two lanes near to the verge
- Installation of pavement layers in the median for readiness of asphalt
- Finalised design to Issued For Construction (IFC) stage* – civil, drainage, pavements
- Awarded critical packages for:
 - Asphalt supply and install
 - ITS installation
 - Electrical Installation
 - Procurement of ITS and electrical hardware
 - Procurement of Smart Freeway electronic signage
 - Procurement of structural steel for gantries
 - Concrete crash barriers
 - Rigid w-beam crash barriers
 - Completion of the bulk of pre-construction surveys of adjacent properties
 - Clearing in localised locations along the median.

**Design was completed but subsequent updates to a significant portion of the design then extended the IFC stage to the date reported in Table 1.*

3 Governance

3.1 Approach to Sustainability

The Project operates under the NRW corporate Sustainability and Environmental policies, found in Appendix 2 and Appendix 3 respectively. These policies are complemented by a Project specific Environment and Sustainability Commitment Statement as detailed in Appendix 1. The following sections provide context on how the Environment and Sustainability Commitment Statement has guided the Project's approach to sustainability during the reporting period.

3.1.1 ISC Progression on the Project

The Project has been registered for a formal ISC rating, however due to exceeding the establishment period deadlines detailed within the IS V2.1 technical manual, the Project is no longer eligible to obtain an As-Built Rating, as originally required in the Project contract.

Moving forward through construction and towards practical completion, the Project will focus efforts on achieving positive sustainable outcomes in the areas deemed both practical and beneficial. A list of opportunities to achieve such outcomes can be found in section 3.1.4.

3.1.2 Sustainability Management

Sustainability is managed using the Sustainability Management Plan, which outlines the Project's key objectives, obligations, requirements and the management systems that will be used to monitor them. Sustainability leadership is being driven by Project management during the detailed design phase, which will be continued throughout the delivery of the Project.

Key roles on the Project can be seen in the most recent copy of the Organisation Chart, which can be found in Appendix 7. On the ground, sustainability is driven by the Sustainability Advisor, who is allocated to the Project for up to two days per week.

3.1.3 Sustainability Performance

The sustainability efforts of the Project have been adversely impacted during this reporting period with the voluntary administration of the joint venture partner WBHO. This has seen a loss of historical knowledge with key WBHO staffing members relinquishing their roles on the Project, which had implications for sustainability reporting capability.

The Project has utilised this report as a knowledge gathering and documentation tool so that identified gaps can be pursued and rectified over the next reporting period. Despite information gaps and challenges, the Project has still encountered successes and opportunities. Some key performance highlights during the reporting period include:

- Employing a dedicated Aboriginal Engagement Officer to ensure stakeholder engagement and Aboriginal employment is on track. The advisor has been actively working towards an interpretive art strategy for the Project.
- The training program for Certificate III in Civil Construction.
- The Project undertook a life cycle assessment early in the design stage which outlines some opportunities for the Project moving forward. Opportunities have been outlined in Section 3.1.4.

Alongside the above highlights the Project has encountered challenges which have impacted sustainability performance including:

- Driving integration and ownership of sustainability into Project team responsibilities.
- Lost knowledge due to the Project re-structure and associated overturning of key personnel.
- Existing standards and specifications limiting the delivery of additional LEDs for freeway lighting.

3.1.4 Sustainability Opportunities

In lieu of the above challenges experienced by the Project to date, it is recommended that the Project focuses on opportunities identified in the Life Cycle Assessment. The three greatest areas include but are not limited to:

- implementing initiatives to reduce Greenhouse Gas (GHG) emissions,
- initiatives to reduce embodied GHG emissions, and
- initiatives to reduce potable water consumption.

In addition, the Project will also assemble asset handover documentation during the coming stages to document the appropriate management of climate risks during operation.

3.2 Material Sustainability Issues

Material topics were identified for the Project through the application of ISC's Materiality Assessment tool and process. While the design rating for ISC has been abandoned, the learnings from this Materiality Assessment are still useful in guiding the Project on which opportunities to focus on based on the topics they intersect with. The Materiality Assessment identified three categories of high materiality:

- Ecology – Aims to promote and recognise infrastructure developments and operations that protect and enhance terrestrial and aquatic ecology.
- Community Legacy – Aims to deliver initiatives that contribute pronounced and long-lasting societal or environmental outcomes.
- Stakeholder Engagement – Aims to implement high quality stakeholder engagement where key stakeholders can contribute to and have influence on Project outcomes.

3.3 Sustainability Targets

The Project had established overall sustainability objectives, considering risks and opportunities and compliance obligations. At the writing of this report, SMART targets are being amended and will be included in subsequent reports. The sustainability targets in line with all Main Roads Projects are below:

- A 5% reduction in emissions which must include the investigation for the use of a combination of electric and hydrogen fuel cell vehicle and plant.
- Resource Efficiency Strategy and Action Plan to align with the WA Waste Strategy 2030 and must include the consideration of avoiding the use of single use plastics, and the use of recycled asphalt, crushed recycled concrete and crumbed recycled rubber.
- A 5% reduction in embodied impacts from materials.
- A 5% reduction in water usage.

3.4 Climate Change Assessments

The Project completed a climate change risk assessment workshop in July 2021. The Climate Change and Natural Hazards Risk Assessment was based on readily available and current natural hazard data and climate change projections. It considered the optimal scale, timing, costs and benefits of adaptations. The assessment was undertaken with a multidisciplinary internal team. The process aimed to provide adaptation options to all 'very high', 'high' and >50% of 'medium' climate change risks. Table 2 below outlines the climate change projections of the region that were used to undertake the climate change risk assessment.

Table 2 Climate Change Projections

Climate variables	Climate Change Impact	Baseline (2020)	Climate Projections (RCP8.5)	
			2030	2090
AIR TEMPERATURE	Annual extreme maximum temperature (°C)	46.7	47.6	50.5
	Annual extreme minimum temperature (°C)	-1.3	-0.5	1.9
	Days/annum > 35°C	28	36	63
RAINFALL	Mean rainfall (mm)	762.1	731.6	647.8
	Maximum rainfall (mm/24hrs)	132	138.6	165
SEA	Sea-level change (m)	-	0.12	0.61
	Sea surface temperature increase	-	0.6	12.6
	Cyclone event frequency (Not relevant)	No data	No data	No data
STORM	Annual average wind speed (km/h)	16.6	16.6	16.5
	Maximum wind gusts (km/h)	124	126.5	130.2
	Increased frequency of lightning events	No data	No data	No data
SOLAR RADIATION	Mean daily solar exposure (MJ/m2)	19	19.1	19.2
FIRE	Fire 'severe' fire danger (days/yr.)	4.2	4.7	6.9

(Bureau of Meteorology, 2022; Hope, 2015)

From the Climate Change Risk Assessment, nine risks were identified as 'High' or above. These risks and any identified treatment options have been included in Table 3. The Project is currently in the process of identifying which identified potential treatment options will be adopted.

Table 3 Identified Climate Risks and Treatments

Category	Risk	Risk Level	Treatment Identified
Temperature	Increased max temperature, leading to deformation of wearing course, resulting in increased maintenance by 2030.	High	Adaptation treatment under investigation by lead pavement designer.
Temperature	Rising humidity level combined with such factors as air quality and dust causing overheating and failures of electrical equipment and pavement materials.	High	Adaptation treatment under investigation by lead electrical and pavement designers.
Rainfall	Insufficient drainage capacity to manage increased rainfall, damage to equipment, brown/black outs, hydroplaning.	High	Adaptation treatment under investigation by lead drainage designer.

Category	Risk	Risk Level	Treatment Identified
Rainfall	Fluctuation in weather leading to erosion and stability issues.	High	Adaptation treatment under investigation by urban landscape designer.
Rainfall	Insufficient drainage capacity to manage increase in max rainfall events, resulting in roadway flooding and potential of traffic incidents.	Very High	Adaptation treatment under investigation by lead drainage designer.
Storm	Wind loading causing detachment of signage, and power outages resulting in traffic incidents.	High	Adaptation treatment under investigation by lead road furniture designer.
Storm	Wind gusts causing damage to light poles and street furniture causing damage and increased maintenance over time.	High	Adaptation treatment under investigation by lead structural designer.
Fire	Fire risk within vegetation, causing impacts on asset.	Very High	Adaptation treatment under investigation by urban landscape designer.
Fire	Fire risk within vegetation causing detriment to adjacent residents.	Very High	Adaptation treatment under investigation by urban landscape designer.

3.5 Technology and Innovation

Smart Freeway technology is coordinated and managed by Main Roads' state-of-the-art Road Network Operations Centre.

3.5.1 Coordinated Ramp Signals

The on-ramp traffic signals work the same way as those on suburban roads and highways, only faster. Sensors in the asphalt constantly measure traffic flow on the freeway and communicate with all of the ramp signals. The smart technology determines how much traffic can enter the freeway by varying the red signal time on the on ramps.

As the first car travels through the short green period, the lights turn yellow and then red again. Only one car per lane is released to the freeway at each green signal. This helps to keep the freeway moving constantly in lieu of 'start stop'.

3.5.2 Traffic Sensors

Hundreds of sensors will be embedded in the Smart Freeway technology and on-ramps. These sensors will provide valuable real-time data that allows Main Roads operators to react and make changes to keep the traffic flowing smoothly.

4 Economic

4.1 Key Economic Context

The Project is part of the 'Transforming Freeways' strategic program which aims to upgrade Perth's freeways in a variety of ways, including the provision of Smart Freeway technologies for managing traffic flow. Within a strategic context, the Project will respond to an existing Infrastructure Australia Priority Listing: Mitchell and Kwinana freeways upgrade (Infrastructure Australia, n.d.). Along with the other construction projects on the freeway, the Project will deliver benefits in reducing congestion, which will reduce travel times and fuel consumption for commuters. Upon completion of this Project, the average reduction in travel times is anticipated to be approximately seven minutes on the Mitchell Freeway southbound from Hester Avenue to Vincent Street during morning peak periods. In addition, the Project intends to provide the following benefits:

- Installation of smart technology, enabling traffic to be managed in real-time onto, through, and out of the freeway, to optimise its performance. It will improve road safety through coordinated signal entry to the freeway.
- Provide additional capacity on Mitchell Freeway southbound between Hodges Drive and Hepburn Avenue.
- Improve road and rail safety by constructing a safety barrier that meets current standards from Hodges Drive to Reid Highway, adjacent to the rail reserve.
- Support community sustainability and development by increasing efficiencies to residential and business growth areas in the northern suburbs.
- Enhance community amenity by removing traffic movements from the local road network onto the freeway network route.
- Enhanced productivity and supporting economic development by improving access to key commercial and industrial precincts.
- Deliver an efficient solution to manage congestion, increase traffic flows and reduce journey times given the freeway cannot be continually widened to increase network capacity.
- Improve access, safety and connectivity for path users by providing a high standard PSP between Ocean Reef Road and Warwick Station, with separation from vehicular traffic.

As the Project is being constructed within an existing transport corridor with adjacent land uses including nearby industrial, commercial, retail, recreational and residential areas, there are a wide variety of stakeholders associated with the Project. These include government, social and community services. These are detailed in Appendix 6.

A summary of economic performance and aspects for the Project are detailed in Table 4.

Table 4 Summary of Economic Aspects

ECONOMIC ASPECT	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Funding Received	\$	45,686,063	48,238,562
Disability Enterprises	#	0	0
People Employed by Supply Chain	\$	184	184
Suppliers Engaged	\$	34,113,169	36,540,531
Buy Local Spend	\$	32,339,651	33,498,212

The Project has encountered challenges in incorporating sustainability initiatives from an economic standpoint. These challenges have been driven by a constrained site within an active transport corridor. Challenges faced by the Project have included:

- The ability to minimise clearing for PSP and noise walls construction, and
- The increased transportation and vehicular movements required for relocating spoil from the Freeway to the Leach Highway Welshpool Road Interchange Project.

4.2 Key Economic Outcomes

The Project value is approximately \$155M with 42% of this value contracted to third parties. To date, \$37M has been spent with 170 local business entities during the reporting period – this represents approximately 95% of contract spend during the reporting period. Through contracting works, the Project has created 927 jobs excluding its internal workforce.

The anticipated Project duration is approximately 24 months. The Project scope is complex and involves an array of skillsets and trades. This complexity has allowed for opportunities across a broad subset of the local economy. Through local procurement focus, the Project will have a positive impact on the economic development of the area throughout the Project's design and construction phases. It will also provide increased safety and reduced travel times for motorists once the Project is completed which will have indirect positive impacts on the local economy as it becomes more efficient for commuters to travel.

The Smart Freeway will use a range of technologies to reduce congestion, including the installation of 16 co-ordinated ramp signals from Hester Avenue to Vincent Street with additional technologies under consideration at key locations closer to the Perth Central Business District.

4.3 Sustainable Procurement and Buy Local

The Project's approach to industry sustainability is founded on two key aspects: opportunity (via procurement) and development. The Project recognises the significant barriers to entry for inclusion and sustainable growth for many small businesses across the civil construction industry - particularly for those who have traditionally not supplied to the public infrastructure industry.

The Sustainable Industry Blueprint underpins the approach to local industry development. The vision for the Sustainable Industry Blueprint is based on three inter-related dimensions for ISO20400: sustainable procurement: social, environmental, and economic. These dimensions drive development of regional capacity and capability with an emphasis on skills development and local jobs to maximise the impact and benefit of the Project.

Sustainable procurement is incorporated into the Project through several avenues. At the tender phase, a subcontractor evaluation and approval form is completed which includes questions around sustainability, including suppliers/subcontractors' use of sustainability plans/policies, familiarity with ISC processes, sustainable purchasing decisions, and materials and waste tracking. In addition, sustainability commitments and targets have been incorporated into supplier and subcontractor contracts. The base contract includes a compliance and performance management section, targets, and a sustainable products and supply chain section.

The procurement process and opportunity analysis will work with local suppliers, subcontractors, and Aboriginal businesses, conducting assessments of capacity and capability. This will inform development support and guidance services provided by the Project. This includes direct support from:

- Project delivery team
- WA Chamber of Commerce and Industry
- Noongar Chamber of Commerce
- Civil Contractors Federation WA
- Other appropriate agencies including LGA initiatives.

Aboriginal businesses have been sourced through existing corporate databases, Supply Nation, and the Noongar Chamber of Commerce and Industry. To date, four Aboriginal enterprises have been involved in the Project, with three further Aboriginal enterprises involved to a lesser capacity, resulting in incidental spends. While no significant packages to date have been awarded to Aboriginal Enterprises, the Project is targeting landscaping activities which will account for approximately \$900,000 of the Project value and fencing packages which will account for approximately \$500,000.

Growing the Australian Aboriginal business sector has significant, measurable, and positive impacts on Aboriginal and Torres Strait Islander communities. Research shows that Aboriginal businesses not only deliver innovative products and services but also employ Aboriginal people, reconnecting them to their culture, instilling pride and aspiration in Aboriginal communities and investing back into communities.

The engagement of Aboriginal businesses is uniquely tied to the Aboriginal Employment Target of at least eight Full Time Employees (FTE) and at least \$2,000,000 of works or services as outlined in the Aboriginal Engagement Management Plan. Currently, the Project has spent \$740,788 towards this goal, with the majority of this spend going towards the four main Aboriginal enterprises as mentioned above.

Several objectives and targets with regards to Aboriginal engagement have been developed and are included within the Aboriginal Participation Plan. The objectives are as follows:

- Committing to meeting or exceeding mandatory minimum requirements in respect of Aboriginal employment and procurement
- Increasing employment opportunities for Aboriginal people
- Identifying suitable and diverse roles for Aboriginal people
- Providing meaningful, long term Aboriginal employment initiatives
- Mentoring Aboriginal people employed on the Project
 - Increasing Aboriginal business participation through procurement from Aboriginal businesses
 - Identifying opportunities to procure goods and services from Aboriginal businesses
 - Clearly communicating procurement opportunities to Aboriginal businesses
 - Simplifying procurement processes for Aboriginal businesses
 - Assisting in establishing new Aboriginal businesses
- Increasing skills of local Aboriginal businesses
- Providing Aboriginal training programs in a variety of roles
- Providing strong leadership and cultural awareness on the Project; and
- Implementing cultural awareness training sessions.

4.4 Sustainable Transport

The widening of the Mitchell Freeway aims to improve the transport and connectivity of the fast-growing northern suburbs of the Perth metropolitan area. As the road currently carries some of the highest traffic demands in Perth, widening the key bottlenecks on the freeway will improve traffic flows, increasing efficiency which may result in reduced commute times and associated emissions.

The other area where the Project has an opportunity to impact sustainable transport is through the 10 km PSP network upgrade for pedestrians and cyclists. This will improve the walkability and cyclability of the area, supporting low carbon, healthy active transport, and sustainable movement and travel.

A Path User Group of government agencies was created to explore early concept designs for PSP, with their input continued into detailed design. Stakeholders in this group included representatives from the City of Joondalup, WestCycle, the Public Transport Authority, the Department of Transport, and Main Roads.

Further information on stakeholder engagement with the Project, specifically in relation to the PSP alignment, can be found in Section 6.2.

5 Environmental

A summary of environmental performance and aspects for the Project are detailed in Table 5.

Table 5 Summary of Environmental Aspects

ENVIRONMENTAL ASPECTS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Native Vegetation Cleared	ha	4.41	4.41
Revegetation/rehabilitation Undertaken	ha	0	0
Total Water Consumption	kL	42,072.07	42,072.98
Total Non-Potable Water Consumption	kL	25,777	25,777
Total Potable Water Consumption	kL	16,295.07	16,295.98
Non-Potable Water Replacement	%	61	61
Total Green House Gas emissions [^]	t CO ₂ -e	941.66	941.66
Total Energy Consumption	GJ	12,653.64	12,653.64
Renewable Energy Mix	%	0	0
Total imported material used in the Project (t)	t	54501	54501

[^] Inclusive of Scope 1, 2 & 3 emissions

A summary of resource inputs and wastes for the Project are detailed in Table 6.

Table 6 Resource and Waste Summary

RESOURCE INPUTS AND GENERATED WASTE	UNIT	TOTAL THIS PERIOD	TOTAL FOR THE PROJECT
Resource Inputs (Materials)			
Total Quantity of Virgin Materials Used	t	54,501	54,501
Total Quantity of Recycled Materials Used	t	0	0
Total Quantity of Reused Materials Used Onsite	t	11,819	11,819
Percentage of Recycled/Reused Material Used	%	17.8	17.8
Resource Outputs (Wastes)			
Waste Sent to Landfill	t	29,886.6	29,886.6
Waste Diverted from Landfill	t	654.6	654.6
Total Waste Generated by Project	t	30,541.2	30,541.2
Waste Diversion Rate	%	2.1	2.1

5.1 Environmental Context

The Project is within the Perth Metropolitan transport corridor along the Mitchell Freeway southbound, approximately 5km inland from the coast of the Indian Ocean. The environment in the Project area is highly modified and comprises mostly of existing freeway infrastructure and the associated median and verge. Most of the Project area has been previously cleared and is now characterised by planted vegetation. However, there are some small patches of native vegetation scattered through the road reserve. Native vegetation condition ranges from Completely Degraded to Good but is predominantly in Completely Degraded condition.

Native vegetation clearing is being conducted in accordance with native vegetation clearing permits obtained under the State *Environmental Protection Act 1986*, including Ministerial Statement 629, Project specific clearing permit CPS 9225/1 and Main Roads State-wide clearing permit CPS 818/15.

Despite being in degraded condition, vegetation present includes Black Cockatoo habitat and Tuart Woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC), which are protected under State and Commonwealth legislation (Appendix 4). The impact assessment for the Project identified three additional species of flora and fauna protected at the State level (Appendix 5). The Project is unlikely to have a significant impact on these species.

Significant impacts to Tuart Woodlands and Black Cockatoos were referred to the then Department of Agriculture Water and Environment (DAWE), now the Department of Climate Change, Energy, the Environment Water (DCCEEW), and approval was obtained under the EPBC Act (EPBC 2020/8833).

These species and communities have been considered as part of the urban and landscape design. A key aim of rehabilitation is to ensure the long-term stability of soils, landforms and hydrology required for the sustainability of sites. Another main purpose of rehabilitation is to partially or fully repair the capacity of ecosystems to provide habitats for biota and services for people.

The Project area intersects one Registered Aboriginal Site (ID 3504), but there will be no impacts to the site (Appendix 4).

5.2 Environmental Management

The Project will be managed in accordance with the Project's Environmental Management Plan (EMP) to ensure that works are undertaken in an environmentally responsible manner and in accordance with relevant environmental approvals and associated Project conditions. The EMP sits within a Health, Safety and Environmental Management System (EMS) and adopts an avoid, minimise and offset hierarchy approach to mitigate environmental impacts. Weed infested areas are currently being identified and will be removed and properly disposed of under the Project's hygiene sub-plan.

The Project team will continually review the applicability of the EMP and EMS to establish its key policies and standards on the Project. When determining this, it will refer to its policy commitments Appendix 1, 2 and 3. The environmental approvals and allowances are summarised in Table 7.

The Project has identified the following objectives relating to environmental management:

- Minimise the environmental impacts of construction work equipment in the vicinity of flora and fauna habitat (i.e., vehicle strikes to fauna and habitat clearing impacts).
- No wastewater / chemicals including hydrocarbons entering waterways or groundwater.
- Minimise waste by means of reuse and recycling wherever practicable.
- Minimising the release of dust particles.
- Prevention of soil erosion.

- Minimisation of vegetation clearing.
- Timely rehabilitation.
- Nil Environmental Incidents and
- Nil customer or community complaints.

Key environmental legislation for the Project includes both State and Commonwealth legislation as detailed below.

Western Australian Legislation (including subsidiary regulations):

- *Environmental Protection Act 1986*
- *Biodiversity Conservation Act 2016*
- *Contaminated Sites Act 2003*
- *Rights in Water and Irrigation Act 1914*
- *Agricultural and Related Resources Protection Act 1984 and Regulations 2002*
- *Soil and Land Conservation Act 1945*
- *Biodiversity Conservation Act 2016*
- *The Aboriginal Heritage Act 1972*
- *Heritage Act 2018*
- *Aboriginal Heritage Regulations 1974*

Commonwealth Legislation:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Greenhouse Gas and Energy Reporting System Act 2007*
- *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*
- *Fuel Quality Standards Act 2000*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Native Title Act 1993*

As the Project has potential environmental impacts (Appendix 4), specific initiatives have been developed to ensure environmental compliance and benefits. These include but are not limited to:

- No environmental incidents (contamination, clearing breaches, or regulatory NCR's) with a moderate or greater risk rating.
- Minimise wastewater, no Acid Sulfates in the drainage, minimise hydrocarbons spills, removal of contaminated soil, no wastewater/chemicals (including hydrocarbons) with a moderate or higher risk rating impacting the environment.
- Minimise the effects on the community from dust and noise generated via construction activities.
- Ensure that Project personnel are aware of and able to achieve their environmental targets through appropriate training and awareness programs.
- Maintain and improve the EMP and procedures to meet, and demonstrate that, the environmental objectives of the Project are met.

Table 7 Environmental Allowances, Approvals, and Permits

ENVIRONMENTAL ALLOWANCE TYPE	UNIT	PROJECT ALLOWANCE
EPBC 2020/8833 - Approval	ha	3.02 ha of foraging and potential breeding habitat for black cockatoos
	#	Two suitable nesting hollows
	ha	12.16 ha of Tuart TEC
Clearing Permit Allowance (CPS 9225/1)	ha	3.02 ha of Native Vegetation – Conditions apply
Clearing Permit Allowance (CPS 818)	ha	11.20 of vegetation
MS 629	ha	4.758
Water Abstraction Licence (5C) 206006	kL	15,000
Water Abstraction Licence (5C) 205875 (1)	kL	15,000
Water Abstraction (WaterCorp Bore – G12) (GWL 206833)	kL	50,000

5.3 Water Management

The Project lies within the Perth Coastal and Gwelup Underground Pollution Control Area, which is a Priority 3 (P3) Protection Area for public drinking water supply (GHD, 2014). P3 areas are declared over land where water supply sources need to coexist with other land uses such as residential, commercial and light industrial developments.

The Project has obtained licences (5C) to obtain water from groundwater sources. The licences allow the Project to annually draw up to 80,000kL of water per annum from the superficial swan aquifer for construction water and dust suppression.

The Project is unlikely to utilise dewatering to lower the ground water levels during the construction period, though the management of stormwater runoff onsite shall be required during periods of excessive rainfall.

The Project manages stormwater through controls to ensure that excess water discharges into existing stormwater drains, and does not discharge into lakes, rivers, or other receiving waters that contains levels of salt, organic matter, chemicals, hydrocarbons, detergents, or sediment that are incompatible with the receiving waters. All discharges comply with the requirements of the relevant authorities and the Project will not cause damage or nuisance to adjacent properties. The Project will rectify any damage caused by dewatering or changes to underground flow.

Due to staff movements associated with the voluntary administration, historical information was not readily available for water savings and initiatives at the time of issue. Information that was available can be found in Table 8.

Table 8 Water Parameters

WATER PARAMETER	TOTAL THIS PERIOD		TOTAL FOR PROJECT	
	kL	%	kL	%
Potable Water				
Standpipe / Scheme Water Purchased	16,295.07	38.7	16,295.98	38.7
Non-Potable Water				
Bore Water	25,777.00	61.3	25,777.00	61.3
Surface Water	0	0	0	0
Recycled / Wastewater	0	0	0	0
Total Water Used	40,072.07	100.0	40,072.98	100.0

5.4 Vegetation

5.4.1 Clearing

To date 4.41 ha of vegetation has been cleared. Where possible, grass trees and small native vegetation is translocated to community groups, organisations, and schools. A particular example includes the donation of a series of grass trees to Liwara Primary School (Figure 2) which were removed to build the PSP and noise walls.



Figure 2 Grass Trees Removed as part of vegetation clearing being donated to Liwara Primary School

A baseline biological survey identified two trees with suitable Black Cockatoo nesting hollows within the Project area. The removal of any trees with suitable nesting hollows will be offset through the installation of artificial nesting hollows at a regional property as per the clearing permit requirements. Main Roads will install at least three artificial nesting hollows for each suitable nesting hollow cleared. These will be in place prior to the next breeding season following clearing. Monitoring and maintenance by a qualified field ecologist is also required for ten years.

The Project's fauna spotters located two unregistered beehives within the Project boundaries, see Figure 3. With the assistance of a local resident who is also a beekeeper, the beehives were safely relocated.



Figure 3 Unregistered Beehive found in Project Boundary

The Project will reuse 100% of vegetation cleared (excluding any diseased vegetation). Vegetation reuse initiatives include the provision of grass trees to a local primary school, (Figure 2) the supply of logs to the Woodturners Association of WA, the supply of logs for perches for the cockatoos at Kaarakin Black Cockatoo Conservation Centre and the supply of large logs for nature scape playgrounds at various schools. The remaining vegetation will be mulched and used in future landscaping activities.

The Project is continuing to actively explore opportunities to limit vegetation clearing across the length of the Project and create opportunities for landscaping to improve the aesthetic appearance of the PSP and noise wall in this location. The Project team is also continuing to liaise with the City of Joondalup regarding the path alignment through the City of Joondalup managed lands.

5.4.2 Revegetation/Rehabilitation

Revegetation shall be implemented in the PSP verge and road reserve. Discussions with the City of Joondalup are ongoing regarding the revegetation works within their cadastral boundary. Discussions are ongoing to ensure that the future planting meets both the LGA and Project requirements.

Main Roads is also consulting with the DBCA to revegetate an additional 7.1 ha of land near the Project boundary with Carnaby's Cockatoo foraging habitat species to satisfy offset requirements included in CPS 9225/1.

5.4.3 Dieback

Most of the Project area is listed as Dieback uninterpretable due to previous disturbance, and an absence of indicator species, however a drainage basin area directly north of Whitfords Ave is listed as Dieback infested and various other locations mapped as un-infested. Dieback controls shall be implemented throughout the Project.

5.5 Carbon Emissions and Energy

The main forms of energy consumption for the Project come from plant and transport vehicles, light sources and embodied carbon within materials. High impact materials have been identified and suppliers have been informed of Project requirements surrounding the supply and management of these materials.

Emissions and energy consumption are included within the EMP, which includes a high-level objective to reduce airborne emissions. Some details for management of energy and emissions exist within management plans including the Sustainability Management Plan and the Industry Sustainability Plan.

The Project undertook a Life Cycle Assessment (LCA) in early design to investigate life cycle and embodied impacts and guide procurement and material opportunities.

Another initiative the Project is pursuing to reduce emissions is through suppliers. Suppliers who can demonstrate any of the following initiatives to reduce the life cycle impacts of products will score well against sustainability criteria during tender evaluation:

- Reduction in material quantities through process optimization e.g., offsite prefabrication
- Low carbon or low embodied impact material alternatives that meet the technical and performance specifications
- Improved durability and maintainability, and improved whole of life cost outcomes
- Reduced social impacts e.g., local sourcing, reduced haulage, employee wellbeing programs.

With respect to the lighting emissions and light control, the Project will comply with statutory regulations of government departments which have jurisdiction over the site. Lighting control will be investigated now that the temporary compound locations are finalised, and other temporary lighting requirements (traffic management) will be added as part of a development plan in the delivery phase.

The Project team proposed an energy efficient Light Emitting Diode (LED) lighting option based on a comparative study conducted by the Project. The option assessment found that two types of luminaires are suitable to achieve a like for like replacement compared to the base case (HPS lighting). A further comparison was conducted on the suitable replacement luminaires to show the total operational savings over a 15-year design life. This investigation helped inform the decision-making process at the Project level and ensured sustainability was considered when approving high impact areas like lighting design. While most of the Freeway lighting was not transitioned to LED, sections of side road and ramp lighting included within the Project scope have been successfully redesigned to be LED. In addition, the PSP lighting will be LED. The energy use of the Project to date inclusive of the design and construction phase is detailed in Table 9.

Table 9 Energy Parameters

ENERGY PARAMETERS	TOTAL THIS PERIOD			TOTAL FOR PROJECT		
	LITRES	KWH	% OF TOTAL USE	LITRES	KWH	% OF TOTAL USE
Unleaded (on and off road)	393	-	0.12	393	-	0.12
Diesel Used (on and off road)	324,629	-	98.97	324,629	-	98.97
Liquefied Petroleum Gas (LPG)	-	-	-	-	-	-
Biodiesel	-	-	-	-	-	-
Hydrogen	-	-	-	-	-	-
Oil	-	-	-	-	-	-
Other	-	-	-	-	-	-
Purchased Electricity from Grid	-	31,840	0.91	-	31,840	0.91
Green Power Mix	-	-	0	-	-	0
Generated from Renewable Energy Onsite and Used Onsite	-	-	-	-	-	-
Total Energy Used	-	31,840	100.0	-	31,840	100.0

Note: Energy in gigajoules (GJ) is calculated using the conversion values detailed in the [National Greenhouse Account Factors](#).

5.6 Materials and Recycling

The Project endeavours to ensure all material wastage is kept to a minimum through proper planning of work, selection of economical construction methods and purchasing of materials in lot sizes, which are sufficient for the works.

The Project applies the principles of reduction, reuse and recycling of resources generated by its activities and by ensuring the following controls are implemented:

- Adequate bins will be made available on site to prevent littering and contain - all food scraps, cigarette butts and other waste.
- General waste will be disposed of at an appropriate landfill site (Richardson Road) in accordance with waste regulation.
- Contaminated materials include but are not limited to fuel and hydrocarbons used in construction and earthmoving equipment.
- Maximising resources usage by means of minimising, reusing, recycling, recovering, and disposing of material wherever practicable.

Materials and waste are managed through the Resource Efficiency Management Plan and the creation of SMART targets. During the reporting period, the main construction activities that required virgin materials were road pavements (consisting of limestone and crushed rock base) and concrete barrier. There were demolition materials (including old redundant steel barrier and road materials) removed from the Project site. Scrap steel and copper was sent to recyclers, however redundant pavement and asphalt materials did not have a suitable use on the Project and were directed to landfill.

No imported recycled materials have been incorporated into the Project. Sandy material has been reused on the Project in earthworks cut-to-fill operations. Towards the end of the reporting period, pavement bituminous surfacing commenced.

The Project has considered the use of recycled crushed concrete as a subbase material for a section of the Project that will have thick lift asphalt (section between Hepburn Avenue and Warwick Road). Enquiries with suppliers established that they had very limited stock and could not guarantee availability when the Project would require the material (at this stage it will be late 2022). It was decided to re-enquire on material availability closer to when the work will be performed. Design and approval from Main Roads will also be required.

As well as scrap steel and copper, concrete demolition material, when encountered, is also being collected and sent to recyclers. In relation to office generated waste, the main office has three bin types: general waste, paper, and other generally recyclable materials.

Through the next reporting period, the Project will be completing asphalt activities. Asphalt will incorporate up to 10% Recycled Asphalt Pavement (RAP). Existing asphalt removed from the Project will be provided to suppliers that can re-incorporate the material into future products.

Works on site started in July 2021, meaning the reported information for the period and the Project total below in Table 10-12 will be the same for both columns.

Table 10 Imported Raw/Traditional Materials for the Project

IMPORTED RAW/TRADITIONAL MATERIALS			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Aggregate	t	487	487
Aluminium	t	0	0
Asphalt	t	0	0
Ballast	t	0	0
Bedding Aggregate	t	0	0
Bitumen	t	22	22
Bitumen Cutter (MCC)	t	0	0
Bitumen Cutter (SCC)	t	0	0
Cement	t	0	0
Cement Additives	t	0	0
Cement Stabilised Backfill	t	6,703	6,703
Clay	t	0	0
Concrete	t	1,302	1,302
Crushed Dust (including Cracker Dust)	t	0	0
Crushed Limestone	t	0	0
Crushed Rock	t	0	0
Crushed Road Base	t	21,985	21,985
Emulsion Based Prime (e.g. Ecoprime)	t	0	0

IMPORTED RAW/TRADITIONAL MATERIALS			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Ferricrete	t	0	0
Geofabric Polymers	t	0	0
Glass (including Glass Beads)	t	0	0
Gravel	t	24,511	24,511
Laterite	t	0	0
Lime	t	0	0
Lime Additives	t	0	0
Mechanically Stabilised Earth Backfill	t	0	0
Mulch	t	0	0
Paint (Waterborne, Thermoplastic, Cold Applied Plastics)	l	0	0
Perspex	t	0	0
Plastic	t	0	0
Precast Concrete	t	0	0
Sand	t	0	0
Steel	t	0	0
Synthetic Binders	t	0	0
Topsoil	t	0	0
Other	t	0	0

Table 11 Imported Recycled Materials for the Project

IMPORTED RECYCLED MATERIALS			
MATERIALS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Crumb Rubber	t	0	0
Crushed Recycled Concrete	t	0	0
Crushed Recycled Glass	t	0	0
Eco-blocks	t	0	0
Geopolymer Concrete	t	0	0
Low Carbon Concrete	t	0	0
Mulch and Soil Conditioner (not including Food	t	0	0

IMPORTED RECYCLED MATERIALS			
MATERIALS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Organic and Garden Organics (FOGO)			
Mulch (FOGO)	t	0	0
Soil Conditioner (FOGO)	t	0	0
Reclaimed Asphalt Pavement	t	0	0
Recycled Aggregate	t	0	0
Recycled Aluminium	t	0	0
Recycled Clay	t	0	0
Recycled Granular Material	t	0	0
Recycled HDPE Plastic Pipes	t	0	0
Recycled Mineral Sand	t	0	0
Recycled Sand (as per the definition in the Contractor Monthly Reporting form)	t	0	0
Supplementary Cementitious Materials – slag	t	0	0
Supplementary Cementitious – fly ash	t	0	0
Supplementary Cementitious – silica fume	t	0	0
Supplementary Cementitious – other	t	0	0
Topsoil	t	0	0
Warm Mix Asphalt	t	0	0
Other	t	0	0

Table 12 Materials Reused on the Project

MATERIALS REUSED WITHIN THE PROJECT SITE			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Aggregate	t	0	0
Asphalt (RAP)	t	0	0
Clay	t	0	0
General Fill	t	11,559	11,559
Granular Material	t	0	0
Limestone	t	0	0
Mulch	t	0	0

Overburden	t	0	0
Road Base	t	260	260
Sand	t	0	0
Spoil	t	0	0
Topsoil	t	0	0
Other	t	0	0

5.7 Noise and Vibration

Baseline noise studies were undertaken and reviewed by WSP, and a Noise Management Report was developed. Current modelling, versus as built with vehicle movements, has been used to define the current and future noise levels expected to be generated from the Freeway, and their impact on sensitive receivers. Noise walls shall be constructed where the noise levels are projected to exceed the allocated noise levels for a given property. Construction noise and vibration is managed by implementing the controls outlined in the Noise and Vibration Management Plan.

5.8 Air Quality

Dust monitoring is not undertaken on the Project using a quantitative approach. Where visual dust is observed increased dust control is undertaken.

5.9 Light Spill

The PSP will be illuminated with LED lighting that will minimise light spill into the surrounding environment.

5.10 Contamination

No contaminated sites are identified within the Project boundary. Asbestos is likely to be encountered due to fly tipping, illegal dumping and removal of redundant infrastructure (asbestos water pipes). Any bonded asbestos will be managed inhouse by a licenced asbestos removalist with a class B licence. Any friable asbestos will be removed by an external asbestos removalist with a class A licence. Any asbestos material shall be managed in accordance with the legislative guidelines.

5.11 Acid Sulfate Soils

No acid sulfate soils have been mapped within the Project area and the risk is considered low, however an unexpected finds protocol will be implemented if acid sulfate soils are identified.

6 Social

The Project operates in both a residential area and within the Mitchell Freeway, impacting road users and industry. A summary of key social aspects and performance for the Project is detailed in Table 13.

Table 13 Summary of Social Aspects

SOCIAL ASPECT	UNIT	TOTAL FOR THIS PERIOD	TOTAL FOR THE PROJECT
Stakeholders engaged*	#	258	316
Stakeholder enquiries received	#	146	146
Heritage sites in Project boundary	#	1	1
Length of Principal Shared Path (Addition/Refurbished)	km	0	0
Women in Workforce	%	13	13
Aboriginal People in Workforce	%	5.19	5.65
Lost Time Injury Frequency Rate (LTIFR)	#	0	0
Hours of Training Undertaken^	hrs	-	-
Development Employees and Apprentices on the Project	#	5	5

^Information was not available at time of issue *Reflective of the number of CONNECT database cases

6.1 Social Context

The Project is occurring against a backdrop of potential roadworks fatigue in the northern suburbs; a traffic load of 180,000 vehicles a day on the Mitchell Freeway southbound; a high-density residential area; connections to major arterial roads; and community expectations in relation to noise mitigation. Effectively communicating the Project's scope is critical in engaging the community and key stakeholders, with a view to gaining their support for the Project, by understanding the Project rationale and benefits. A full list of the Project's stakeholders is available in Appendix 6.

Stop-start conditions on the freeway are associated with a greater number of traffic crashes, with a concentration of incidents at congested sections of the freeway in peak periods. Congestion for the Mitchell and Kwinana Freeways alone is expected to cost the Perth economy more than \$30 billion over the next 30 years.

The transformation of Mitchell freeway southbound will improve safety, lead to more reliable journey times and provide congestion relief to more than 180,000 motorists per day that use Mitchell Freeway southbound.

In addition to the benefits the freeway widening will bring for northern suburbs residents and industry, the Project is also delivering improved community amenity and connectivity through the construction of 7.6 km of new or upgraded PSP between Ocean Reef Road and Warwick Train Station, addressing some missing links. This will provide a high-quality path which meets current access and mobility standards, creating a safer environment for all, with separation from vehicular traffic and minimal disruption. This supports the State Government's goal of having a full PSP on the eastern side of the freeway. There has been close liaison with the City of Joondalup on the PSP alignment, with efforts to consider future connections to local paths.

The Project will also build approximately 5.5km of noise walls, providing residents adjacent to the southbound freeway lanes with relief from the noise generated by passing freeway traffic.

6.1.1 Project Demographics

The Project area is bordered by the Mitchell freeway on the west and the suburbs of Greenwood, Warwick, Woodvale and Kingsley to the east. These suburbs are in established areas, with most development occurring in the 1970s. A demographic profile of each suburb from Census 2016 is found in Table 14.

Table 14 Demographic Profile of Surrounding Suburbs

Suburb	Pop	Med Age	Dwellings	Houses	Renting	Med Week Family Income
Warwick	3,732	42	1,553	93.0%	18.4%	\$1,860
Greenwood	9,614	39	3,912	92.9%	15.5%	\$1,923
Kingsley	13,059	43	5,062	86.9%	12.1%	\$2,188

The suburbs also have a high concentration of families from English speaking backgrounds. English speaking households account for 81.2% (Warwick), 86.1% (Greenwood) and 87.6% (Kingsley). The highest number of residents from non-English speaking background (NESB) communities speak Mandarin - 2.4% (Warwick), Italian - 1% (Greenwood) and Italian - 0.9% (Kingsley).

The Socio-Economic Indexes for Areas is a product developed by the Australian Bureau of Statistic that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census.

The Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) summarises variables that indicate either relative advantage or disadvantage. This index ranks areas on a continuum (1-10) from most disadvantaged to most advantaged. As shown in Table 15 the three suburbs adjacent to the works are among the most advantaged suburbs in Australia.

The Index of Education and Occupation (IEO) summarises variables relating to the educational and occupational aspects of relative socio-economic advantage. This index focuses on the skills of the people in an area, both formal qualifications and the skills required for occupations. A low score (1) indicates a high proportion of people without qualifications, jobs, and/or with low skilled jobs. A high score (10) indicates a high proportion of high-level qualifications and/or skilled jobs. The three suburbs adjacent to the works all fall within the top range of this continuum, as seen in Table 15.

Table 15 Index Scores for the Surrounding Suburbs

Index / Suburb	Warwick	Greenwood	Kingsley
IRSAD Score	9	9	9
IEO Score	8	8	8

6.1.2 Stakeholder Top Priority Issues

Issues identified at the start of the Project by Main Roads and by anecdotal community feedback include:

- Environment and amenity i.e., vegetation clearing, re-vegetation/landscaping
- Noise walls and noise modelling
- Property damage
- Traffic congestion
- Cyclist and pedestrian impacts
- Safety concerns regarding interaction of cyclists and pedestrians on PSP
- Urban design
- Ramp metering
- Lighting (light spill into properties)
- Construction fatigue

6.2 Community and Stakeholder Engagement

The Project is committed to effective community consultation and stakeholder engagement to inform its decision making and deliver Main Roads' objectives on behalf of the State Government. It believes that consultation and open dialogue help to identify issues of concern and opportunities for innovation, provides access to new skills and experience, aligns divergent expectations, streamlines, and improves decision-making, and promotes greater stakeholder ownership, support, and legitimacy.

The Project has been liaising closely with local stakeholders and the community throughout the construction process. This includes residents directly bounding the freeway reserve, as well as relevant business owners, amenity groups and neighbouring landowners. Broadly, the key issues for this Project relate to construction impacts and perceived impacts on future amenity for adjacent residents.

Project stakeholders will be engaged across three categories - primary, secondary and remote. Stakeholders are allocated to an engagement category (based on the International Association for Public Participation (IAP2) Engagement Spectrum) at the commencement of the Project, which may shift during the life cycle of the Project. The Project will engage the community in a proactive, transparent, and timely manner to understand their needs and concerns. The Project's resources are however limited, with the greatest resources focused on stakeholders with high levels of interest in, and influence, on the Project.

An overarching Community and Stakeholder Management Plan will guide the Project's engagement, with the creation of issues-based tactical communication plans to manage the community engagement process for campaigns that require different messages over differing timeframes, using multiple communications channels. These plans will include:

- The purpose of the plan (issue the plan is addressing).
- The dates the plan will commence and end.
- The key messages to be communicated.
- The identification of stakeholders relevant to the issue.
- The communication methods and timing.
- Drafts of external communications.
- Name and responsibilities of key Project personnel responsible for implementing the plan.

Key targets and commitments for the Project are outlined in the Community and Stakeholder Management Plan as well as within the Sustainability Management Plan. The overarching approach to stakeholder and community engagement will be to provide accurate, timely and relevant information to all stakeholders, to ensure maximum awareness and understanding of the project, its aims and benefits. Some of the objectives relating to engagement include:

- Meet and/or exceed community and stakeholder expectations in relation to engagement
- Proactively share information with the community and stakeholders – a ‘no surprises’ approach
- Minimise the risk of issues escalating through early issue identification and mitigation
- Generate awareness of and support for the project, including its core objectives
- Understand stakeholder and community aspirations, opportunities, issues and concerns associated with the Project
- Obtain community buy-in to the Project development and design and construction methodology, ensuring where possible that the Project reflects the wishes of the community
- Ensure that works can be undertaken with the least amount of impact as possible and
- Build strong, ongoing relationships with the local community, improving levels of trust and confidence in Main Roads and its vision for the road network, especially as it interfaces with businesses, schools and residential areas.

Targets for stakeholder engagement include:

- Engagement with 100% of residents and road users falling within the Project boundary.
- Timely resolution of complaints
- 100% awareness of complaints and queries mechanism
- Highest impacts relate to improvements to the area

As a minimum, stakeholders will be engaged at the “Involve” level of the IAP2 Public Participation Spectrum level when discussing negotiables. The non-negotiables have been identified and are managed through the contract. The negotiables were discussed and confirmed at the first meeting of the Community Reference Group (CRG) (disbanded in late 2021). Negotiables and non-negotiables can be found in Table 16.

Table 16 Agreed Negotiables and Non-negotiables

Area	Negotiable	Non-Negotiable
Noise wall / screening wall design and colours	✓	
Landscaping design	✓	
Community engagement methods and evaluation	✓	
Mitigation of adverse impacts such as vibration, dust, and noise	✓	
Traffic management	✓	
Public art		✓
Budget		✓

Engagement commenced in November 2019 with the State Government's funding announcement. Early engagement included the local member of parliament, Liwara Primary School, and the Cities of Wanneroo and Joondalup. A letterbox drop to neighbouring suburbs occurred in June 2020 to introduce the Project.

The community has been engaged in influencing the Project's design through a CRG process that included 12 residents. The CRG was also created to provide a forum to facilitate and improve communication between the community, stakeholders, and the Project.

Participants in the CRG were invited to express their opinions across about topics including the PSP, noise wall alignment and the extent of vegetation clearing required to deliver the new infrastructure. A key component of the engagement was to seek input on the appearance of noise walls, with the CRG determining the colour suite/design from three options, with impacted residents then being able to select one of three colour swatches for their boundary wall.

The CRG was able to influence and provide input in a number of areas including early engagement on vegetation clearing and landscaping, engagement methods, and the amenity wall on Twickenham Drive. Their opinions were considered by the Project team where possible, with changes made to the designs to deliver better community outcomes.

As the Project has moved into construction, the focus of engagement has shifted to one-to-one engagement with residents directly impacted by the works.

A technical Path User Group including representatives from the City of Joondalup, Westcycle, Public Transport Authority, Department of Transport, Main Roads was also created to explore early concept designs, which has continued its involvement into detailed design. Proposed PSP detours were sent to Westcycle for its input and communication materials have been provided to WestCycle for distribution to its cycling network.

Originally, the PSP was to be positioned directly next to the road, however in consultation with the City of Joondalup, the Project has re-configured the general layout of the Principal Shared Path and noise wall to enable creation of a vegetation strip of up to 3 metres between the road and the path, seen in below in Figure 4. This will maximise landscaping opportunities and provide increased amenity for residents.

Landscaping will be of various heights, using endemic species recommended by the City of Joondalup.

IMAGE: Indicative layout of path and noise wall

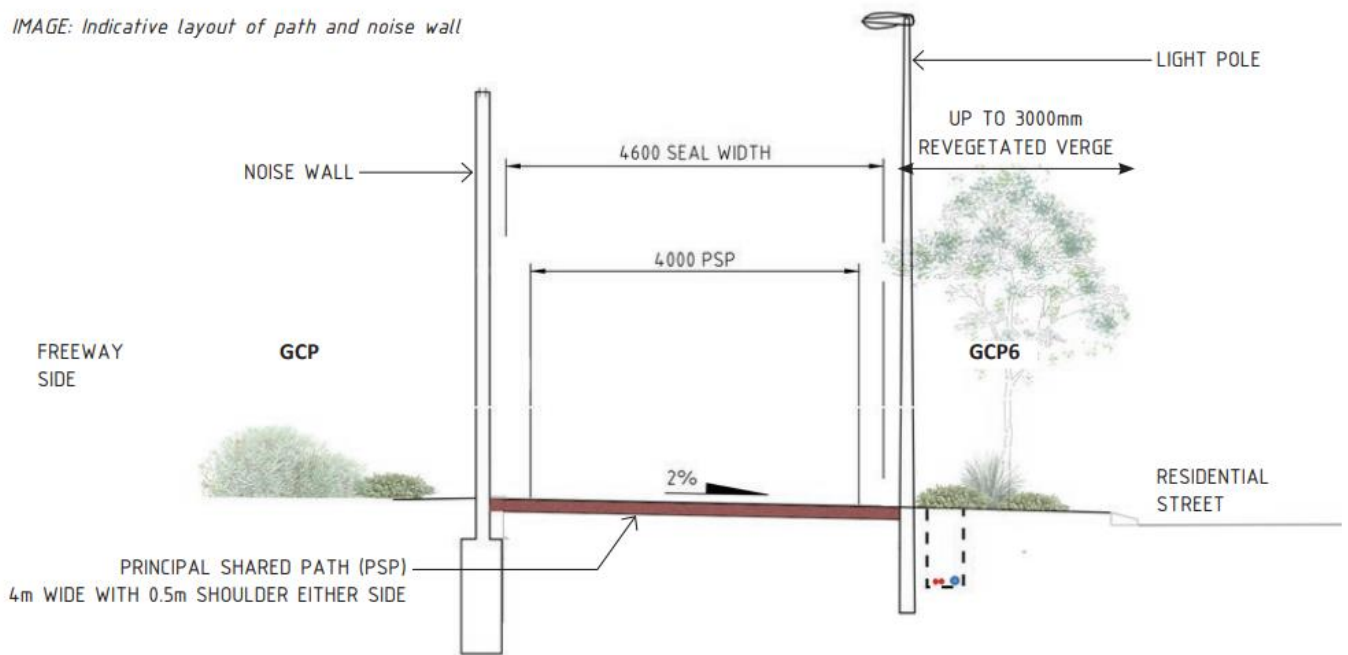


Figure 4 Indicative Layout of Principal Shared Path and Noise Wall

6.3 Community Satisfaction and Amenity

Managing community and stakeholder expectations and construction impacts are critical to the success of major infrastructure Projects. Qualitative and quantitative evaluation criteria will be used to assess the effectiveness of the Community and Stakeholder Management Plan and its implementation. Table 17 showcases the objectives, Key Performance Indicators (KPIs), and measures used to evaluate each KPI.

Table 17 Stakeholder Management Actions and Measures

Objective	KPI	Metrics
Stakeholders will receive timely responses.	The extent to which stakeholder feedback was responded to within the acceptable timeframes.	90% of enquires and complaints are closed within 3 business days (as averaged over a single month). Property damage claims are closed within 90 business days.
Stakeholders can influence decision making	Stakeholder feedback influenced or changed a planned outcome.	The influence of stakeholder feedback on Project planning and construction works
Stakeholders are engaged using multiple methods that are appropriate for their needs	The appropriateness of communications methods to engage stakeholders.	The diversity of communications methods used during the project.

Objective	KPI	Metrics
Project staff accept responsibility for mitigating construction impacts	The delivery of training to Project members and involvement of key Project members in the communications management process.	100% of inductions discuss stakeholder engagement. Weekly meetings of the Project Communications Team with the leadership team. Delivery of toolbox presentations.

Members of the public are encouraged to contact the Main Roads Customer Information Centre via phone (available 24/7) or email with any enquiries or complaints. This information is provided at the bottom of all Project communications. Once received, enquiries and complaints are then allocated to the Project for management. All contact is recorded on the CONNECT database, a Main Roads stakeholder management system. Enquiries and complaints must be responded to within 10 days of receipt.

Market research was undertaken in July 2021, from a sample of 100 people living in suburbs adjacent to the Project. This was prior to any Project team contact and therefore, is only based on perception - with the following results.

During reporting period residents were generally positive towards the road works occurring along Mitchell Freeway. In particular, the majority (88%) of residents felt positive towards the freeway Widening along Hodges Drive to Hepburn Avenue. Further, 3 in 4 residents were positive about the Smart Freeway and the PSP. When following up with residents about the key reasons for feeling positive towards the Projects, 1 in 4 mention that it will alleviate the congestion on the freeway while 1 in 5 felt that anything that helps traffic flow is a good thing, and a similar proportion thought it was a good initiative.

However, 1 in 4 residents did provide negative comments towards the Project. Specific concerns were related to the outcomes of the Project, with some residents believing that the Project will not fix the problem and that improving the skills of drivers would be more effective. Further, around 1 in 10 required a better understanding of Smart Freeways.

With regards to engagement, 3 in 4 residents surveyed felt the information provided to them had been useful and relevant, whereas 2 in 3 found the information honest and provided in a timely manner. Importantly, only half of residents felt the information was easily accessible, and 41% thought that the Project communications supported the community sentiment.

Additionally, close to half of residents (44%) felt they had not received enough information on the Smart Freeway Mitchell Southbound Project. Of those, common information requested related to the timing, Project stages and potential disruptions to their daily commutes.

Less than 1 in 4 residents experienced any impacts from the new construction Projects occurring along Mitchell Freeway. Of these, two of the highest impacts were positive, such as beneficial road changes and improved accessibility to schools. Around 1 in 5 felt that the confusing road changes and road detours are negatively impacting their daily activities.

Positively, over 2 in 3 residents did not have any concerns about the Project. Of those who had a concern, issues mentioned related to traffic flow and the likelihood of the Project being unsuccessful.

Only half of residents that were aware of the Mitchell Freeway roadworks felt that their concerns had been addressed. Only 1 resident had personal contact with the Project team. Importantly, this resident was satisfied with all aspects of the Project communication, the Project team and felt that the response effectively addressed their concerns.

6.4 Heritage

The importance of protecting Aboriginal heritage sites is recognised on the Project with the understanding that it is an offence to interfere with a registered site without the consent of the Western Australian Minister of Aboriginal Affairs. Heritage requirements have been included in the Project induction to ensure all personnel are aware of the cultural significance of those sites and what they mean to Aboriginal people. In the event that an Aboriginal heritage site (as defined in the *Aboriginal Heritage Act 1972*) is identified in an area undergoing disturbance, procedures and systems are in place to ensure this is appropriately managed.

As detailed in the Aboriginal and European Heritage Management Plan, a desktop assessment of Aboriginal heritage values of the Project area was undertaken by GHD/R & E O'Connor in 2013 to establish the Aboriginal heritage context. An ethnographic consultation for the Project area from Burns Beach Road to Romeo Road was also commissioned by Main Roads in 2013. This survey, undertaken by Brad Goode, helped to identify the position of multiple sites. For European heritage, Main Roads commissioned GHD/Dr. Gaye Nayton to undertake a preliminary desktop assessment of the Project area. No sites on the State Heritage Register or local government municipal inventory are located within the Project footprint, however four sites are in proximity.

Management of heritage is included within the Environmental Management Plan, and the Aboriginal and European Heritage Management Plan. This includes several management actions designed to conserve heritage and avoid impacts for both Aboriginal and European heritage. A monitoring program has also been developed for both Aboriginal and European heritage. Table 18 outlines the Project's objectives and targets with regards to Aboriginal & European heritage.

Table 18 Objectives & Targets for Heritage

Objectives	Target	Key Performance Indicator
Aboriginal Heritage		
Obtaining a Section 18 approval if required	Protection of all known and unknown Aboriginal heritage sites	Records of site inspections/monitoring
Mitigate impacts on Aboriginal Heritage, both known and unknown	Protection of all known and unknown Aboriginal heritage sites	Records of site inspections/monitoring
Consult with the local Aboriginal community regarding the Project	Maintain communication between Main Roads and Aboriginal Community representatives	Consultation meeting records
European Heritage		
Comply with the requirements of the <i>Heritage of Western Australia Act 1972</i> and the Government Heritage Property Disposal Process	No disturbance to State registered European heritage sites. Comply with any heritage approval requirements.	Records of site inspections/monitoring
Minimise impacts on European heritage sites	As above. Obtain planning approval from the City of Wanneroo to impact sites listed on the Municipal Register of Heritage Places	Records of site inspections/monitoring Obtain planning/demolition approval from the City of Wanneroo

6.5 Road Safety

The 2015 Australian Infrastructure Audit projected that the Mitchell freeway would become the most congested corridor in Australia, with demand expected to exceed capacity well before 2031. While recent modelling scales back the projected rate of population growth in the region compared to the rate used in the audit (reflecting the slower rate of growth in Western Australia following the mining boom) growth in the region will still increase congestion along the corridor.

Congestion is currently characterised by frequent stop–start conditions that are directly contributing to an increasing number of rear-end crashes and compromising road safety. The travel time delays associated with these events will increasingly result in nationally significant losses to productivity. The Project will improve traffic conditions and road user safety and will consider the communities and organisations that may warrant separate treatment for road safety.

The Project’s traffic management plan considers relevant risks associated with the works and surrounding communities including schools, road users, Project staff and businesses. The plan also considers road weather conditions and other hazards that may impact the Project, ensuring these are managed effectively.

One of the Project’s key outcomes is to provide safer interphase between rail and passenger vehicles. In particular, the Project undertook works on the road crash barrier at the Joondalup rail tunnel crossing below the freeway. This barrier was initially comprised of steel and could be easily breached. The Project removed this barrier and replaced it with a structurally engineered concrete barrier. The before (Figure 5) and after (Figure 6) images can be seen overleaf.



Figure 5 Image showing the steel barrier on top of the retaining wall protecting the rail corridor from vehicles travelling on the freeway



Figure 6 The steel barrier on top of the retaining wall has been removed and replaced with the concrete structure seen in the image above

6.6 Diversity

The Project has tracked the percentage of women in the workforce as well as the percentage of Aboriginal workers employed. As per Main Roads requirements, all contracts in the Metropolitan Region require a minimum of 10% of the workforce to comprise of Aboriginal people. Over the current reporting period the Project is tracking at 5.19%.

In terms of gender diversity, the percentage of women in the workforce is a highlight for the Project, as it sits at 13%, slightly above the national average for the construction industry in Australia which has remained around 12% since the 1990's (NAWIC, 2020).

6.7 Traffic Management & Community Safety

Traffic Management Planners have undertaken hazard identification and risk assessments which consider all impacts to work personnel and motorised and non-motorised road users including delays, traffic accidents and road conditions.

Increased risks to the road user will occur in the form of changed conditions and construction traffic entering and exiting work sites. This will be managed through approved traffic management plans and schemes. Delays are in the form of reduced speed from 100km/hr to 80km/hr. Night delays will also occur due to closures.

The Traffic Management Plan details a list of objectives related to traffic management and community safety, which are as follows:

- To provide protection to workers and the public from traffic hazards that may arise because of the construction activity.
- To manage potential adverse impacts on traffic flows to ensure network performance is maintained at an acceptable level.
- To minimise adverse impacts on users of the road reserve and adjacent properties and facilities.

To meet these objectives, the Traffic Management Plan has incorporated the following strategies:

- Providing enough traffic lanes to accommodate vehicle volumes
- Ensuring delays to traffic are minimised
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport
- Ensuring work activities are carried out sequentially to minimise adverse impacts
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices

6.8 Workforce Safety

The primary Occupational Health Safety objective is to have an incident and injury free Project. It is the responsibility of every individual on the Project to ensure that they comply with and contribute to achieving this objective. The Project wants everyone to go home at the end of each day in the same condition in which they arrived. All Project management and supervisors are responsible for fostering a complete safety culture which impacts on all aspects of Project planning and implementation. The Project's Total Safety Culture, summarised in Figure 7, focuses on the three elements of People, Behaviour and Environment. This shall be maintained throughout the Project.



Figure 7 Safety Culture Summary

A "safe system of work" requires all three elements to be deployed effectively. Of the three areas, the behaviour of people, while working in a given environment can have a significant influence on the level of risk for any given task. It is through developing a total Health Safety Environment (HSE) awareness culture that the Project can focus on achieving its goal of an incident free workplace. In particular, by focusing on management leadership and employee involvement, will enable better management of HSE issues, as well as the other key focus areas of workmanship, schedule and cost.

Performance indicators will be used on the Project to strive towards ongoing improvement enabling NRW to realistically measure the results of the improvements and to determine what level of compliance is being achieved.

Total Safety Culture can be measured by:

- An increase in the number of hazard observations reported
- Number of observations conducted
- Percentage safe versus at-risk behaviour performed
- Number of employee-led safety meetings
- Percentage of participation in observations process
- Frequency of peer coaching.

The NRW *"A safe day. Every day."* Program also includes leading and lagging KPIs for individuals and sites, such as:

- Management plan(s) implementation
- Health and Safety Committee meetings
- Safety communication meetings
- Induction and training
- Take 5s
- Hazard reporting
- Workplace inspections
- Audits
- Incident statistics
- Reward and recognition promotion

In consultation with its workforce, the Project identified four Critical Risks (CRITRISK). These are non-negotiable controls that have been put in place and communicated to the workgroups. These are detailed further in Figure 8 below.

All construction activities are covered by safety legislation, and everyone involved has an obligation to maintain health and safety in the workplace. The general duty of care is a basic concept concerning the overriding responsibilities of employers and employees. Legislative duties of employers and employees are communicated to personnel as part of the site-specific induction process.

The Project operates under a Project Specific Health & Safety Management Plan with all KPI's stated in this document. The KPI's are monitored weekly, and statistics are reported to Senior Management on a weekly basis utilising the attached report format. There has been considerable focus on personal risk assessments and their completion. The focus has also been around hazards and their reporting/management. The Project supervisors have been conducting focused inspections and having the dialogue with their work crews. Please see Table 19 and 20 below for a snapshot of HSE statistics along with some Human Resource statistics.



Figure 8 Project Critical Risks

Table 19 Health, Safety and Environment Statistics

DESCRIPTION	PROJECT TO DATE
INCIDENTS	
Safety Incidents	34
Environmental Incidents	2
LEAD INDICATORS	
Toolbox Meetings	53
Take 5's	7,230
Workplace Inspections	626
Hazards Raised	484
Hazards Closed	484
External HSE Audits	2

Table 20 Human Resource Statistics

MANHOURS	PROJECT TO DATE
Indirect man-hours	70,264.25
Direct man-hours	16,385.45
Subcontractor man-hours	93,059.4
Aboriginal Man Hours	5,688.5
Total Man-hours	185,397.6
Current percentage of Aboriginal Employment	5.2

6.9 Legacy Commitments

The Project is in ongoing discussions surrounding the development of patterned noise walls with the intent of leaving a legacy for the surrounding area. The Project is exploring options to improve community amenity.

6.10 Social Case Study

Prior to the development of this Project, the Member for Kingsley had advocated for an amenity wall along Twickenham Drive in Kingsley, in response to feedback from the local community. There was also an earlier Ministerial commitment to build the wall. Therefore, an amenity wall was proposed to be built along a section of Twickenham Drive in Kingsley, as part of this Project's scope. At an early CRG meeting, a member advised that local residents would most likely prefer to keep the existing vegetation and would not want the amenity wall if it meant removing trees to construct it. The Project undertook a door knocking consultation exercise, taking feedback from affected residents. Noting, residents were advised that clearing would still be necessary to accommodate the PSP.

There were 8 of 12 nearby households surveyed (some were unable to be contacted) and all responded that the view was important or very important. In addition, all surveyed residents responded that the construction of an amenity wall was not at all important. The results indicated strong community feedback that the amenity wall should not be constructed, and residents preferred to retain the vegetation instead.

The Project team recommended to Main Roads that the amenity wall be removed from the Project scope. A summary of engagement was provided to Main Roads for consideration. After consultation with the local member for Kingsley, Main Roads determined that the amenity wall would be removed from the design. This was received very favourably by residents and provided a cost saving for the taxpayers.

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8 Glossary

A glossary of terms used throughout this document is detailed in below.

Table 21 Glossary of Terms

Term	Description	Link to Further Information
Material; Materiality	Relevant topics are those that may reasonably be considered important for reflecting the organisation’s economic, environmental, and social impacts, or influencing the decisions of stakeholders.	Global Reporting
Scope 1 Emissions	Scope 1 greenhouse gas emissions are the emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility level. Scope 1 emissions are sometimes referred to as direct emissions.	Clean Energy Regulator
Scope 2 Emissions	Scope 2 greenhouse gas emissions are the emissions released to the atmosphere from the indirect consumption of an energy commodity. Scope 2 emissions from one facility are part of the scope 1 emissions from another facility.	
Scope 3 Emissions	Scope 3 emissions are indirect greenhouse gas emissions other than scope 2 emissions that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business. Some examples are extraction and production of purchased materials, transportation of purchased fuels, use of sold products and services, and flying on a commercial airline by a person from another business.	

9 Appendices

Appendix	Title
Appendix 1	Commitment Statement
Appendix 2	NRW Sustainability Policy
Appendix 3	NRW Environmental Policy
Appendix 4	List of Protected Areas
Appendix 5	Protected/Conservation Significant Flora and Fauna Species and Habitat
Appendix 6	List of Project Stakeholders
Appendix 7	Organisational Chart

Appendix 1 – Commitment Statement

The Project operates under the NRW corporate sustainability and environmental policies which can be found in Appendix 2 and Appendix 3 respectively. These Policies are complemented by a Project Specific Environment and Sustainability Commitment Statement as detailed below:



Mitchell Freeway Southbound Upgrade – Hodges Drive to Hepburn Avenue

Environment and Sustainability Commitment Statement

As a project Team, to achieve our environmental and sustainability objectives we will:

- Comply with all environmental and legal requirements and approval conditions applicable to the project.
- Promote the efficient use of resources through the reduction of energy, materials and water used, by reducing demand, using lower impact alternatives and offsetting residual impacts where viable.
- Consider environmental & sustainability issues in our project's biggest risks and opportunities and integrating them in key decisions for the delivery of the project.
- Select suppliers and sub-contractors with a strategic approach to procurement, that considers environmental and sustainability performance and pioneering initiatives in sustainable design, process and advocacy.
- Engage with the relevant stakeholders and community representatives to build strong relationships and ensure input & inclusion on negotiable issues.
- Provide training and feedback to all employees and subcontractors to ensure they understand WBHO's policies and procedures for the preservation of the environment.
- Develop local industry skills, including by implementing suitable training and recruitment programs, promoting a constructive and positive workplace culture for all people involved with the project, and building a diverse and inclusive workforce.
- Adopt best practice urban and landscape design, pursuing opportunities to achieve green infrastructure, ecological enhancement, heritage interpretation, water quality improvement, flood mitigation and community well-being.
- Meet and exceed the project objectives for restoration and enhancement of the site and manage temporary impacts on local water, noise, vibration, air quality and light receptors.
- Ensure our solution contributes over the long term towards greater local and regional resilience, including in relation to natural hazards and climate change.

Signed:  Stuart Douglas H2H Project Manager	Date: 27.04.21
Signed:  Tierney McCourt H2H Project Sustainability Lead	Date: 27.04.21
Signed:  Patrick Illot H2H Project Sustainability Manager	Date: 27.04.21
Signed:  Peter Galloway H2H Environmental Manager	Date: 27.04.21

Appendix 2 – NRW Sustainability Policy



SUSTAINABILITY POLICY

Sustainability refers to the use, development and protection of resources at a rate and in a manner that enables people to meet current needs and provides for the needs of future generations.

NRW Holdings Ltd is committed to approaching all aspects of our business' operations in a sustainable and responsible manner to deliver lasting value to our stakeholders. We will do this by minimising our environmental footprint, making a positive social impact, and applying ethical business and governance practices to everything we do.

We strive to:

- Deliver a workplace that protects the safety, health and wellbeing of all our people at all times.
- Foster an environment that encourages and values a diverse and inclusive workforce.
- Implement relevant sustainability related principles and procedures that add value to our business.
- Implement effective Enterprise-Wide risk management reporting and assurance processes to demonstrate good governance.
- Maintain strong corporate governance policies and procedures throughout our business that are founded on best practice.
- Make business decisions that are based on strong ethical standards.
- Demonstrate high standards of environmental stewardship and play our part in carbon reduction.
- Engage with our internal and external stakeholders in a socially responsible way.
- Establish shared values with our internal and external stakeholders by engaging in a positive and constructive manner to further the sustainability related initiatives of the business.

NRW acknowledges that delivering these objectives will contribute to business success by strengthening our standing as an industry leader and the contractor of choice.

Jules Pemberton
Chief Executive Officer

July 2022



Appendix 3 – NRW Environmental Policy



ENVIRONMENTAL POLICY

NRW is committed to minimising environmental impacts, reducing environmental incidents and continuously improving environmental performance across all of its business operations. These commitments will be reflected in the processes established by the business to ensure a robust, credible and reliable environmental management system.

Consistent with this NRW will:

- Maintain and continually improve our Environmental Management System in accordance with ISO 14001:2015.
- Comply with relevant environmental compliance obligations as a minimum, and exceed these obligations where practicable.
- Assess environmental risks and opportunities and implement appropriate control measures prior to the commencement of each project.
- Set, meet and review objectives and targets to reduce environmental risks and improve performance.
- Minimise adverse environmental impacts through the use of integrated management procedures and planning.
- Prevent pollution, reduce waste and where viable commit to waste recovery and recycling as opposed to disposal.
- Communicate environmental requirements to all employees and subcontractors.
- Provide appropriate technological, infrastructure, financial and human resources to meet environmental requirements.
- Ensure that environmental management considerations are fully evaluated, costed and detailed in tender bid preparation.
- Review environmental performance and identify opportunities for improvement.
- Encourage and seek the input of employees and subcontractors into our environmental plans.
- Only do business with suppliers and subcontractors who can demonstrate compliance and commitment to this policy.

A handwritten signature in black ink, appearing to be 'Jules Pemberton', written in a cursive style.

Jules Pemberton
Chief Executive Officer

January 2021
CP02

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Appendix 4 – List of Protected Areas

Outlined below is the list of protected areas understood or believed to be present within the Project's bounds or immediate surrounds.

PROTECTED AREA	DETAILS	LOCALITY/ PROXIMITY	IMPACT
Environmental			
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	TEC under the EPBC Act; Critically Endangered Community	Community confirmed within Project boundaries	See EPBC Preliminary documentation (Section 3.1.1.3)
Black Cockatoo habitat	Threatened Fauna under EPBC Act and BC Act	Habitat confirmed within Project boundaries	
Heritage			
Joondalup Waugal Egg (ID: 3504)	Registered Aboriginal Heritage Site	Within Project Area	No impact to site, works within previously disturbed land.

Appendix 5 – Conservation Significant Flora and Fauna Species and Habitat

Below information are significant species with potential to utilise habitat within the Project area. Significant impacts to Black Cockatoos have been approved under EPBC Act (EPBC 2020/8833). The Project is unlikely to result in a significant impact to the other conservation significant species.

SPECIES	CONSERVATION SIGNIFANCE CODE		IMPACT
	FEDERAL	STATE	
Flora			
<i>Jacksonia sericea</i> (Waldjumi)	-	P4	Recorded within the Project area in limited locations. Clearing principles applied to minimise clearing. The potential impact is considered low.
Fauna			
Black Cockatoos (Carnaby's Cockatoo (EN), Forest Red-tailed Black Cockatoo (V))	EN/VU	EN/VU	Clearing of up to 177 suitable DBH trees, including up to two trees containing a total of two potentially suitable hollows. Clearing of up to 3.02 ha of foraging habitat For further information see EPBC Preliminary documentation (Section 3.2.1)
<i>Falco peregrinus</i> (Peregrine falcon)	-	OS	The Project areas is considered a potential foraging habitat, with recording in the Pinnaroo Valley Memorial Park. Considering their mobile nature and potential habitat surrounding the Project area the potential impact to this species is considered low.
<i>Isoodon fusciventer</i> (Quenda)	-	P4	Quenda have been identified within the Project area. Clearing occurs directionally on one front to allow any fauna to escape into surrounding habitat i.e., Woodvale Nature Reserve thus the potential impact to this species is considered low.

Appendix 6 – List of Project Stakeholders

STAKEHOLDER GROUP	SPECIFIC STAKEHOLDERS	ENGAGEMENT TYPE
Aboriginal Land Council	Traditional Owners	Consult
	Southwest Aboriginal Land and Sea Council	Consult
Client	Main Roads Western Australia	Collaborate
Community Groups	Path Users Group	Collaborate
	WestCycle	Consult
	Northern Suburbs Cycling Group	Consult
	Local sporting groups and churches	Inform
	Schools (Creaney Primary, North Woodvale Primary, St. James Anglican, Liwara Catholic Primary, Hawker Park Primary, College of Electrical Training Joondalup)	Inform
Contractors	NRW	Empower
Emergency Services	FESA	Inform
	St John's Ambulance	Inform
	WA Police	Inform
	Quinns Rock Bush Fire Brigade	Inform
Government Local	- City of Joondalup	Collaborate
	- City of Wanneroo	Collaborate
Government State	- Public Transport Authority	Collaborate
Media	The Wanneroo Joondalup Times	Inform
	West Australian	Inform
Neighbours	Local businesses	Inform
	Residents adjacent to freeway (within 100 m of the Project boundary)	Involve
	Road users	Inform
	PSP Users	Inform
Regulators	DBCA	Consult
	The Australian Government Department of the Environment	Consult
Utilities	Water Corporation	Collaborate
	ATCO	Collaborate
	Western Power	Collaborate
	Telecommunications Providers (i.e. Telstra)	Collaborate

Appendix 7 – Organisational Chart

