



# Smart Freeway Mitchell Southbound Hester Avenue to Warwick Road: Project Annual Sustainability Report 2022/2023

Prepared by the Hester to Warwick Alliance

This annual report covers the period from 1/07/2022 to 30/06/2023. This is the third annual report to be prepared for the project. Previous annual sustainability reports include 2020/2021 and 2021/2022

Project Sustainability Advisor – Kirsten Neil  
Project Communications Lead – Carmel Luck, [enquiries@mainroads.wa.gov.au](mailto:enquiries@mainroads.wa.gov.au)

## Approval for Publication

Date	Approved By
31/07/2023	Hester to Warwick Alliance Environment Manager
14/08/2023	Hester to Warwick Alliance Director
31/08/2023	Main Roads Project Manager
03/10/2023	Main Roads Project Director

## 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
CBD	Central Business District
CRG	Community Reference Group
DBCA	Department of Biodiversity, Conservation and Attractions
EMP	Environmental Management Plan
FTE	Full-time Equivalent
GHG	Green House Gas
GJ	Gigajoule: unit of energy which is equivalent to 1 billion Joules
GRI	Global Reporting Initiative
GRS	Geotextile Reinforced Seal
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
LGA	Local Government Authority
LTIFR	Lost Time Injury Frequency Rate
m	Metre(s)
Main Roads	Main Roads Western Australia
NCR	Non-conformance Report
P3	Priority 3; Protection Area
PSP	Principal Shared Path
RAP	Reclaimed Asphalt Pavement
SCM	Supplementary Cementitious Materials
SEIFA	Socio-Economic Indexes for Areas
SMART	Specific, Measurable, Achievable, Realistic and Timely
SWTC	Scope of Work and Technical Criteria

# Table of Contents

1	About this Report.....	7
1.1	Purpose.....	7
1.2	Sustainability Statement.....	7
1.3	Highlights.....	8
2	Project Overview.....	9
2.1	Locality and Scope.....	9
2.2	Value and Funding .....	11
2.3	Delivery Agents.....	11
2.4	Project Timeline .....	11
3	Governance.....	13
3.1	Approach to Sustainability .....	13
3.2	Material Sustainability Issues.....	14
3.3	Sustainability Targets.....	14
3.4	Climate Change Assessments.....	16
3.5	Technology and Innovation .....	17
4	Economic.....	18
4.1	Key Economic Outcomes .....	19
4.2	Sustainable Procurement and Buy Local.....	19
4.3	Economic Case Study .....	20
5	Environmental.....	24
5.1	Environmental Context .....	24
5.2	Environmental Management .....	25
5.3	Water Management .....	27
5.4	Vegetation .....	27
5.5	Carbon Emissions and Energy.....	29
5.6	Materials and Recycling.....	29
5.7	Noise and Vibration .....	34
5.8	Air Quality .....	34
5.9	Light Spill.....	34
5.10	Contamination .....	34
5.11	Acid Sulfate Soils.....	34
5.12	Environmental Case Study – Green corridor.....	35
6	Social.....	37
6.1	Social Context.....	37
6.2	Community and Stakeholder Engagement.....	39

6.3	Community Satisfaction and Amenity.....	42
6.4	Heritage.....	43
6.5	Road Safety.....	44
6.6	Diversity.....	45
6.7	Traffic Management & Community Safety.....	45
6.8	Workforce Safety.....	46
6.9	Legacy Commitments.....	48
7	Reference List.....	49
8	Glossary.....	50
9	Appendices.....	51
	Appendix 1 – Project Sustainability Policy.....	52
	Appendix 2 – NRW Environmental Policy.....	53
	Appendix 3 – Organisational Chart.....	54
	Appendix 4 – List of Project Stakeholders.....	55
	Appendix 5 - List of Protected Areas.....	56
	Appendix 6 – Conservation Significant Flora and Fauna Species and Habitat.....	57

## Tables

Table 1	Project Timeline.....	11
Table 2	Project Sustainability Initiatives.....	14
Table 3	Climate Change Projections.....	16
Table 4	Identified Climate Risks and Treatments.....	17
Table 5	Summary of Economic Aspects.....	18
Table 6	Summary of Environmental Aspects.....	24
Table 7	Resource and Waste Summary.....	24
Table 8	Environmental Allowances, Approvals and Permits.....	26
Table 9	Water Parameters.....	27
Table 10	Energy Parameters.....	29
Table 11	Imported Raw/Traditional Materials for the Project.....	30
Table 12	Imported Recycled Materials for the Project.....	32
Table 13	Materials Reused on the Project.....	33
Table 14	Summary of Social Aspects.....	37
Table 15	Demographic Profile of Surrounding Suburbs.....	38
Table 16	Index Scores for the Surrounding Suburbs.....	38
Table 17	IAP2 Process.....	40
Table 18	Agreed Negotiables and Non-negotiables.....	40

Table 19 Stakeholder Management Actions and Measures .....	42
Table 20 Objectives & Targets for Heritage.....	44
Table 21 HSE Statistics .....	47
Table 22 Human Resource Statistics.....	48
Table 23 Glossary of Terms .....	50

## Figures

Figure 1 Project Location and Scope .....	10
Figure 2 Existing Noise Wall Structure (NW17) .....	21
Figure 3 Proposed Acrylic Extension to Noise Wall Structure (NW17) .....	22
Figure 4 Contingency Back Stay, Should Existing Footing not Meet Future Wind Loading Requirements .....	23
Figure 5 Logs Provided to Primary Schools .....	28
Figure 6 Location of Kilrenny Park and Natural Area.....	36
Figure 7 Indicative Layout of PSP and Noise Wall.....	42
Figure 8 Steel Barrier on Top of the Retaining Wall Protecting the Rail Corridor from Vehicles Travelling on the Freeway.....	45
Figure 9 The Steel Barrier on Top of the Retaining Wall has been Removed and Replaced with the Concrete Structure Seen in the Image Above.....	45

# 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 2022/2023 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 Hester to Warwick Alliance (HWA) 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

---

*"Our continued focus on sustainability initiatives throughout construction will see this project contribute to the broader Main Roads WA sustainability development goals" – Jason Gavranic, Alliance Director*

---

### 1.3 Highlights

The sustainability highlights that the Project is tracking towards are:

- Incorporation of recycled & reused materials, including incorporation of at least 10% Reclaimed Asphalt Pavement (RAP), diversion of at least >85% site inert spoil with >50% onsite reuse, and all geotextile reinforced seal to comprise recycled plastic content.
- Opportunities to increase ecosystem services and ecosystem resilience include the development of water sensitive urban design alternatives along portions of Principle Shared Path (PSP), and developing a “green corridor” proposal design to the City of Joondalup for regenerative landscaping.
- Upskilling & support of the local Perth economy and investigation of alternate opportunities including development of an Industry Sustainability Action Plan to support a number of subcontractors in upskilling their workforce and providing support as they pursue ISO certification.



## 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 southbound lanes between Hester Avenue and Vincent Street currently experience congestion in the morning peak. Main Roads' data suggests that up to 28,000 road users use this section of the Freeway during morning peak hour. The Mitchell Freeway is currently known for unreliable traffic performance, which negatively affects Perth's operational capacity (Infrastructure Australia, 2022). As Perth continues to develop, demand has outstripped the capacity of the Mitchell 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 the previous reporting period from July 2021 to June 2022, the Project underwent 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 re-visit key elements of its delivery method, with an alliance contracting arrangement negotiated between NRW Contracting Pty Ltd (NRW) and Main Roads. The Project team is now operating as an Alliance. For more information please refer to the Main Roads Project website ([here](#)). The Project has now been operating as an Alliance for the entirety of the reporting period covered in this report.

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 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 growing outer northern suburbs.

Part of the Project scope is the Smart Freeway technology, which includes modified entry ramps with co-ordinated traffic signals and overhead electronic signs which can display speed reductions and alert commuters 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 three Local Government Authorities (LGA), the City of Joondalup, the City of Stirling 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 PSP between Ocean Reef Road and Warwick Train 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 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
- Upgraded drainage infrastructure.

## 2.2 Value and Funding

This project forms part of the Smart Freeway Mitchell Southbound: Hester Avenue to Vincent Street suite of works totalling over \$200 million, jointly funded by the Australian and Western Australian Governments. The expected construction completion date is set for mid-2024. Intelligent Transport System (ITS) commissioning is expected to be completed by early 2024 with landscaping expected to commence by May 2024 and planting to coincide with the first rain events of Autumn.

## 2.3 Delivery Agents

The Mitchell Freeway Southbound upgrade was awarded in February 2021 by Main Roads to the H2H joint venture comprising NRW and WBHO. The Project is now operating under an alliance contract between NRW and Main Roads which operates 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 Gantries Supply (Fremantle Steel).

## 2.4 Project Timeline

Table 1 summarises key Project milestones related to sustainability.

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

Milestone	Date
Third Bi-annual Sustainability Presentation	February 2023
Third Annual Sustainability Report	July 2023 (this report)
Fourth Bi-annual Sustainability Presentation	August 2023
Design Phase Completion	October 2023
ITS Commissioning Completion	Early 2024
Landscaping Commencement	May 2024
Construction Phase Completion	Mid 2024
Practical Completion	Mid 2024
Final Annual Sustainability Report	August 2024

Over the reporting period, the below list of activities have progressed:

- Installation of concrete crash barrier along the median
- Installation of drainage network and upgrades along median
- Installation of retaining walls
- Installation of W-beam
- Installation of ITS and RC3 infrastructure
- Installation of noise wall footings
- Installation of rock pitching
- 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
- Clearing of vegetation along the median verge
- Awarded critical packages for:
  - Procurement of noise wall posts
  - Procurement of noise wall panels
  - Noise wall installation
  - Procurement of limestone blocks
  - Retaining wall installation
  - Procurement and installation of permanent signage
  - Procurement and installation of permanent fencing

*\*Design was completed but subsequent scope additions 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 1 – Project Sustainability Policy, and Appendix 2 respectively. The following sections provide context on how the Sustainability and Environmental policies have guided the Project's approach to sustainability during the reporting period.

#### 3.1.1 Infrastructure Sustainability Council Progression on the Project

The Infrastructure Sustainability Council (ISC) is a third-party rating body which assesses sustainability metrics undertaken on infrastructure Projects. The Project was 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 a Design and As-Built Rating, as originally required in the Project contract.

Moving forward through construction and towards practical completion, the Project has focused efforts on achieving positive sustainable outcomes in the areas deemed both practical and beneficial. A list of initiatives and opportunities to achieve such outcomes can be found below, in Section 3.1.4 and Appendix 3.

#### 3.1.2 Sustainability Management

Sustainability is managed through the Sustainability Management Plan, which outlines the Project's key objectives, obligations, requirements and management systems used to monitor them. Sustainability leadership is being driven by Project management during the design and construction phases, 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 3.

#### 3.1.3 Sustainability Performance

As described in the previous year's report, sustainability efforts were adversely impacted due to the departure of joint venture partner WBHO. This departure saw a loss of historical knowledge from key WBHO staffing members who relinquished their roles on the Project. While the Project team has moved forward with sustainability initiatives in this reporting period, this is a legacy issue that has remained relevant and may have impacted sustainability performance including:

- Driving integration and ownership of sustainability into Project team responsibilities.
- Standard of backdated data such as that required for undertaking a life cycle assessment (e.g. energy, waste, and material metrics).

Some key performance highlights during this reporting period include:

- Identification of key initiatives for the Project to focus on achieving during the remainder of the Project lifespan.
- Progress against initiatives, including the design of a greenspace for the City of Joondalup (Kilrenny Natural Area and Park) and purchasing of GRS with recycled content.

#### 3.1.4 Sustainability Opportunities

Cognisant of the historical challenges, the Project is focusing efforts on implementing outcomes that resulted from an opportunity assessment undertaken alongside a multicriteria analysis. From this



exercise, initiatives as per Section 3.3 were developed and include opportunities which will help the Project to:

- Reduce direct Greenhouse Gas (GHG) emissions,
- Reduce embodied GHG emissions, and
- Increase the social and environmental benefits of the built environment.

A life cycle assessment will be undertaken near the end of the construction phase to capture the carbon emissions from the Project, including any savings seen from pursued initiatives. In addition, the Project will also assemble Case Study documentation during the coming stages to document the initiatives as they are closed out. These Case Studies will be handed over to Main Roads as the Asset Owner.

### 3.2 Material Sustainability Issues

Material topics were identified for the Project through the application of ISC’s Materiality Assessment tool and process. The Materiality Assessment was used to guide the Project on which opportunities to focus on based on the topics they intersect with. The Materiality Assessment identified three areas of high materiality, below:

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

### 3.3 Sustainability Targets

The Project has established overall sustainability commitments, considering risks, opportunities and compliance obligations. Table 2 below details the initiatives agreed upon by the Project Board.

Table 2 Project Sustainability Initiatives

Initiative Title	Initiative Description	Tracking
All intermediate course to use at least 10% Reclaimed Asphalt Pavement	Achieve at least 10% Reclaimed Asphalt Pavement (RAP) content for all installed intermediate course.	On Track
All Geotextile Glass Reinforced Seal (GRS) to comprise recycled plastic content. Each batch will track the corresponding recycled content.	All GRS installed to comprise recycled plastic content. Each batch will track the corresponding recycled content.	On Track

<p>Implement Water Sensitive Urban Design (WSUD) treatments along the Principle Shared Path (PSP) and remove the current hard landscaping in five areas</p>	<p>Deliver a Water Sensitive Urban Design alternative along the PSP to remove current hard landscaping zone at:</p> <ul style="list-style-type: none"> <li>– Camarino Dr: CH21000-21875</li> <li>– Kanangra Cres: CH:17650- 17825</li> <li>– Darnley Ave: 17250-17550</li> <li>– Buchanan Ave: 16850 – 17175</li> <li>– Twickenham Dr: 19250 - 19550, 20150- 23000</li> <li>– St. John's Crt: 19050 - 19200</li> </ul> <p>The design must be critically reviewed by a landscape architect and submitted for approval by Main Roads prior to implementation. All water sensitive urban design treatments must align with the City of Joondalup's related urban water management objectives described in the most recent City Water Plan (2016-2021)</p>	<p>On Track</p>
<p>Interpretive Aboriginal heritage artwork underpass</p>	<p>Deliver an interpretive local Aboriginal artwork to Whitfords Underpass, inclusive of explanatory interpretation plaque.</p>	<p>Behind</p>
<p>Design and deliver a Green Corridor through the landscaping design within the City of Joondalup</p>	<p>Achieve the following key community stakeholder initiative: deliver a "Green Corridor" Initiative proposal for the City of Joondalup at the Kilrenny Park and Kilrenny Natural Area.</p>	<p>On Track</p>
<p>Divert at least 85% of inert spoil from landfill inclusive of a &gt;50% onsite reuse of inert spoil</p>	<p>Achieve the following key community stakeholder initiative: deliver a "Green Corridor" Initiative proposal for the City of Joondalup at the Kilrenny Park and Kilrenny Natural Area.</p>	<p>On Track</p>
<p>Develop a mortarless retaining wall specification</p>	<p>Deliver a Project Specification for a mortarless retaining wall. The specification must be developed with regular and ongoing consultation with Main Roads Materials Engineering Branch - Structural representative.</p>	<p>Behind</p>
<p>Develop a Training Management Plan for Project Subcontractors</p>	<p>The Training management subplan will be developed and incorporated into the Industry Sustainability Plan to implement and monitor the mentoring of two local subcontractors on the Project.</p>	<p>On Track</p>
<p>Review and update the Materiality Assessment</p>	<p>Undertake an IS Materiality Assessment, to identify the Project's most material areas</p>	<p>Complete</p>
<p>Develop and apply an Opportunity Decision Making Framework</p>	<p>Develop and apply an opportunity decision making framework to evaluate key Project initiatives and outline the procedure for initiative implementation.</p> <p>The decision-making framework must be submitted to Main Roads for approval prior to implementation.</p>	<p>Complete</p>
<p>Undertake a climate change natural hazards risk assessment</p>	<p>Undertake a climate change and natural hazard risk assessment, with the Contractor to deliver treatment options for all high or above risks.</p>	<p>On Track</p>

Undertake a lifecycle assessment	<p>A lifecycle assessment or equivalent assessment must be undertaken to demonstrate the difference between the actual case and base case footprint. The assessment must include</p> <ul style="list-style-type: none"> <li>– Energy used and emissions</li> <li>– Water used</li> <li>– Resource inputs (materials) and</li> <li>– Resource outputs (waste).</li> </ul>	Proposed
----------------------------------	--	----------

### 3.4 Climate Change Assessments

As reported in the previous annual report, 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. Table 3 below outlines the climate change projections of the region that were used to undertake the climate change risk assessment.

Table 3 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, as per last year's report. The Project has identified treatment options which have been implemented and incorporated into final design reports. The remaining risks in Table 4 are those which have not yet been closed out as they are linked to the Landscape Design Report and documentation which has not yet reached IFC.

Table 4 Identified Climate Risks and Treatments

Category	Risk	Risk Level	Treatment Identified
Rainfall	Insufficient drainage capacity to manage increase in max rainfall events, resulting in roadway flooding and potential of traffic incidents.	Very High	Modelling allowed for climate change and increase in rainfall intensity. Relocation of some structures away from flood levels. Some elements of WSUD incorporated into sections of the alignment.
Fire	Fire risk within vegetation, causing impacts on asset.	High	Vegetation types & landscape design to reduce fuel fire load. All major vegetation to be designed away from residential properties and outside of bushfire prone areas with consideration of bushfire prone species.
Fire	Fire risk within vegetation causing detriment to adjacent residents.	High	Vegetation types & landscape design to reduce fuel fire load. All major vegetation to be designed away from residential properties and outside of bushfire prone areas with consideration of bushfire prone species.

### 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

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, 2022). Along with the other construction Projects on the Mitchell 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:

- Provide infrastructure to allow for the installation of intelligent transport systems to meet future demands.
- Improve access, safety and connectivity for PSP users by providing a high standard PSP between Ocean Reef Road and Warwick Station, with minimal interaction with vehicle traffic. There will also be upgrades of the existing PSP to comply with current standards
- Provide additional capacity on Mitchell Freeway southbound between Hodges Drive and Hepburn Avenue
- Improve productivity for industry and commuters travelling across Perth's northern suburbs or to the CBD through more efficient and predictable midblock journeys
- Improve road and rail safety by construction of a safety barrier that meets current standards on the median between Mitchell Freeway and the rail reserve. The Mitchell Freeway drainage is also being upgraded to minimise flooding during heavy rainfall events

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 inclusive of retail and commercial business and industries. These are detailed in Appendix 4.

A summary of economic performance and aspects for the Project are detailed in Table 5, all financial figures are inclusive of goods and services tax.

*Table 5 Summary of Economic Aspects*

ECONOMIC ASPECT	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Funding Received	\$	79,460,553	130,359,348
Indigenous Enterprises	#	8	8
Disability Enterprises	#	0	0
People Employed by Supply Chain	\$	305	497
Suppliers Engaged	#	67,330,802	107,630,649
Buy Local Spend	\$	66,479,462	104,856,190

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 Project to other Main Roads Projects and identifying Projects located in the Metropolitan area that require sand/limestone fill material.

#### 4.1 Key Economic Outcomes

The Project value is approximately \$198M with 82% of this value contracted to third parties. To date, \$104.8M has been spent with 337 local business entities (during this reporting period – \$66.5M has been spent with 252 local businesses) this represents approximately 84% of contract spend during the reporting period (81% to date). Through contracting works, the Project has created 1,486 short-term jobs excluding its internal workforce.

The anticipated Project duration is approximately 30 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 is having 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 CBD.

#### 4.2 Sustainable Procurement and Buy Local

The HWA approach to industry sustainability is founded on two key aspects: opportunity (via procurement) and development. HWA 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 via a number of avenues. At the tender phase, a subcontractor evaluation and approval form are 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 commitment 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 support 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. During the reporting period, the permanent signage supply and installation package was awarded to an Aboriginal business (\$270k). During the next period the Project is targeting procurement of Aboriginal business's for:

- Landscaping works - approximately \$900,000
- PSP package - approximately \$700,000

Growing the Australian Aboriginal business sector has significant, measurable and positive impacts on Aboriginal and Torres Strait Islander communities. Research by Professor Alex Maritz of La Trobe University shows that Aboriginal businesses deliver innovative products and services through start-up businesses which employ Aboriginal people, reconnecting them to their culture, instil pride and aspiration in Aboriginal communities and invest back into their communities.

The engagement of Aboriginal businesses is uniquely tied to the Aboriginal employment target of at least sixteen FTEs and at least \$4,000,000 of works or services as outlined in the Aboriginal Engagement Management Plan.

A number of the 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
- Implementing cultural awareness training sessions.

### 4.3 Economic Case Study

Monitoring and interrogation of the design for noise wall structures has seen the Project challenge the requirements at several locations (height and length). Noise Wall 17, which is an existing structure, has been identified as being a non-compliant height to reduce noise from the increased traffic on the nearby Whitfords off-ramp. The Project put forward two scenarios which included:

- Option 1 – demolish the existing structure, clear footprint and rebuild to meet acoustic requirements. This is the most material intensive, highest waste generation and largest vegetation clearing footprint.
- Option 2 – modify and retain the current structure through increasing the height of the structure by way of acrylic panels to meet the acoustic requirements, with the potential installation of back stay supports. This option does not require demolishing the existing structure, has the lower material impact with minimal clearing of vegetation required.

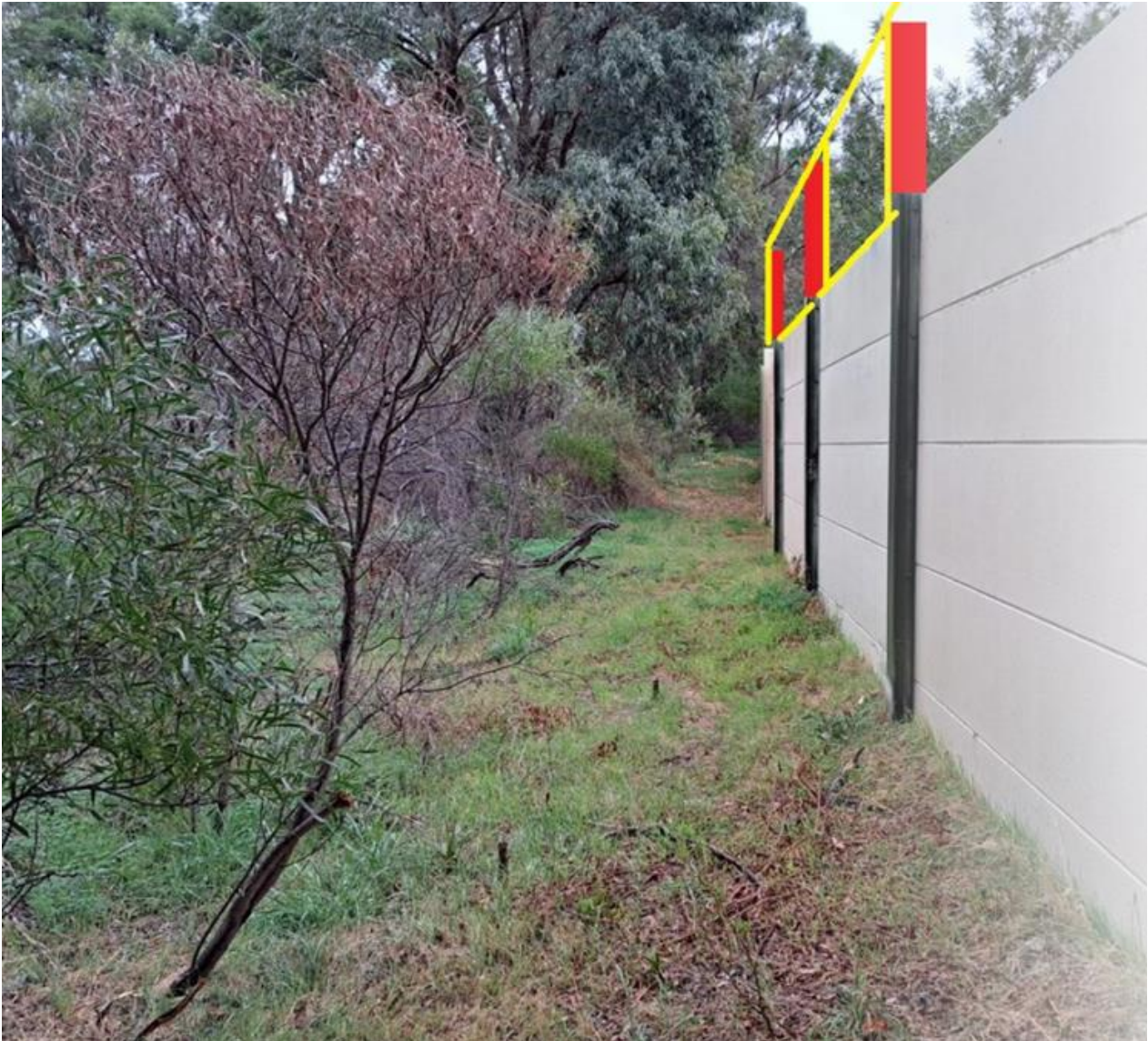
By challenging the design and seeking dispensation from the relevant department specifications, for Option 2 the Project will save approx. \$700k. If implemented as proposed this initiative will demonstrate a benefit to environmental, social and economic outcomes.

The existing noise wall structure proposed acrylic extension and contingency back stay should the existing footing not meet future wind loading requirements are detailed in Figure 2, 3 and 4 below.



*Figure 2 Existing Noise Wall Structure (NW17)*





*Figure 3 Proposed Acrylic Extension to Noise Wall Structure (NW17)*



*Figure 4 Contingency Back Stay, Should Existing Footing not Meet Future Wind Loading Requirements*



## 5 Environmental

The Project is located between Hester Avenue and Beach Road along the Mitchell Freeway transport corridor, within the LGAs of the City of Joondalup, the City of Wanneroo and the City of Stirling. A summary of environmental performance and aspects for the Project are detailed in Table 6.

Table 6 Summary of Environmental Aspects

ENVIRONMENTAL ASPECTS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Native Vegetation Cleared	ha	3	8
Native Vegetation Retained (due to design)	ha	TBC**	TBC**
Revegetation/rehabilitation Undertaken	ha	0	0
Total Water Consumption	kL	37,819	79,891
Total Non-Potable Water Consumption	kL	36,345	62,122
Total Potable Water Consumption	kL	1,474	17,769
Non-Potable Water Replacement	%	96	96
Total Green House Gas emissions <sup>^</sup>	t CO <sub>2</sub> .e	1,924	3,044*
Total Energy Consumption	GJ	21,811	34,465
Renewable Energy Mix	%	0	0
Total Imported Material Used in Project	t	49,490	103,991

<sup>^</sup> Inclusive of Scope 1, 2 & 3 emissions

\*values differ slightly from previous annual report due to correction in an audit cycle

\*\*Native vegetation retained will be calculated following Design completion

A summary of resource inputs and wastes for the Project are detailed in Table 7.

Table 7 Resource and Waste Summary

RESOURCE INPUTS AND GENERATED WASTE	UNIT	TOTAL THIS PERIOD	TOTAL FOR THE PROJECT
<b>Resource Inputs (Materials)</b>			
Total Quantity of Virgin Materials Used	t	43,694.8	112,492.2
Total Quantity of Recycled Materials Used	t	3,471.4	12,228.2
Total Quantity of Reused Materials Used Onsite	t	13,520.0	25,339.0
Percentage of Recycled Material Used	%	27.9	25.0
<b>Resource Outputs (Wastes)</b>			
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 Southbound Mitchell Freeway, approximately 5 km 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 Statewide 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. The impact assessment for the Project identified three additional species of flora and fauna protected at the State level. The Project is unlikely to have a significant impact on these species.

Significant impacts to Tuart Woodlands and Black Cockatoo's were referred to the then Department of Agriculture Water and Environment (DAWE), now the Department of Climate Change, Energy, the Environment Water (DCCEE), 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.

## 5.2 Environmental Management

The Project will be managed in accordance with HWA'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. Prior to any clearing works areas are assessed for weeds of national significance (WoNS) and if identified they are removed and properly disposed of under the Projects 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 and Appendix 2. The environmental approvals and allowance are summarised in Table 8, below.

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

- Minimise the impacts of construction work equipment in the vicinity of fauna and fauna habitat (ie 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 where practicable
- Minimising the release of dust particles
- Prevention of soil erosion
- Minimising vegetation clearing
- Timely rehabilitation
- Nil significant environmental incidents; and
- Minimise community complaints relating to environmental aspects.

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

### 5.2.1 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

### 5.2.2 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

As the Project has potential environmental impacts (Appendix 6), specific initiatives have been developed to ensure environmental compliance and benefits. These include but are not limited to:

- Education of Project personnel and implementation of a robust vegetation removal permit has resulted in zero clearing breaches.
- Ongoing education of Project personnel through toolbox presentations and site visits has improved environmental awareness across the project as is evident by environmental aspects being included in job hazard analysis documentation.
- One internal and external environmental audit was undertaken with the reporting permit and identified five minor areas for improvement and no non-conformances were identified.

Table 8 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
	Ea	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	3.56 ha of native vegetation
MS 629	ha	4.76
Water Abstraction Licence (5C) 205875 (1)	kL	100,000
Water Abstraction (WaterCorp Bore – G12) (GWL 206833)	kL	15,000
Water Abstraction Licence (5C) 208115	kL	20,697

## 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.

HWA has obtained licences (5C) to obtain water from groundwater sources. The licences allow HWA to annually draw up to 135,697 kL of water per annum from the superficial swan aquifer for construction water and dust suppression.

The Project is not required to undertake dewatering to lower the groundwater levels during the construction period. The management of stormwater onsite shall be required during periods of excessive rainfall.

HWA manages stormwater through controls to ensure that excess water does not discharge into drains 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 HWA will not cause damage or nuisance to adjacent properties. Details on water parameter is detailed below in Table 9.

Table 9 Water Parameters

WATER PARAMETER	TOTAL THIS PERIOD		TOTAL FOR PROJECT	
	kL	%	kL	%
<b>Potable Water</b>				
Standpipe / Scheme Water Purchased	1,474	4	17,770	22
<b>Non-Potable Water</b>				
Bore Water	36,345	96	62,122	78
Surface Water	0	0	0	0
Recycled / Wastewater	0	0	0	0
<b>Total Water Used</b>	<b>37,819</b>	<b>100.0</b>	<b>79,892</b>	<b>100.0</b>

## 5.4 Vegetation

### 5.4.1 Clearing

To date 22.41 ha of vegetation has been cleared, with 100% of vegetation (excluding any diseased vegetation) to be reused. Vegetation reuse initiatives include the supply of large logs for school nature playgrounds and landscaping (refer to Figure 1Figure 5) were provided to the following primary schools:

- Woodvale Primary School
- Creaney Education Support Centre
- Creaney Primary School
- Kelmscott Primary School





*Figure 5 Logs Provided to Primary Schools*

Suitable Grass Trees and Cockatoo perching branches were collected during the clearing works and delivered to the Kaarakin Black Cockatoo Conservation Centre to allow injured Cockatoos to forage and perch on vegetation they utilise in their natural environment.

Excess mulch was provided to the Liwara Catholic Primary School with the remainder stored on site for future landscaping works.

One tree with potential Carnaby's Cockatoo nesting hollows that required clearing was identified. The cleared tree was replaced with three artificial nesting hollows as per the Project offset requirements. The Project is required to install at least three artificial nesting hollows for each suitable tree cleared. The artificial hollows have been installed at a Lake Clifton property and they will be monitored and maintained by a qualified field ecologist for a period of ten years.

The Project is continuing to actively explore opportunities to limit vegetation clearing across the length of the Project. Opportunities include modifying the Project design in multiple locations and liaising with the City of Joondalup to avoid significant trees. This in turn creates opportunities for landscaping to improve the aesthetic appearance of the PSP and noise wall in these locations.

#### **5.4.2 Revegetation/Rehabilitation**

Revegetation will be implemented in the local road verges following consultation with the City of Joondalup. Discussions are ongoing to ensure that the future planting meets both the LGA and Project requirements.

Main Roads is revegetating 7.1 hectares of land within the Yellgonga Regional Park in consultation with the Department of Biodiversity Conservation and Attractions as part of the CPS9225/1 offset.

Main Roads will also revegetate an additional 1.54 hectares in the Yellagonga Regional Park as part of a CPS 818 offset.

A landscape design is being developed for the Kilrenny Park and Kilrenny Natural Area in consultation with the City of Joondalup, refer to Section 5.12 for the environmental case study.

## 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.

The energy use of the Project to date is detailed in Table 10.

Table 10 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)	-	-	-	244.3	-	0.02
Diesel Used (on and off road)	561,352	-	99.34	885,981	-	99.23
Liquefied Petroleum Gas (LPG)	-	-	-	-	-	-
Biodiesel	-	-	-	-	-	-
Hydrogen	-	-	-	-	-	-
Oil	-	-	-	-	-	-
Other	-	-	-	-	-	-
Purchased Electricity from Grid	-	39,819	0.66	-	71,659	0.75
Green Power Mix	-	-	-	-	-	-
Generated from Renewable Energy Onsite and Used Onsite	-	-	-	-	-	-
<b>Total Energy Used</b>	-	-	<b>100.0</b>	-	-	<b>100.0</b>

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

## 5.6 Materials and Recycling

HWA endeavours to ensure all material is kept to a minimum through thorough selection of economical construction methods and purchasing of materials in bulk quantities, which are sufficient for the works.

HWA has been applying the principles of reduction, reuse and recycling of resources generated by its activities and by ensuring the following controls are implemented:



- Liquid and solid waste materials generated on the Project are adequately stored to prevent any adverse impacts on the environment
- Adequate bins are made available on site to prevent littering and contain multiple waste streams
- Waste will be stored in secured storage containers to prevent access from scavenging fauna
- Waste scheduled for removal off site will be appropriately classified prior to disposal in accordance with the Landfill Waste Classification and Waste Definitions 1996
- General waste will be disposed of at an appropriate landfill site in accordance with waste regulation
- Hazardous waste will be disposed of by an appropriately licensed HWA Controlled Waste and Dangerous Goods subcontractor at regular intervals to minimise waste accumulation
- Hazardous materials and dangerous goods will be suitably stored in bunded areas
- Hazardous materials and dangerous goods 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; and
- Waste identified post construction will be removed

During the reporting period, the main construction activities that required virgin materials were road pavements, drainage and concrete barriers (refer to Table 11). There were demolition materials (including old redundant steel barrier and road materials) removed from the Project site. Scrap metal was sent for recycling, however redundant pavement and asphalt materials did not have a suitable use on the Project and were directed to landfill.

The only imported recycled materials used during the reporting period was crumbed rubber. Sandy material has been reused on the Project in earthworks cut-to-fill operations and also exported to other Main Roads Projects. Throughout the reporting period, the Project commenced 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.

Material and recycling metrics for the period and the Project total are detailed below in Table 11-13.

Table 11 Imported Raw/Traditional Materials for the Project

IMPORTED RAW/TRADITIONAL MATERIALS			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Aggregate	t	755.0	755.0
Aluminium	t	0.0	0.0
Asphalt	t	9,438.8	9,438.8
Ballast	t	0.0	0.0
Bedding Aggregate	t	0.0	0.0
Bitumen	t	36.1	38.7
Bitumen Cutter (MCC)	t	2.4	2.4
Bitumen Cutter (SCC)	t	21.4	27.5

Cement Drainage Pipes	t	2,981.6	2,981.6
Cement Additives	t	0.0	0.0
Cement Stabilised Backfill	t	7,515.6	14,218.6
Clay	t	0.0	0.0
Concrete	t	6,285.3	8,749.2
Crushed Dust (including Cracker Dust)	t	0.0	0.0
Crushed Limestone	t	0.0	0.0
Crushed Rock	t	0.0	0.0
Crushed Rock Base	t	13,226.0	39,254.0
Emulsion Based Prime (e.g. Ecoprime)	t	20.7	62.8
Ferricrete	t	0.0	0.0
Geofabric Polymers	t	0.0	0.0
Glass (including Glass Beads)	t	0.0	0.0
Gravel	t	0.0	24,511.0
Laterite	t	0.0	0.0
Lime	t	0.0	0.0
Lime Additives	t	0.0	0.0
Mechanically Stabilised Earth Backfill	t	0.0	0.0
Mulch	t	0.0	0.0
Paint (Waterborne, Thermoplastic, Cold Applied Plastics)	l	0.5	12.6
Perspex	t	0.0	0.0
Plastic	t	80.0	80.0
Precast Concrete	t	0.0	0.0
Sand	t	1,718.6	1,718.6
Steel	t	157.0	176.0
Synthetic Binders	t	0.0	0.0
Topsoil	t	2.3	3,569.3
Other	t	0.0	0.0

Table 12 Imported Recycled Materials for the Project

IMPORTED RECYCLED MATERIALS			
MATERIALS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Crumb Rubber	t	1,373.0	1,373.0
Crushed Recycled Concrete	t	0.0	0.0
Crushed Recycled Glass	t	0.0	0.0
Reconstituted Limestone Blocks	t	1,656.0	1,656.0
Geopolymer Concrete	t	0.0	0.0
Low Carbon Concrete	t	0.0	0.0
Mulch and Soil Conditioner (not including Food Organic and Garden Organics (FOGO))	t	0.0	0.0
Mulch (FOGO)	t	0.0	0.0
Soil Conditioner (FOGO)	t	0.0	0.0
Reclaimed Asphalt Pavement	t	3,394.8	3,394.8
Recycled Aggregate	t	0.0	520.0
Recycled Aluminium	t	0.0	0.0
Recycled Clay	t	0.0	0.0
Recycled Granular Material	t	0.0	0.0
Recycled HDPE Plastic Pipes	t	0.0	0.0
Recycled Mineral Sand	t	0.0	0.0
Recycled Sand (as per the definition in the Contractor Monthly Reporting form)	t	0.0	10.0
Supplementary Cementitious Materials – slag	t	0.0	0.0
Supplementary Cementitious – fly ash	t	0.0	0.0
Supplementary Cementitious – silica fume	t	0.0	0.0
Supplementary Cementitious – other	t	0.0	0.0
Topsoil	t	0.0	0.0
Warm Mix Asphalt	t	0.0	0.0
Unsuitable Material	t	0.0	240.0
Clean Fill	t	0.0	7,891.8

Haul Rd – Track Material	t	2,098.4	2,098.4
--------------------------	---	---------	---------

Table 13 Materials Reused on the Project

<b>MATERIALS REUSED WITHIN THE PROJECT SITE</b>			
<b>MATERIAL</b>	<b>UNIT</b>	<b>TOTAL THIS PERIOD</b>	<b>TOTAL FOR PROJECT</b>
Aggregate	t	0.0	0.0
Asphalt (RAP)	t	0.0	0.0
Clay	t	0.0	0.0
General Fill	t	10,989.0	22,548.0
Granular Material	t	0.0	0.0
Limestone	t	0.0	0.0
Mulch	t	759.3	759.3
Overburden	t	0.0	0.0
Road Base	t	0.0	260.0
Sand	t	0.0	0.0
Topsoil	t	0.0	0.0
Other	t	0.0	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 is being monitored throughout the Project to minimise impacts to surrounding receptors. Project works are only undertaken at night when there is no safe day time alternative. Night works are undertaken in accordance with the Afterhours Noise Management Plan. Three vibration monitors are currently positioned at various locations throughout the Project site. dependant on the scope of works and proximity to receptors. In the event of an exceedance the equipment generating the vibrations and the site assessed including the proximity of works to the residential receptors. As assessment is undertaken of the size of mobile plant and the level of vibrations required to obtain required geotechnical compliance i.e. can we use a static roller or oscillating roller rather than a drum roller using low or high vibrations.

## 5.8 Air Quality

Air quality monitoring is undertaken across on the Project using a quantitative approach. During the summer months three dust monitoring stations are positioned at various locations around the Project dependant of work scopes and proximity to receptors. In the event of an exceedance of air quality levels or where visual dust is observed, increased dust control is undertaken and the scope of works in the area investigated. This typically involves placing shade cloth on boundary fences, increasing the use of water carts and frequency of street sweepers.

## 5.9 Light Spill

The PSP will be illuminated with LED lighting that will minimise light spill into the surrounding environment. Lighting towers used during nightshift are directed at the works area and away from surrounding residents and vegetated areas that may have light sensitive receptors.

## 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.



## 5.12 Environmental Case Study – Green corridor

Whilst undertaking works to upgrade/install the PSP between the Tuart Road and Buchanan Avenue a parcel of land known as the Kilrenny Natural area (approx. 1,182m<sup>2</sup>, inclusive of the existing fire break) was disturbed. Parts of the Kilrenny Park have also been disturbed to allow access to the Project and to store mulch.

Vegetation within this area consisted of a combination of Tuart Forest and planted vegetation and ranged in condition from completely degraded to degraded (A. Sleep, 2020).

In light of the clearing, HWA has developed a number of sustainability commitments and objectives to improve the local community amenity within the Kilrenny Natural area and Park (refer to Figure 6 below), as detailed below:

- Provide an open space concept / opportunity for the community with the City of Joondalup for approval and cooperation.
- Develop a case study generated to quantify the social, economic and environmental benefits for initiative including the lessons learnt.

HWA engaged Ecoscape to deliver the following scope of work to meet our commitments and objectives:

- Site walk through of Kilrenny Natural area and Park and any other nearby open spaces that could be linked or improved as part of the concept (ie. Darnley/Strathaven overpass).
- Ensure a synergy between the current 3m wide streetscape & drainage strategy design (as developed by Tim Davies Landscaping TDL and WSP) and the proposed option/concept. The options/concepts have the option to include both Main Roads and City of Joondalup land.
- Develop options/concepts to develop a green corridor/ increase canopy cover initiative within the Kilrenny Natural area and western side of the disturbed section of Kilrenny Park.
- Develop a package to present to the City of Joondalup including visuals (ie. x-sections/figures) and benefits to City of Joondalup and local community.
- Attend a meeting with the City of Joondalup to present option/concept.
- Refine concept if required and develop a report/case study including costs to deliver the concept, delivery/implementation timeframes and maintenance requirements.

At the end of this reporting period, Ecoscape have provided a narrative/concept and a draft landscape design which is currently under internal review.

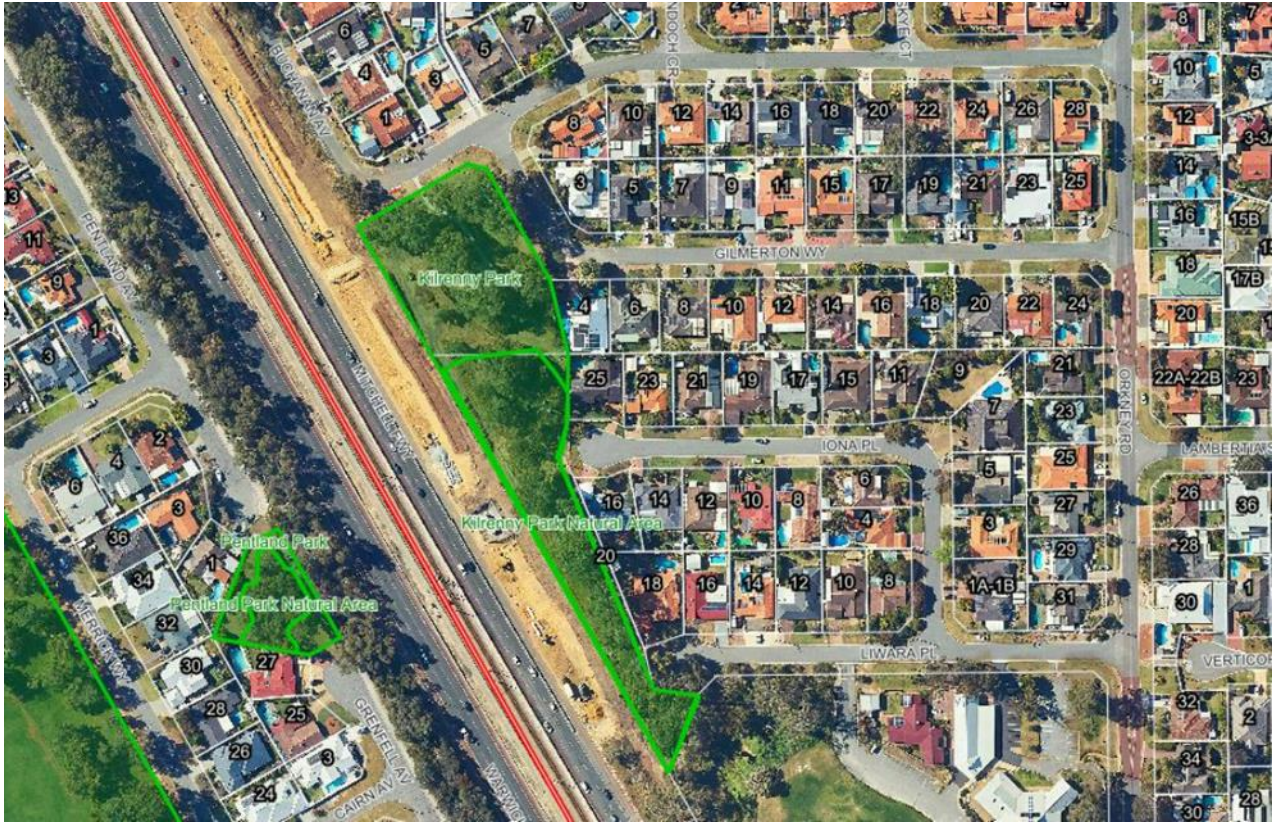


Figure 6 Location of Kilrenny Park and Natural Area

## 6 Social

The Project operates in both a residential area and within the Mitchell Freeway corridor, impacting road users, residents and industry. A summary of key social aspects and performance for the Project is detailed in [Table 14](#).

Table 14 Summary of Social Aspects

SOCIAL ASPECT	UNIT	TOTAL FOR THIS PERIOD	TOTAL FOR THE PROJECT
Stakeholders engaged*	#	262.0	578.0
Stakeholder enquiries received	#	333.0	479.0
Heritage sites in project boundary	#	1.0	1.0
Length of Principal Shared Path (Addition/Refurbished)	km	0.0	0.0
Women in Workforce	%	14.5	13.5
Indigenous People in Workforce	%	3.7	54.8
Lost Time Injury Frequency Rate (LTIFR)	#	3.8	NA***
Development Employees and Apprentices on the Project**	#	2.5	4.0

\*Reflective of the number of individuals with enquiries in the CONNECT database

\*\*Totals are averages of employees/apprentices across each month in the respective reporting period (this period or Project total)

\*\*\* Rolling value each month and value for last reporting period is not available

### 6.1 Social Context

The Project is facing a number of social issues, including potential roadworks fatigue in the northern suburbs of Perth; a traffic load of 60,000 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 Project activities is critical for the community and acceptance of the short-term construction-related inconvenience for the long-term benefits of the Smart Freeway infrastructure. A full list of the Project's stakeholders is available in Appendix 4.

The Project's primary objective is to reduce congestion and to deliver travel time savings between Hodges Drive and Vincent Street. This is expected to benefit more than 28,000 motorists using this section of the Freeway during the weekday morning peak period. Secondary safety improvements are expected from the Project, leading to more reliable journey times and congestion relief. Stop-start conditions on the Freeway are associated with a greater number of traffic crashes, with a high proportion of incidents at congested sections of the Freeway in peak periods.

In conjunction with recent widening works from Hutton Street to Cedric Street, the Project will increase the Freeway's southbound capacity by 50% between Hodges Drive and Hepburn Avenue, and lead to shorter, more reliable journey times. Once upgrades are complete it is estimated they will save up to 6 minutes on their journey.

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 PSP between Ocean Reef Road and Warwick Train Station, addressing the missing links between these locations.

The new PSPs will meet current access and mobility standards; creating a safer environment for all,

with separation from vehicular traffic and minimal disruption, supporting the State Government’s goal to install full PSPs along Mitchell Freeway. Close consultation with the City of Joondalup regarding PSP alignment will allow for future connections to local paths.

The Project will also deliver approximately 5.5 km of noise walls, providing residents adjacent to the Southbound Freeway lanes with relief from traffic noise.

### 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 having occurred in the 1970s. A demographic profile of each suburb from Census 2021 is found in Table 15.

Table 15 Demographic Profile of Surrounding Suburbs

Suburb	Pop	Med Age	Dwellings	Houses	Renting	Med Week Family Income
Warwick	3,858	41	1,600	89.4%	18.7%	\$2,151
Greenwood	9,861	40	3,845	92.6%	14.1%	\$2,351
Kingsley	41,711	42	16,400	89.5%	13.1%	\$2,396

The suburbs also have a high concentration of families from English speaking backgrounds. English speaking households account for 82.5% (Warwick), 86.2% (Greenwood) and 86.2% (Kingsley). The highest number of residents from non-English speaking background communities speak Mandarin - 2.2% (Warwick), Italian – 0.8% (Greenwood) and Mandarin - 1.0% (Kingsley).

The Socio-Economic Indexes for Areas (SEIFA) ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census. SEIFA 2021, based on Census 2021 data, consists of four indexes, each focusing on a different aspect of socio-economic advantage and disadvantage. One index has been used to inform the delivery of Project communications. As shown in Table 16 the three suburbs adjacent to the works are among the most advantaged suburbs in Australia.

The Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) summarises variables indicating either relative advantage or disadvantage. The index ranks areas from most disadvantaged to most advantaged. A high score has a relatively high incidence of advantage and a relatively low incidence of disadvantage.

Table 16 Index Scores for the Surrounding Suburbs

Index / Suburb	IRSAD Index	IRSAD Percentile
Warwick	1,028.6	74
Greenwood	1,033.4	76
Kingsley	1,048.6	83

### 6.1.2 Stakeholder Top Priority Issues

Issues identified at the start of the Project by Main Roads and by the Project’s Community Reference group (CRG) 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 decision making, in order to carry out works in the least impactful manner possible. Open dialogue assists to identify issues of concern; as well as opportunities for innovation, align stakeholder expectations and improve decision-making.

Wherever possible, the Project team liaises closely with local stakeholders and the community throughout the construction process. This includes communicating and liaising with residents, business owners, interest groups and motorists.

The Project will engage the community in a proactive, transparent, and timely manner to understand their needs and concerns.

An overarching Community and Stakeholder Management Plan has been developed to guide engagement, with the creation and implementation of tailored tactical communication plans to manage the community engagement process for work campaigns, using a variety of communications channels. Each plan covers:

- The purpose of that plan
- Dates the plan will commence and end
- Key messages to be communicated
- Key stakeholders relevant to the issue
- The communication methods and timing
- Proposed communication materials
- Project personnel responsible for implementing the plan

HWA have identified key targets and commitments within the Project Community and Stakeholder Engagement Plan, as well as within the Sustainability Management Plan. These plans will ensure the active management and monitoring of stakeholder satisfaction with the Project. The overarching imperative of the targets and commitments is to provide accurate, timely and relevant information to all stakeholders, ensure adequate awareness and understanding of the Project during construction and the benefits it will deliver. Other engagement objectives include:

- Meet and/or exceed community and stakeholder expectations around engagement
- Proactively share information with the community and stakeholders, adopting a 'no surprises' approach
- Minimise the escalation of issues through early identification and mitigation.
- Generate awareness of and support for the Project
- Understand stakeholder and community aspirations, opportunities, issues, and concerns associated with the Project



- Foster community buy-in for the Project, ensuring wherever possible, the Project reflects the wishes of the community
- Ensuring works can be undertaken with the least amount of impact as possible
- Build strong, ongoing relationships with the local community, improving trust and confidence in Main Roads and its vision for the road network

Targets for stakeholder engagement include:

- Engagement with 100% of residents and road users falling within the Project boundary.
- Timely resolution of complaints, in accordance with the Main Roads Customer Service Charter
- 100% awareness of complaints and queries mechanism
- Highest impacts relate to improvements to the area

The Project Community and Stakeholder Management Plan incorporates processes, methods and tools intended to engage with community and stakeholders in an inclusive, consistent, and timely fashion. The Plan and the Community and Stakeholder Engagement Team utilise a range of strategies to engage the community and stakeholders consistent with the levels of engagement as prescribed by the International Association for Public Participation (IAP2), as shown below in Table 17.

Table 17 IAP2 Process

Inform	Consult	Involve	Collaborate	Empower
To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.

Increasing impact on the decision 

As a minimum, stakeholders will be engaged at the 'Involve' level of the IAP2 Public Participation Spectrum level when discussing negotiables. Project non-negotiables have been identified in the Scope of Works and technical Criteria and managed accordingly. Negotiables and non-negotiables can be found in Table 18.

Table 18 Agreed Negotiables and Non-negotiables

Area	Negotiable	Non-Negotiable
Noise wall design and colours	✓	
Landscaping design	✓	
Community engagement methods and evaluation	✓	
Mitigation of adverse impacts such as vibration, dust, and noise	✓	

Area	Negotiable	Non-Negotiable
Traffic management including road detour planning and access	✓	
Public art locations		✓
Budget		✓

Project engagement commenced in November 2019 with the State Government’s funding announcement. Early engagement included consultation with:

- The local member of parliament
- Liwara Primary School
- The City of Joondalup
- Residents through a resident notification about the Project delivered to suburbs adjacent to the Project alignment in June 2020 to introduce the Project.

The community was actively involved early on in influencing the Project’s design through the dedicated CRG, consisting of 12 residents. The CRG provided a forum to facilitate and improve communication between the community, stakeholders, and the Project team.

CRG members were invited to share their opinions about a range of topics, including the PSP and noise wall alignments, and vegetation clearing required for the Project. Outcomes of the engagement has informed the appearance of Project noise walls. The CRG elected the noise wall colour suite from five available options. The CRG determined that impacted residents shall have the option to select the colour of the property-facing side of the noise wall installed at their cadastral boundary.

The CRG also influenced several other Project decisions, including the requirement for early engagement about vegetation clearing and landscaping, and the types of engagement methods to be incorporated into the Plan. All inputs were considered by Main Roads and the Project team wherever possible, with changes made to the designs to deliver better community outcomes.

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

A Path User Group, consisting of representatives from the City of Joondalup, Westcycle, the Public Transport Authority, Department of Transport and Main Roads was established to review early concept designs, the involvement of which has continued into detailed design. Proposed PSP detours are provided to Westcycle for input and communication materials are shared with Westcycle for distribution to its cycling network.

Originally, the PSP was to be constructed adjacent to the road. However, consultation with the City of Joondalup has seen its alignment re-configured; to enable inclusion of a 3-metre-wide vegetation corridor between the road and the path, seen in below in Figure 7. The vegetation corridor will provide a more visually appealing amenity for residents.

The landscaping design for the Project intends to integrate the new PSP and road infrastructure into the existing physical and visual landscape. This will be achieved through thorough consultation with key stakeholders, such as community groups, Aboriginal stakeholders and the City of Joondalup.

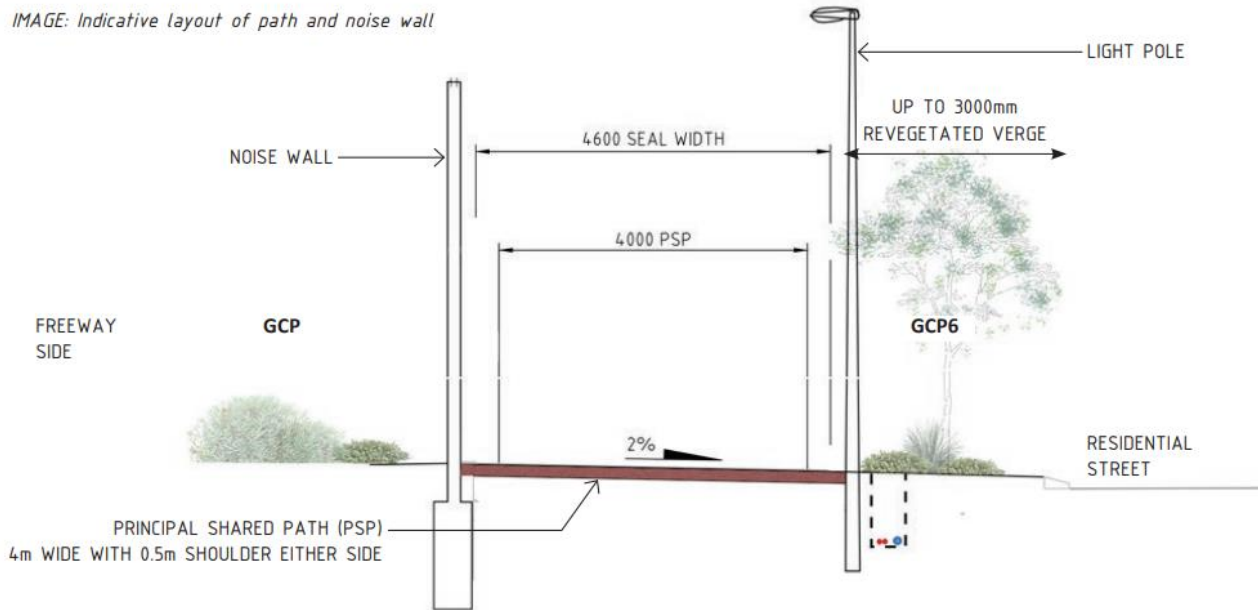


Figure 7 Indicative Layout of PSP and Noise Wall

### 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 are used to assess the effectiveness of the Community and Stakeholder Management Plan and its implementation. Table 19 showcases the objectives, Key Performance Indicators (KPIs), and measures used to evaluate each KPI.

Table 19 Stakeholder Management Actions and Measures

Objective	KPI	Quantitative Measure	Qualitative Measure
Stakeholder involvement in development and review of the Plan	Stakeholder participation in the review of the Community and Engagement Stakeholder Engagement Plan	Not relevant	Feedback is captured and considered in the review. Evidence: Feedback Review Advisory group/s actively engaged in review of performance. Evidence: Minutes
Stakeholders will receive timely responses to queries	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	Not relevant
Stakeholders can influence decision making	Stakeholder feedback influenced or changed a planned outcome	Not relevant	The influence of stakeholder feedback on Project planning and construction works. Evidence: Influence register

Objective	KPI	Quantitative Measure	Qualitative Measure
Stakeholders are engaged using multiple methods that are appropriate for their needs	The appropriateness of communications methods to engage stakeholders	Not relevant	The diversity of communications methods used during the Project. Evidence: feedback in review of plan
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	Not relevant

Members of the public are encouraged to contact the Main Roads Customer Information Centre via phone (available 24/7) or email with any Project 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 information about the query, customer, and correspondence is recorded within the Main Roads customer relationship management system. Enquiries and complaints must be responded to within 10 days of receipt.

## 6.4 Heritage

Given it is an offence to interfere with a registered site without the consent of the Western Australian Minister of Aboriginal Affairs, the importance of protecting Aboriginal heritage sites is recognised on the Project. 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. These are detailed in Appendix 5.

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 20 outlines the Project's objectives and targets with regards to Aboriginal & European heritage.

Table 20 Objectives & Targets for Heritage

Objectives	Target	Key Performance Indicator
<b>Aboriginal Heritage</b>		
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
<b>European Heritage</b>		
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 Perth 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 interface 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 8) and after (Figure 9) images can be seen below.





Figure 8 Steel Barrier on Top of the Retaining Wall Protecting the Rail Corridor from Vehicles Travelling on the Freeway



Figure 9 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 per cent of the workforce to comprise of Aboriginal people. Over the current reporting period, the Project is tracking at 3.79%.

In terms of gender diversity, the percentage of women in the workforce is a highlight for the Project, as it sits at 14.5%, slightly above the national average for the construction industry in Australia which currently sits at 13.8% (NAWIC, 2022). This year's 14.5% participation has seen the project to date value rise from 13% in 2021/22 to 13.5% for this reporting period.

## 6.7 Traffic Management & Community Safety

Traffic Management Planners have undertaken hazard identification and risk assessments which consider all impacts to Project 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 general public from traffic hazards that may arise as a result 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 a sufficient number of 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.

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. 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 is measured by:

- An increase in the number of hazard observations reported
- Number of safety interactions & general site inspections conducted
- Percentage safe versus at-risk behaviour performed
- Number of employee-led safety toolbox meetings

- Percentage of participation in the safety observations process

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

- Management plan(s) implementation
- Safety Alert notification & communication
- Safety toolbox meetings
- Induction and training
- Take 5s
- Job Hazard Analysis (JHA) & Safe Work Method Statements (SWMS) documentation
- Hazard reporting
- Workplace inspections
- Audits
- Incident statistics
- Reward and recognition promotion

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. 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 21 and Table 22 below for a snapshot of HSE statistics along with some Human Resource statistics.

Table 21 HSE Statistics

HEALTH, SAFETY AND ENVIRONMENT	
DESCRIPTION	Project to date
<b>INCIDENTS</b>	
Safety Incidents	73
Environmental Incidents	5
<b>LEAD INDICATORS</b>	
Toolbox Meetings	156
Take 5's	32,211
Workplace Inspections	1,902
Hazards Raised	1,168
Hazards Closed	1,168
External HSE Audits	5

Table 22 Human Resource Statistics

<b>HUMAN RESOURCES</b>	
<b>MANHOURS</b>	<b>Project to date</b>
Indirect man-hours	157,311
Direct man-hours	28,193
Subcontractor man-hours	327,154
Indigenous Man Hours	11,452
Total Man-hours	52,4110
Current percentage of Indigenous Employment	3.22%

## 6.9 Legacy Commitments

The Project is in ongoing discussions surrounding the development of patterned noise walls with the intent of leaving a lasting legacy for the surrounding area. The Project is exploring options to improve community amenity including the Green Corridor Initiative. Further information on this initiative can be found in Section 5.12.

## 7 Reference List

- A. Sleep. (2020). *Mitchell Freeway Widening Southbound and PSP Mitchell Freeway Gaps Hodges Drive to Reid Highway Biological Survey*. Astron Environmental Services, for Main Roads Western Australia.
- Bureau of Meteorology. (2022). *Daily Global Exposure: Perth Metro*. Australian Government, Bureau of Meteorology.
- City of Joondalup (2018, pp 7). *Craigie Bushland Management Plan*.  
<https://www.joondalup.wa.gov.au/wp-content/uploads/2019/07/Craigie-Bush-Management-Plan-1.pdf>.
- GHD (2014). *Mitchell Freeway Extension- Environmental Impact Assessment*. GHD.
- Hope, P. et al. (2015). *Southern and South-Western Flatlands Cluster Report, Climate Change in Australia Projections for Australia's Natural Resource Management Regions: Cluster Reports*, eds. Ekström, M. et al., CSIRO and Bureau of Meteorology, Australia.
- Infrastructure Australia. (2022). *Transforming Perth's freeways strategic program: Phase 2 and 3: Infrastructure Australia*. Transforming Perth's Freeways Strategic Program: Phase 2 and 3 | Infrastructure Australia. Retrieved from:  
<https://www.infrastructureaustralia.gov.au/projects/transforming-perths-freeways-strategic-program-phase-2-and-3>.
- La Trobe University. (2022). *Indigenous Entrepreneurship Key*. Retrieved from:  
<https://www.latrobe.edu.au/news/articles/2022/release/indigenous-entrepreneurship-key2>.
- Main Roads Western Australia. (2018). Committed to Increasing Aboriginal Participation. Retrieved from <https://annualreports.mainroads.wa.gov.au/AR-2018/welcome/our-stories/committed-to-increasing-aboriginal-employment-initiatives.html>.
- NAWIC. (2022). *The NAWIC Journal*. The National Association of Women in Construction. Retrieved from: [https://www.nawic.com.au/NAWIC/News/The\\_NAWIC\\_Journal.aspx](https://www.nawic.com.au/NAWIC/News/The_NAWIC_Journal.aspx).



## 8 Glossary

A glossary of terms used throughout this document is detailed in Table 23.

Table 23 Glossary of Terms

Term	Description	Link to Further Information
<b>Material; Materiality</b>	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.	<a href="#">Global Reporting</a>
<b>Scope 1 Emissions</b>	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.	<a href="#">Clean Energy Regulator</a>
<b>Scope 2 Emissions</b>	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.	
<b>Scope 3 Emissions</b>	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
<b>Appendix 1</b>	NRW Sustainability Policy
<b>Appendix 2</b>	NRW Environmental Policy
<b>Appendix 3</b>	List of Project Stakeholders
<b>Appendix 4</b>	List of Project Stakeholders
<b>Appendix 5</b>	Protected/Conservation Significant Flora and Fauna Species and Habitat

## Appendix 1 – Project Sustainability Policy

The Project operates under the NRW corporate sustainability and environmental policies which can be found in Appendix 1 and Appendix 2 respectively.



### 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 2 – 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.

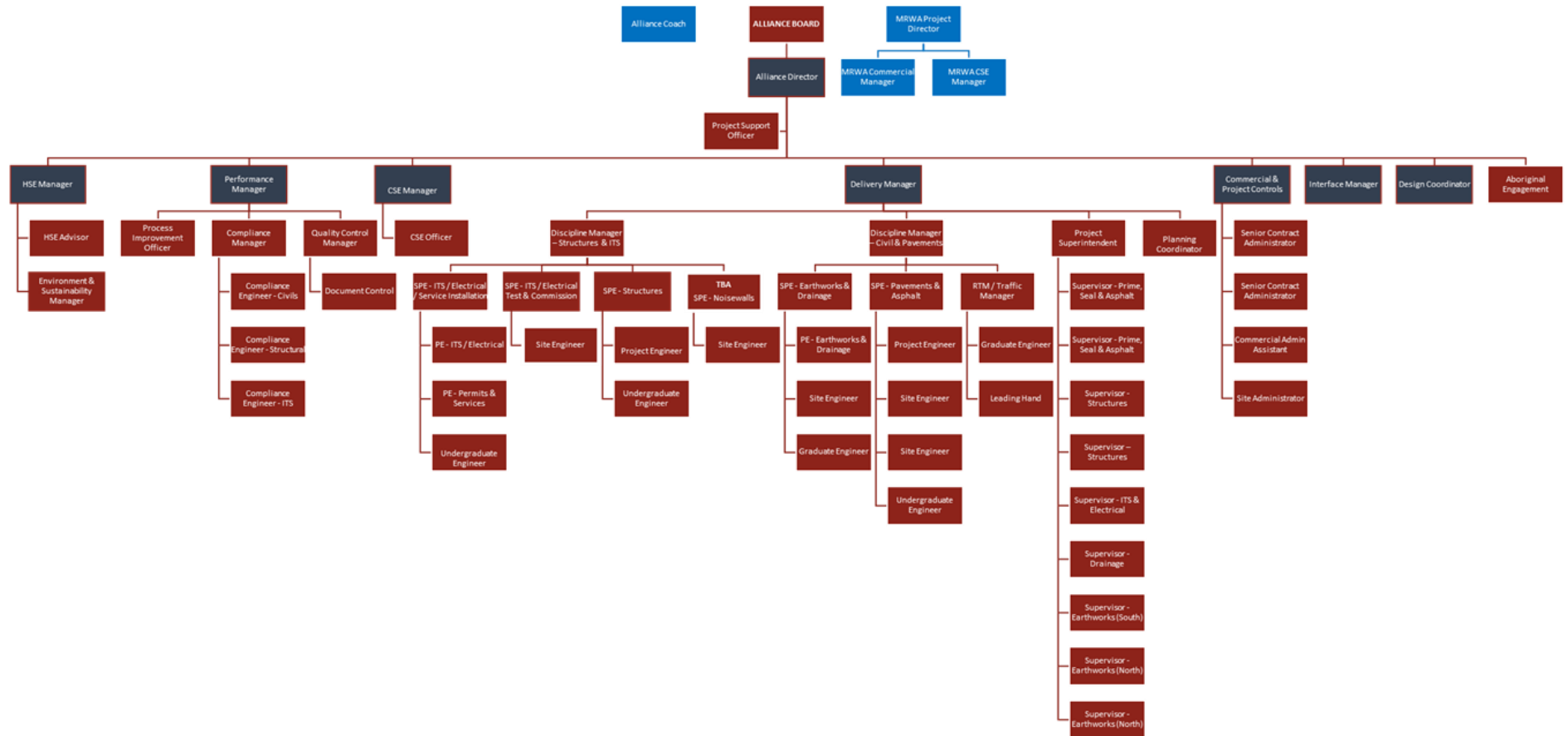
Jules Pemberton  
Chief Executive Officer

January 2021  
CP02

181 Great Eastern Highway Belmont,  
Western Australia 6104  
+61 8 9232 4200  
nrw.com.au



## Appendix 3 – Organisational Chart





## Appendix 4 – 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 Stirling	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 5 - 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 ( <a href="#">Section 3.1.1.3</a> )
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 6 – 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			
<i>Black Cockatoos (Carnaby's Cockatoo (EN), Forest Red-tailed Black Cockatoo (V))</i>	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 ( <a href="#">Section 3.2.1</a> )
<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.