



# Coolgardie-Esperance Highway Upgrade Emu Rocks: Project Annual Sustainability Report 2021/2022

Prepared by Highway Construction

This annual report covers the period from 1/07/2021 to 31/07/2022 (including an additional month as the project has been completed). This is the second and final annual report to be prepared for the project. Previous annual sustainability report includes the 2020/21 financial year.

## Approval for Publication

Date	Position
14/10/2022	Highways Construction Project Engineer
14/10/2022	Main Roads Project Manager
24/10/2022	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
ASS	Acid Sulfate Soils
DAWE	Department of Agriculture, Water and Environment
DFES	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority of Western Australia
GHG	Green House Gas
GRI	Global Reporting Initiative
ha	Hectare(s)
IS	Infrastructure Sustainability
ISC	Infrastructure Sustainability Council
kL	Kilolitre
km	Kilometre(s)
LCA	Lifecycle Assessment
LTIFR	Lost Time Injury Frequency Rate
m	Metre(s)
Main Roads	Main Roads Western Australia
GJ	Megajoule; Gigajoule: unit of energy which is equivalent to 1 billion Joules
NGA	National Greenhouse Accounts
RtR	Roads to Reuse
SDG	Sustainable Development Goals
tCO <sub>2</sub> e	Tonnes of carbon dioxide equivalent
TEC	Threatened Ecological Community
UN	United Nations



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# 1 About this Report

## 1.1 Purpose

This report has been prepared for the Coolgardie-Esperance Highway Emu Rocks Project (herein 'the Project'). This report was compiled by Highway Construction on behalf of Main Roads Western Australia (herein after 'Main Roads'). This report will accompany the Main Roads Annual Sustainability Report and will ultimately be integrated into the Main Roads Annual Report. This report summarises the sustainability initiatives and potential environmental, social, and economic impacts of the Project. Material topics reported in this report have been determined through a materiality process that aspires to align to the Infrastructure Sustainability Council Australia's (ISCAs) (now the Infrastructure Sustainability Council (ISC)) Infrastructure Sustainability (IS) Design and As Built Rating v2.0 requirements.

## 1.2 Sustainability Statement

The primary objective of the Project is to provide efficient and safe road access for all road users and to provide road infrastructure that supports economic and regional development. Highway Construction is committed to supporting environmental, social and economic improvement in the communities in which it operates and follow sustainable procurement principles to achieve desired outcomes on this Project and beyond.

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*"The Coolgardie-Esperance Highway Emu Rocks Project incorporates essential alignment correction by reconstruction, new pavements and surfacing to ensure ongoing serviceability of the Perth-Adelaide route, the main arterial road that connects the west with the east. The Project overall has provided exceptional opportunities to local suppliers, subcontractors and labour pool to contribute to the construction of this overdue upgrade." – Lourens Hiemstra, Project Manager*

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## 2 Project Overview

The Project was announced to boost road safety and regional jobs in south-central Western Australia as part of the Australian Government's 10-year infrastructure pipeline, with the Project forming part of the Perth to Adelaide route on the National Land Transport Network. The Project scope involved an upgrade of approximately 30 kilometre (km) section of highway between Widgiemooltha and Kambalda, to improve travels times, road safety and reduce ongoing maintenance costs. The work was undertaken in six sections (Figure 1).

Construction began early 2021 and was opened to the public in August 2022, the Project was accelerated to stimulate cash flow into the economy at the start of the COVID-19 pandemic. The infrastructure value chain, including material sourcing, construction methodologies, operational outcomes, and waste management processes, were implemented, monitored and reported as the Project progressed.

Construction of the 30 km upgrade included:

- Reconstruction and realignment of the road
- Widening and sealing of the shoulders
- Construction of passing lanes
- Upgrade of intersections
- Upgrade and replacement of culverts; and
- Adding line marking, audio tactile edge lines and road safety barriers.

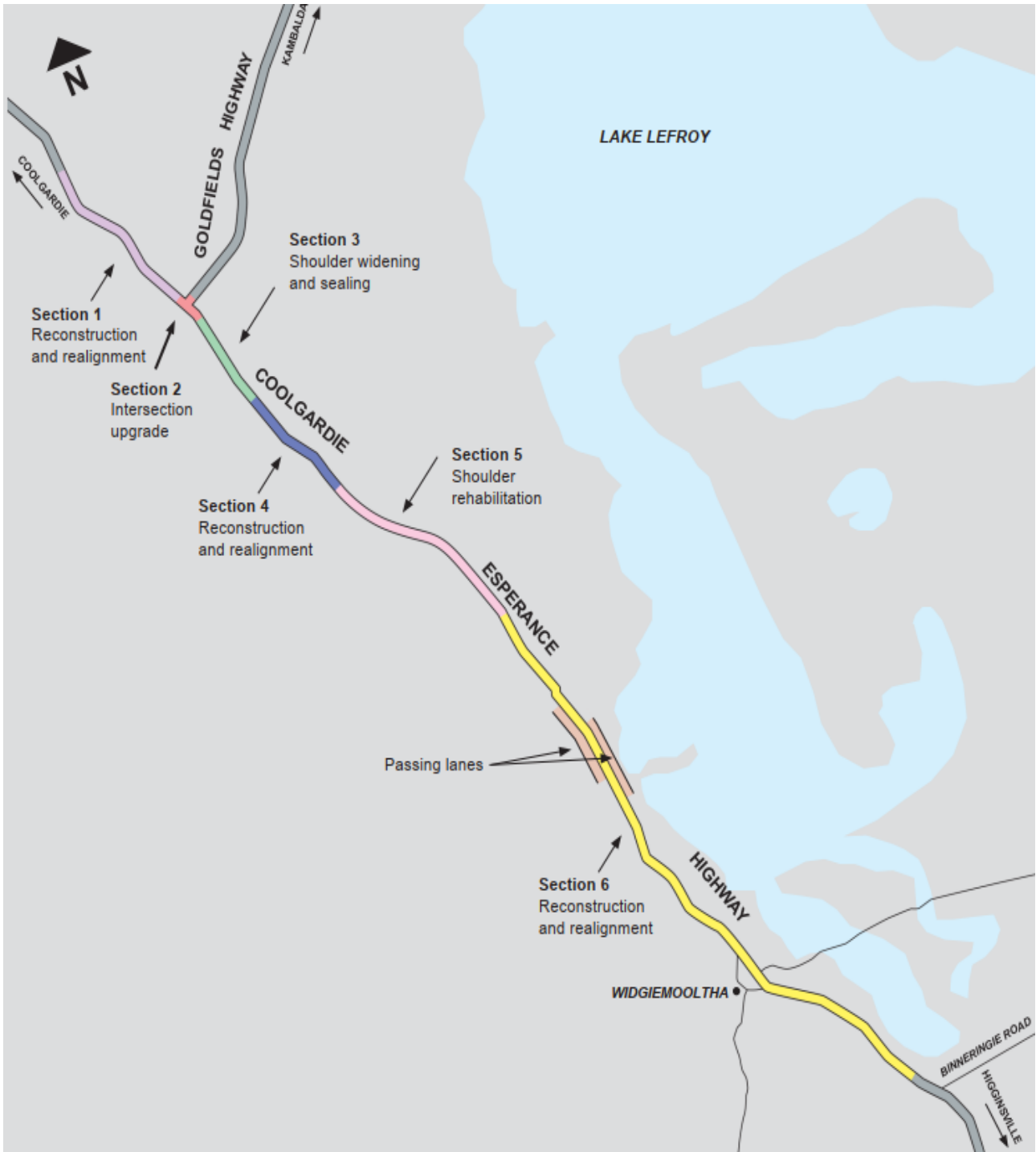


Figure 1 Project Location and Section Scopes



## 2.1 Locality and Scope

The Project is located within the Shire of Coolgardie, the upgrade is within the locality of Widgiemoolta, an old gold prospecting and mining town with a small population remaining. The Project is approximately 100 km from Kalgoorlie, the nearest major centre. The overall length of the Project is 29.3 km and encompasses two major intersections (Goldfields Highway (Figure 2) and Kingswood Road South) and a railway crossing of which is operated by ARC infrastructure to facilitate the movement of ore between Kalgoorlie and Esperance.



Figure 2 Asphalt Intersection Upgrade at Goldfields Highway and Coolgardie-Esperance Highway

## 2.2 Value and Funding

The State and the Commonwealth Government committed \$60 million in funding (80% Federal, 20% State) for the design and construction of the Project.

## 2.3 Delivery Agents

The contract was delivered by West Australian company, Highway Construction. The Project was delivered as a Design and Construct delivery model, whereby Highway Construction developed and managed the design, construction and some aspects of the ongoing maintenance of the asset. The key organisations involved in the delivery of the Project are summarised in Table 1.

Table 1 Key Delivery Partners for the Project

DELIVERY ORGANISATION ROLE	ORGANISATION
Client and Operator	Main Roads Western Australia
Head Contractor	Highway Construction
Designer	GHD
Verifier	WML

## 2.4 Project Timeline

This Project had an accelerated construction commencement without the finalisation of design documentation. To facilitate this, all delivery agents worked towards an abbreviated and fast-tracked design program, skipping a design gate to ensure the construction would not surpass the design process. This was an exceptional coordination with all parties involved and can be used as a model for other project who wish to be shovel ready in a short period of time. Key Project dates are summarised in Table 2.

*Table 2 Key Project Dates and Timing*

<b>PROJECT MILESTONE</b>	<b>DATE</b>
Project Award	22 December 2020
Commence Construction	21 January 2021
Design Issued for Construction	29 September 2021
Road Open to Public	August 2022

## 3 Governance

### 3.1 Approach to Sustainability

Highway Construction's Corporate Sustainability and Procurement Policy (Appendix 1) was adopted on the Project. This policy commits the organisation to promote sustainability initiatives across all aspects of the business and on projects, including those tasks undertaken by sub-contractors and consultants. The Project team aims to integrate sustainability into all decision making throughout the design and construction of the Project to achieve the targeted sustainability outcomes.

The Project's Sustainability Management Plan (SMP) was developed and implemented to guide sustainable practice throughout construction and attempt to achieve the mandated self-assessed Infrastructure Sustainability (IS) Rating contract score of  $\geq 40$ . The SMP identifies the project-specific resources, procedures and practices to be implemented to ensure that sustainable outcomes are achieved.

### 3.2 Material Sustainability Issues

A materiality assessment was undertaken and attended by key personnel from Highway Construction, the Design Team (GHD) and Main Roads, to identify the most important topics and issues for the Project. The most material sustainability topics and subsequent IS credits for identified were:

- **Water** - Water Use (Wat-1) and Appropriate Use of Water Sources (Wat-2)
- **Resource Efficiency** - Material Lifecycle Impact Measure and Management (Rso-6)
- **Stakeholder Engagement** - Stakeholder Engagement Strategy Development (Sta-1) and Stakeholder Engagement Strategy Implementation (Sta-2)

### 3.3 Climate Change Assessments

To identify and treat risks associated with climate change, the Project incorporated climate change projections and the associated impacts within the Project Risk Assessment. The Project engaged a Suitably Qualified Professional (SQP) to assist with a review of climate and natural hazard risks, drawing on current climate change projections, considering both direct and indirect risks to the asset. The Project has consulted heavily with the Department of Fire and Emergency Services (DFES), to ensure that the construction has mitigated risk to climate threats (mainly bushfires in the Goldfields region).

## 4 Economic

### 4.1 Key Economic Context

The Project is in the Goldfields-Esperance region of south-eastern Western Australia. The mining industry sector provides the greatest contribution to the economic output of the region and is the largest employer. Gold mining-related tourism is also a strong contributor to the region's economy. Over 290,000 vehicles use the Coolgardie-Esperance Highway at Widgiemooltha every year. Around two million tonnes of goods and materials are carted through the region each year, with 34% of all traffic being heavy vehicles.

The upgrades undertaken by the Project will support the productivity of regional industries on this major freight route, and significantly improve safety for locals, tourists, and freight operators alike. During construction, the Project created jobs and training opportunities for the local community, with a commitment to prioritise procurement of local products and services. A summary of key economic aspects is in Table 3.

Table 3 Summary of Economic Aspects

ECONOMIC ASPECT	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Funding Received	\$	0	\$60 M
Indigenous Enterprises	\$	\$1.28M	\$1.64M
Disability Enterprises	#	0	0
People Employed by Supply Chain	#	-	-
Suppliers Engaged	#	111	111
Buy Local Spend	\$	\$13.97 M	\$18.17 M

Note: The number of People Employed by Supply Chain were unable to be substantiated following project completion.

### 4.2 Key Economic Outcomes

Key economic outcomes of the Project include:

- Improved safety for all road users and freight efficiency and reliability.
- Over \$18 million spent with local businesses.
- Local job creation and investment in local contractors and businesses.

### 4.3 Sustainable Procurement and Buy Local

Highway Construction's Corporate Sustainability and Procurement Policy commits the organisation to promote sustainability initiatives across all aspects of the business and on projects, including those tasks undertaken by sub-contractors and consultants.

The buy local target for this Project was \$10 million, which was exceeded. Not only that, as this is the second project Highway Construction has completed in the Goldfields Esperance Region, many suppliers had the opportunity to secure more work in the road construction field, providing continuity of work. The following local suppliers secured more than \$500,000 worth of supply and subcontract packages:

- Advanced Traffic Management (Traffic Management)
- Tulli Resources (Plant and Labour Hire)
- Compass Group (Accommodation)
- Sidetippers Australia (Haulage)
- Bellini (Haulage)

## 5 Environmental

The Project specific Environmental Management Plan (EMP) identifies the key environmental issues associated with the works and details the approach to managing environmental risks during construction. Implementation of the EMP ensures the Project minimised the impacts on the surrounding environment by:

- protecting native flora and fauna ecosystems, and control the import of weed species
- identifying Aboriginal heritage sites and detailing controls in place to minimise disturbance
- ensuring dust controls were implemented
- minimising the generation of waste and
- complying with all relevant environmental legislation.

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

*Table 4 Summary of Environmental Aspects*

ENVIRONMENTAL ASPECTS	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Native Vegetation Cleared	ha	0.31	63.41
Native Vegetation Retained (due to design)	ha	-	-
Revegetation/rehabilitation Undertaken	ha	40.29	40.29
Number of Trees Cleared	#	-	-
Number of Trees Retained (due to design)	#	-	-
Total Water Consumption	kL	99353	115076
Total Non-Potable Water Consumption	kL	47926	67056
Total Potable Water Consumption	kL	41096	48020
Non-Potable Water Replacement	%	53.8	58.3
Total Green House Gas emissions <sup>^</sup>	t CO <sub>2</sub> e	2952	2993
Total Energy Consumption	GJ	-	-
Renewable Energy Mix	%	0	0

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

Note: The number of Native Vegetation Retained (due to design), Number of Trees Cleared, Number of Trees Retained (due to design), Total Energy Consumption were unable to be substantiated following practical completion.

A summary of resource inputs and wastes for the Project are detailed in Table 5.



Table 5 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	263206	272681
Total Quantity of Recycled Materials Used	t	0	0
Total Quantity of Reused Materials Used Onsite	t	209503	354813
Percentage of Recycled Material Used	%	0	0
<b>Resource Outputs (Wastes)</b>			
Waste Sent to Landfill	t	1394.5	1429.5
Waste Diverted from Landfill	t	0	0
Total Waste Generated by Project	t	1394.5	1429.5
Waste Diversion Rate	%	0	0

## 5.1 Environmental Context

The Project area in the north is dominated by Eucalypt woodland associations occurring on gently undulating plains and low stony hills and ridges. The Project area in the south is characterised by Eucalypt woodland vegetation with mixed shrub understoreys and mixed shrubland vegetation. There are several records of priority flora species in the region, however none are located within the Projects construction boundary. No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) were recorded in the Project area.

No conservation significant fauna has been recorded in surveys of the Project area. Following the environmental impact assessment, the proposed clearing required for the Project was not considered significant, as the clearing was adjacent to existing breaks in habitat connectivity. It was also concluded that all fauna habitats recorded in the Project area were locally common and likely to be found in better condition in locations away from the Project area.

There are no wetlands within the Project area. The Project area is in the Goldfields Groundwater Proclamation Area and a licence was required to take groundwater. Groundwater salinity in the region is generally in the range of 50,000 to greater than 300,000 mg/L Total Dissolved Solids (TDS).

The Primary Environmental Approvals for the Project are:

- Main Roads State-wide Purpose Clearing Permit CPS 818 will be used to undertake native vegetation clearing for the project.
- Highway Construction 5C licence to take groundwater (Application for a licence under Section 5C of the *Rights in Water and Irrigation Act 1914*).

## 5.2 Environmental Management

The Project EMP together with Construction Pit Management Plan were implemented throughout the Project. The Environmental Aspects and Impacts Register within the Project EMP was used to manage the environmental risks and relevant controls.

## 5.3 Water Management

Scarcity of fresh water in the region is an issue. Water use was clearly identified as the most important material sustainability issue for the Project, with effective and careful management of water of high importance to stakeholders. A summary of water use on the Project is in Table 6.

Table 6 Water Parameters

WATER PARAMETER	TOTAL THIS PERIOD		TOTAL FOR PROJECT	
	kL	%	kL	%
<b>Potable Water</b>				
Standpipe / Scheme Water Purchased	41,096	46.2	48,020	41.7
<b>Non-Potable Water</b>				
Bore Water	47,926	53.8	67,056	58.3
Surface Water	0	0	0	0
Recycled / Wastewater	0	0	0	0
<b>Total Water Used</b>	<b>89,022</b>	<b>100.0</b>	<b>115,076</b>	<b>100.0</b>

Overall, two strategies were used to manage the water usage: avoiding unnecessary water usage and encouraging the effective substitution.

### 5.3.1 Avoiding Unnecessary Water Usage

Evaporation on Spargoville Dam and water wastage during pavement construction was identified as a concern during construction. The Project conducted an experiment on the efficacy of the 'Waterguard' product on minimising water loss due to evaporation at the Spargoville Dam. Refer to [Section 5.11 Environmental Case Study](#) for further details.

It is common practice to use watercarts to spray water on the pavement material then mix with grader, which can waste the water by over spraying and lead to excess evaporation. The Project used stabilisers, mixing water with pavement material inside the machine, to avoiding unnecessary water usage.

### 5.3.2 Encouraging the Effective Substitution

One of the major water usages is on dust suppression by spraying water on dry dusty area. This activity is generally required daily during construction. The Project used dust suppressant products on the unsealed haulage roads to achieve the same outcome, only requiring a fortnightly respray.

## 5.4 Vegetation

### 5.4.1 Clearing

The total clearing allowance for the Project was 100 ha under Main Roads State-wide Purpose Clearing Permit CPS 818/15. All clearing undertaken was of native vegetation. In total 50.41 ha was cleared from the road reserve for the Project, associated side-tracks, and for two borrow pits including their sub pits.

### 5.4.2 Revegetation/Rehabilitation

Of the cleared areas, a total of 40.29 ha (79.9%) was rehabilitated, with the remaining of the cleared area forming part of the completed construction. No additional planting is currently planned. The area will be monitored annually for five years during the defects period. If the monitoring outcomes demonstrates that the planting and subsequent regrowth does not match the completion criteria, then additional planting must be undertaken. Figure 3 shows the Spargoville Borrow Pit Rehabilitation. Thirty rehabilitation monitoring points were set up along the main alignment and borrow pits. The monitoring program is carried out annually before the end of each summer during the defects correction period. Photographs of the monitoring points show on Figure 4.





Figure 3 Spargoville Borrow Pit Rehabilitation

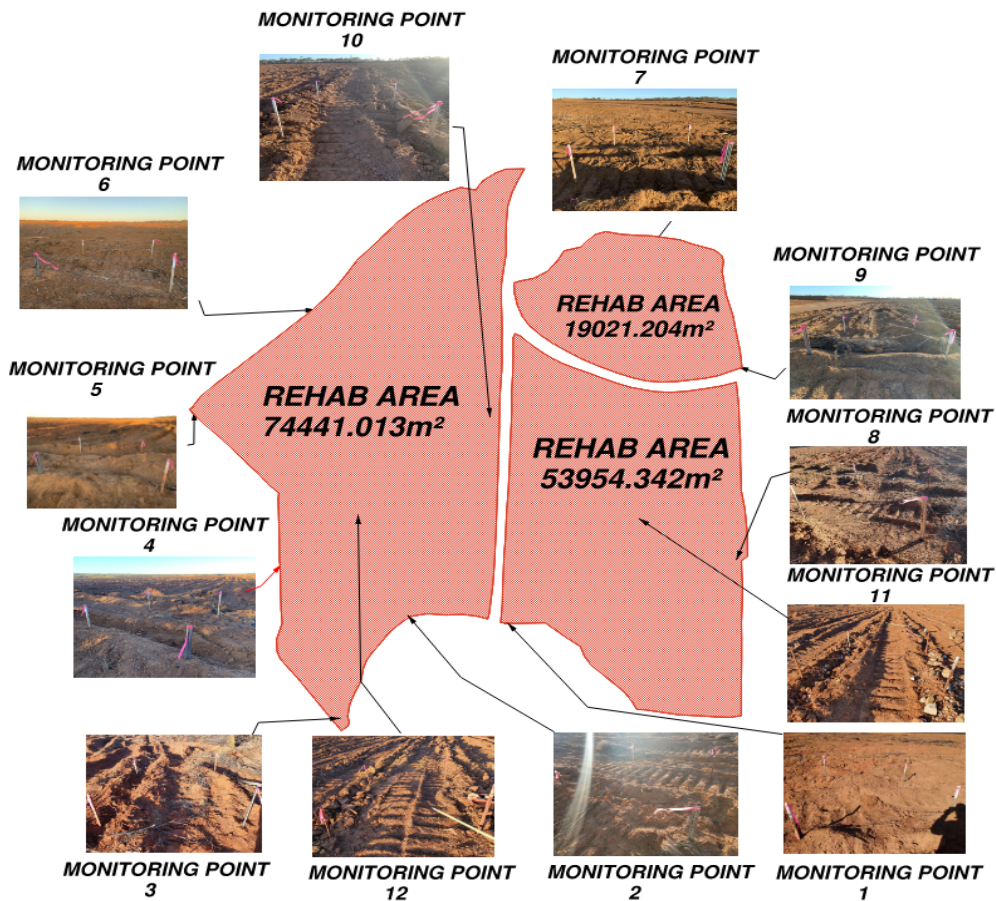


Figure 4 Rehabilitation Monitoring Point Locations and Reference Photographs

### 5.4.3 Dieback

In Western Australia, areas considered to be at risk of Phytophthora Dieback receive an annual rainfall in excess of 300 mm. The Project is not within this rainfall zone, therefore, is not considered to be susceptible to Dieback infestation.

## 5.5 Carbon Emissions and Energy

Most the Project's construction related carbon emissions will occur from diesel fuel use associated with operating plant machinery, site vehicles and diesel generators. Fuel use is itemised in Table 7. Due to the location and nature of the Project, options for renewable energy sources, alternative methodologies, and operational energy reduction opportunities were limited. In addition, timing constraints and mobilisation requirements limited feasibility to implement these opportunities.

Table 7 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)	0	0	0	0	0	0
Diesel Used (on and off road)	1,093,604	3,280,812	100	1,650,604	4,951,812	100
Liquefied Petroleum Gas (LPG)	0	0	0	0	0	0
Biodiesel	0	0	0	0	0	0
Hydrogen	0	0	0	0	0	0
Oil	0	0	0	0	0	0
Other	0	0	0	0	0	0
Purchased Electricity from Grid	-	0	0	-	0	0
Green Power Mix	-	-	0	-	-	0
Generated from Renewable Energy Onsite and Used Onsite	-	0	0	-	0	0
<b>Total Energy Used</b>	-	3,280,812	<b>100.0</b>	-	4,951,812	<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

Site office waste is the major waste stream being removed from site. The Project explored options to recycle, however due to the remote location no waste provider was identified to offer this service. As a compromise, the site offices collected paper for recycling and will transported the bins to recycling facilities themselves.

Waste from construction of the new road alignment was minimal, as the design balances cut to fill as much as possible, with oversize material incorporated into landscape design of the alignment, eliminating the need to cart material.

The Infrastructure Sustainability credit Rso-6 Material Life Cycle Impact Measurement and Reduction was identified as having high materiality for the Project.

The imported materials and waste metrics for the Project are detailed in Table 8, Table 9 and Table 10.

Table 8 Imported Raw/Traditional Materials for the Project

IMPORTED RAW/TRADITIONAL MATERIALS			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Aggregate	t	28,735	30,061
Aluminium	t	0	0
Asphalt	t	701	701
Ballast	t	0	0
Bedding Aggregate	t	0	0
Bitumen	t	553.35	692.54
Bitumen Cutter (MCC)	t	38.7	56.9
Bitumen Cutter (SCC)	t	0	0
Cement	t	0	0
Cement Additives	t	0	0
Cement Stabilised Backfill	t	3,974	4,726
Clay	t	0	0
Concrete	t	0	0
Crushed Dust (including Cracker Dust)	t	668.5	773
Crushed Limestone	t	0	0
Crushed Rock	t	0	0
Crushed Rock Base	t	0	0
Emulsion Based Prime (e.g. Ecoprime)	t	0	0
Ferricrete	t	0	0
Geofabric Polymers	t	0	0
Glass (including Glass Beads)	t	0	0
Gravel	t	0	0
Laterite	t	0	0
Lime	t	0	0
Lime Additives	t	0	0
Mechanically Stabilised Earth Backfill	t	0	0
Mulch	t	0	0
Paint (Waterborne, Thermoplastic, Cold Applied Plastics)	l	0	0
Perspex	t	0	0
Plastic	t	0	0
Precast Concrete	t	1,533	1,777
Sand	t	0	0
Steel	t	95.9	114
Synthetic Binders	t	0	0
Topsoil	t	0	0
Other	t	0	0



Table 9 Imported Recycled Materials for the Project

IMPORTED RECYCLED MATERIALS			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Crumb Rubber	t	0	0
Crushed Recycled Concrete	t	0	0
Crushed Recycled Glass	t	0	0
Eco-blocks	t	0	0
Geopolymer Concrete	t	0	0
Low Carbon Concrete	t	0	0
Mulch and Soil Conditioner (not including FOGO)	t	0	0
Mulch (FOGO)	t	0	0
Soil Conditioner (FOGO)	t	0	0
Reclaimed Asphalt Pavement	t	0	0
Recycled Aggregate	t	0	0
Recycled Aluminium	t	0	0
Recycled Clay	t	0	0
Recycled Granular Material	t	0	0
Recycled HDPE Plastic Pipes	t	0	0
Recycled Mineral Sand	t	0	0
Recycled Sand	t	0	0
Supplementary Cementitious Materials – slag	t	0	0
Supplementary Cementitious – fly ash	t	0	0
Supplementary Cementitious – silica fume	t	0	0
Supplementary Cementitious – other	t	0	0
Topsoil	t	0	0
Warm Mix Asphalt	t	0	0
Other	t	0	0

Note: The quantities of Concrete and Gravel are unable to be substantiated following project completion.

Table 10 Materials Reused on the Project

MATERIALS REUSED WITHIN THE PROJECT SITE			
MATERIAL	UNIT	TOTAL THIS PERIOD	TOTAL FOR PROJECT
Aggregate	t	0	0
Asphalt (RAP)	t	0	0
Clay	t	0	0
General Fill	t	209,503	354,813
Granular Material	t	0	0
Limestone	t	0	0
Mulch	t	0	0
Overburden	t	0	0
Road Base	t	0	0
Sand	t	0	0
Spoil	t	0	0
Topsoil	t	0	0
Other	t	0	0

## 5.7 Noise and Vibration

Due to the remote and rural location, a limited amount number of sensitive receptors were identified within the Project boundaries, therefore, noise and vibration has a low materiality. An adjacent gas pipeline was identified as sensitive receptor during construction activities. As such a Drill and Blast Management Plan was developed and implemented to manage the noise and vibration during construction, to mitigate any risk.

The completion of this Project has increased the quality of the road, and as a result there is less noise emitted by vehicles. As many vertical curves have been softened, trucks can continue travelling with less gear changes and braking, which would in turn reduce the noise impact throughout the life of the road.

## 5.8 Light Spill

Two solar-powered lights have been installed at the intersection with Coolgardie-Esperance Highway and Kingswood North Road to highlight the Widgiemooltha Roadhouse. These lights have been designed to provide soft ambient light in accordance with the Scope and Technical Works. Lighting at this location also benefits the local businesses at the corner of Coolgardie-Esperance Highway and Kingswood North Road.

## 5.9 Contamination

Contaminated redundant water pipes were located throughout the Project within the batter. The contaminated pipes are prevalent, present along most of Coolgardie-Esperance Highway, not only within the Project boundaries. These abandoned pipes remain onsite close to the area of excavation as specialist removal is required due to the presence of Polycyclic aromatic hydrocarbons. This material is a class IV contaminated waste in accordance with the Contaminated Sites/Materials ACT 2003. The waste management and disposal is being managed by Main Roads.

## 5.10 Acid Sulfate Soils (ASS)

The Goldfields region is not within an area of ASS risk and therefore, there was a very low risk of ASS occurring within the Project area. The potential for changes to salinity levels is low given that the groundwater is already saline. No excavation will occur below the water table, therefore it is unlikely that acid sulfate soils would be a risk factor. During construction, ASS was not encountered, therefore this has low materiality to this Project.

## 5.11 Environmental Case Study

The Project secured an annual 45,000 kL water entitlement from Ramelius bore which was used in earthwork construction and dust suppression. This water was hypersaline, typical of bore water encountered in the Goldfields region. However, water with a salt content of less than 3000 part per million (ppm) was still required for pavement construction.

Spargoville Dam (Figure 5) was also identified as a water source. It is estimated that each year the Spargoville Dam loses approximately 24,000 kL of water from evaporation. Recognising the scarcity of fresh water in the region, the Project team implemented the use of WaterGuard to suppress water evaporation. WaterGuard - WaterGuard is a liquid substance which spreads over the surface of water to form a very thin film. WaterGuard is used in food and pharmaceutical applications. An evaporation experiment was developed to monitor the effect of WaterGuard over 2.5 months (29/09/2021 to 15/12/2021). Two metal spill trays with rain gauge were used during the experiment. The trays were filled with water, one added WaterGuard, and located next to the dam. The experiment indicates 13,056 KL (36%) water was saved from evaporation using Waterguard.



Figure 5 Spargoville Dam

## 6 Social

This Project is in a rural area, the project boundaries do not encompass large population areas. The people who are residing in the Widgiemooltha townsite are affected by the works. As it is a small and close-knit community, the locals became known to the onsite management team and were overall satisfied with the approach to the construction. A summary of key social aspects and performance for the Project are detailed in Table 12.

Table 12 Summary of Social Aspects

SOCIAL ASPECT	UNIT	TOTAL FOR THIS PERIOD	TOTAL FOR THE PROJECT
Stakeholders engaged	#	-	-
Stakeholder enquiries received	#	-	-
Heritage sites in project vicinity*	#	1	1
Length of Principal Shared Path (Addition/Refurbished)	km	0	0
Women in Workforce	%	-	-
Indigenous People in Workforce	%	14.8	16.4
Lost Time Injury Frequency Rate (LTIFR)	#	0	0
Hours of Training Undertaken	hrs	-	-
Development Employees and Apprentices on the Project	#	2	2

Note: The number of Stakeholders engaged, Stakeholder enquiries received, Women in Workforce and Hours of Training Undertaken are unable to be substantiated following project completion.

### 6.1 Social Context

The Project is within the Shire of Coolgardie, approximately 550 km east of Perth. It encompasses an area of 30,400 km<sup>2</sup> and includes the towns of Coolgardie, Kambalda East, Kambalda West, Widgiemooltha and the Aboriginal community of Kurrawang, with the region classified as 'very remote'. The 2021 Census identified Shire of Coolgardie's population around 3,638 people, with a median age of 38 years. The 30 km long alignment interfaces with one business owner. A list of key Stakeholders to the Project is included at Appendix 2.

### 6.2 Community and Stakeholder Engagement

Management of community and stakeholder engagement during construction of the Project is detailed in the Community and Stakeholder Engagement Plan (CSEP). The overarching aim of the CSEP is to provide factual, accurate and regular information to the local communities to help improve their understanding of the Project and thereby increase community tolerance of construction activities.

The Main Roads Project webpage detailed key project objectives, milestones and progress was regularly updated to keep Stakeholders informed throughout the Projects duration. In addition, roadwork updates and project newsletters were issued to stakeholders.

### 6.3 Community Satisfaction and Amenity

A nearby community that was affected by the Project works, the management team kept in close contact with those who had ongoing interest in the phases of construction and the ultimate final design. The Widgiemooltha Roadhouse was provided frequent updates to the scope and completion timing of the intersection works on Kingswood North Road. Two Variable Message Sign boards were provided at either end of the intersection to inform the travelling public that the

Roadhouse was open for business as the construction works created a changing staged approach to the construction. An additional person was located at the intersection during the works, speaking to trucks on channel 40 and directing the public on where to access the Roadhouse and park safely.

## 6.4 Heritage

Prior to commencing construction various heritage investigations were completed along the 30 km alignment, via field surveys and desktop analysis. An Aboriginal heritage risk assessment was also undertaken. Investigations have identified one registered heritage site (Site 497 – Malbari Nidjuru – a ceremonial / mythological site) located near to the Project works. The Project does not intersect with the registered site. No other known Aboriginal or European heritage sites are impacted by the Project.

Measures to manage impacts to Aboriginal and European Heritage, including the discovery of an unknown site during works, were detailed in the Project's EMP. While the Project works do not intersect with the known registered site, Highway Construction erected a temporary barrier to isolate the area of significance from construction activities.

## 6.5 Road Safety

Crash history was obtained from Main Roads Crash Analysis Reporting System (CARS) for the time period between January 2017 and December 2021. There were nine reported crashes; one of which resulted in a fatality, and two serious injury crashes. The remaining six crashes were property damage only. Of the nine crashes, six were loss of control, two hit objects with one head on. Three crashes occurred at night and one in the wet with two unknown and six in the dry.

In accordance with the Road Safety Management at Main Roads (ROSMA) Policy, during the Project conceptual design the scope underwent a Road Trauma assessment. It assessed three different treatment options, the first being 'do nothing', the second was a basic overlay and widening and finally option three was reconstruction and realignment of the Highway. During the evaluation, option three was the recommended treatment. The Project was designed and constructed in line with these requirements, and overall, the crash risk has been reduced.

## 6.6 Diversity

The Project is committed to building a diverse and inclusive workforce. The Project had a local Aboriginal employment target of at least 15% of the total work hours and a minimum 3% of the contract sum through local Aboriginal businesses via works or services procured for the Project. An Aboriginal Participation Plan (APP) was developed for the Project which details how Aboriginal people and Aboriginal businesses were promoted and engaged to achieve 14.4% total local Aboriginal working hours (greater than 15% for Aboriginal working hours i.e. local and non local Aboriginal worked hours) and 3.48% local Aboriginal business spend.

The Project aimed to facilitate inclusive activities celebrating diversity. Figure 6 shows the site barbeque during NAIDOC Week.





Figure 6 NAIDOC Week Barbeque

## 6.7 Traffic Management & Community Safety

Coolgardie-Esperance Highway is a rural road, connecting the west and the east of Australia. This is an important route to service the transportation of goods between states. The Annual Average Daily Traffic (AADT) is 310 vehicles a day (2020/21) with a northbound flow of 160 vehicles a day and the southbound 150 vehicles a day. Typical heavy vehicles (Austroads Class 3 and above) are approximately 68% of this figure. The volumes have been on a steady decline since a peak in 2016/17 where AADT was roughly 430 vehicles a day with an even 50/50 directional split.

The Project implemented strategies where traffic controllers and supervisors would check timing of lane closures and reduce the length of the closure if there were ongoing delays. Traffic Signals in lieu of Stop Bats were implemented on this Project prior to the formalised requirement by Main Roads, this was a safer option than having controllers on the road sides.

## 6.8 Workforce Safety

Workforce safety was managed through the project specific Occupational Health and Safety management plan. Ultimately the target for safety was zero Lost Time Injuries and major incidents, with the overall objective of delivering a project on time, that minimises risk exposure and safety hazards to all employees and the public. The measures including but not limited to excavation permit, emergency drills, safety toolbox meeting and electrical tagging register to control the risks identified in the project risk register. During the COVID-19 outbreak, the also developed and implemented the COVID-Safety plan.

## 6.9 Legacy Commitments

A partnership was developed with the Shire of Coolgardie, including:

- Provision of approximately 5,800 tonnes of gravel to the Shire of Coolgardie for the upgrade to Cave Hill Road.
- Upgrades to Cave Hill Road performed by Highway Construction during the haulage campaign from the gravel pit, improving the overall quality of the road to the borrow pit, this road is used frequently by exploration vehicles.
- Filling in and closure of the Widgiemooltha tip, including closing the road into the tip location, this is due to the ongoing illegal dumping in the area, now that it is inaccessible the dumping has stopped.

These works have been required by the township for some time, during the construction Highway Construction was able to negotiate a mutually beneficially arrangement so the aforementioned works could proceed.

## 7 Glossary

A glossary of terms used throughout this document is detailed in Table 11.

Table 11 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>National Greenhouse Accounts Factors</b>	The National Greenhouse Accounts (NGA) Factors has been prepared by the Department of Industry, Science, Energy and Resources and is designed for use by companies and individuals to estimate greenhouse gas emissions. The NGA Factors is not published for the purposes of reporting under the <i>National Greenhouse and Energy Reporting Act 2007</i> (the NGER Act). While drawing on the National Greenhouse and Energy Reporting (Measurement) Determination 2008, the methods described in the NGA Factors have a general application to the estimation of a broader range of greenhouse emissions inventories.	<a href="#">Australian National Greenhouse Account Factors</a>  <i>Ensure the most recent year copy is referred to.</i>
<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.	

## 8 Appendices

Appendix	Title
<b>Appendix 1</b>	Project Sustainability Policy
<b>Appendix 2</b>	List of Project Stakeholders

<b>Sustainability &amp; Procurement Policy</b>	Doc No:	C-IMS-002-PO
	Version:	1.10
	Process Owner	HSEQ Manager
	Date:	14-10-2021

Highway Construction Pty Ltd accepts and follows the definition of sustainability that states: sustainability is development that meets environmental, social and economic needs of the present without compromising the ability of future generations to meet their own needs. Furthermore, Highway Construction Pty Ltd is committed to supporting environmental, social and economic improvement in the communities in which it operates and follow sustainable procurement principals to achieve a desired outcomes.

Highway Construction makes the following commitments to achieve policy requirements:

- We are accountable for the sustainability legacy that we leave.
- We recognise that this represents a commitment to look beyond mitigating environmental and social impacts, and take restorative actions where possible.
- We aim to promote sustainability initiatives across all aspects of the business and on projects, including those tasks undertaken by sub-contractors and consultants.
- We aim to become a role model in the road construction industry with our approach to and management of sustainability.
- We have developed and implemented a company-based education and training program that advances sustainability principles.
- We will continue to implement our company-based education and training program to foster diversity and social inclusion.
- We will encourage innovative thinking to promote solutions and practices that achieve environmentally, socially and economically sustainable outcomes.
- We will set realistic and meaningful Key Performance Indicators and continually monitor our corporate and project targets.
- We will endeavour to follow sustainable procurement principles and make significant and continual improvement in the sustainability of their purchase decisions.
- We will acquire necessary goods and services that have least impact on the environment and human health within our capacity to do so.
- We will engage and consult with suppliers and stakeholders to promote and improve sustainable purchases and practices.
- We will monitor and report progress towards sustainable procurement.
- We will acknowledge and apply this Policy with our suppliers and partners.
- We will facilitate education and feedback opportunities to support sustainable procurement and the implementation of this Policy.



<b>Sustainability &amp; Procurement Policy</b>	Doc No:	C-IMS-002-PO
	Version:	1.10
	Process Owner	HSEQ Manager
	Date:	14-10-2021

By honouring these commitments, we seek to minimise any negative environmental, social and economic, project impacts, enhance business opportunities and personnel work skills and increase our awareness of sustainability issues.



DJ Capelli

Managing Director

HIGHWAY CONSTRUCTION PTY LTD

<b>Sustainability &amp; Procurement Policy</b>	Doc No:	<b>C-IMS-002-PO</b>
	Version:	<b>1.10</b>
	Process Owner	<b>HSEQ Manager</b>
	Date:	<b>14-10-2021</b>

<b>Version Control</b>	<b>Details</b>	<b>Approved By</b>	<b>Approval Date</b>
0.9	Preliminary/Draft Submission		
1.0	Reviewed by Executive Management	D. Capelli	30/08/2011
1.1	Reviewed at Management Review Meeting	D. Capelli	13/09/2012
1.2	Reviewed at Management Review Meeting	D. Capelli	13/09/2013
1.3	Revised format and reviewed at Management Review Meeting	D. Capelli	03/10/2014
1.4	Reformatting and Reviewed at Management Review Meeting	D. Capelli	24/09/2015
1.5	Reviewed at Management Review Meeting	D. Capelli	22/09/2016
1.6	Reviewed for Management Review Meeting	D. Capelli	25/09/2017
1.7	Reviewed at Management Review Meeting	D. Capelli	02.10/2018
1.8	Reviewed at Management Review Meeting	D. Capelli	25/10/2019
1.9	Revised to include procurement component to align with ISCA requirements.	D. Capelli	13/07/2020
1.10	Reviewed at Management Review Meeting	D. Capelli	14/10/2021

## Appendix 2 – List of Project Stakeholders

STAKEHOLDER GROUP	SPECIFIC STAKEHOLDERS	ENGAGEMENT TYPE
	Internal	
<b>Contractor</b>	Highway Construction	Responsible (Construct)
<b>Designer</b>	GHD	Responsible (Design)
<b>Client</b>	Main Roads – Office of Major Transport Infrastructure Delivery	Responsible (Design, Construct)
<b>Operator</b>	Main Roads – Goldfields Esperance Region	Responsible (Construct, Operation)
	Main Roads – Heavy Vehicle Services	Collaborate (Design)
	External	
<b>Government – Local</b>	Shire of Coolgardie	Involve
<b>Aboriginal Groups</b>	Traditional Owners	Collaborate
<b>Community</b>	Road Users	Inform
	Widgiemooltha local residents	Consult
<b>Emergency Services</b>	Emergency Services	Inform
<b>Utility Services</b>	Utility Providers – Telstra, Water Corporation, ATCO Gas	Inform
	ARC Infrastructure	Collaborate
<b>Business</b>	Karora Resources	Collaborate
	Widgiemooltha Roadhouse	Collaborate