Metropolitan Road Improvement Alliance
Annual Sustainability Report
2017-18
About this Report

This report has been prepared by the Metropolitan Road Improvement Alliance project team on behalf of Main Roads Western Australia. This report forms part of Main Roads’ annual sustainability reporting which is integrated into its Annual Report. The report content is prepared in accordance with GRI principals. Main Roads processes determine which aspects are Material and to be reported on by the project.

The project has formally adopted the Infrastructure Sustainability Council of Australia’s (ISCA) Infrastructure Sustainability framework.

As part of the planning for the project works numerous environmental approvals were required to be obtained. Some information relating to these permits is summarised in this report.

Highlights

Some of the key highlights to date include:

- Three projects being delivered by the one team
- 520 fauna individuals trapped and relocated
- 54 Bandicoots trapped and relocated across the sites
- Three Indigenous enterprises contracted
- One community and stakeholder perception survey undertaken
- Ongoing consultation through a range of mechanisms with impacted stakeholders
- Changes to project scope based on community stakeholder and consultation
- 93% local content procured
- 634 people inducted
- 18 Indigenous employees participating in workforce
- 44 tonnes of comingled waste recycled

Overview

The Metropolitan Road Improvement Alliance (MRIA) was formed to deliver the design and construction of three scopes of work in the Perth Metropolitan area. The contract was awarded in May 2017 with construction across all sites expected to be completed by late 2019. The project is being delivered by the alliance formed between Main Roads Western Australia (Main Roads), CPB Contractors, Georgiou Group, WA Limestone, GHD, AECOM and BG&E.

The three packages of work have undergone various design changes and significant scope changes since conception. Despite this, the works have generally been maintained within the original development envelopes which has meant that the changes haven’t created significant challenges for environmental objectives. Some sustainability objectives that have been identified for the project as a whole are outlined below:

- Promote a culture of shared responsibility for outcomes and improve the knowledge, awareness and skills of project team members in relation to sustainability;
- Reduce our impact on the natural environment by focusing on emissions, pollution, waste, land use and resources;
• Encourage initiatives and innovation that provide value for money and leave positive legacies for the road network users, stakeholders and communities;
• Engage with the communities in which we operate to deliver long lasting benefits to local stakeholders.

Various targets have been identified and linked to different sustainability aspects such as energy, water and waste, sustainable design and inclusion and many of these are based on contractual content. The three separate scopes of work are outlined below.

**Wanneroo Road Widening, Joondalup Drive to Flynn Drive**

Rapid population growth in Perth’s north western corridor has generated significant traffic demand on Wanneroo Road that serves as an alternative route to Mitchell Freeway.

The scope of the project will see a 3.2km section of the existing Wanneroo Road between Joondalup Drive and Flynn Drive upgraded to a dual carriageway, better servicing the residential and industrial areas of the north-west corridor. This upgrade will increase capacity to address existing delays, cater for future traffic demand and provide safer opportunities for overtaking along this stretch of road.

Two intersections will be upgraded with new shared paths and footpaths. The project budget approximately $31m.

Further information can be found at the following link: https://project.mainroads.wa.gov.au/home/northmetropolitan/wanneroowidening/Pages/default.aspx

**Armadale Road Upgrade, Tapper Road to Anstey Road**

The 6.9km section of Armadale Road between Tapper Road and Anstey Road is being upgraded to a dual carriageway including intersection upgrades and a grade separated interchange at Nicholson Road. The project value is $145m.

The current single carriageway road experiences high volumes of traffic and associated congestion as well as safety issues attributed to the increasing residential and industrial development in the area. The project will increase traffic volume capacity thereby reducing impacts such as congestion for local residents and regular users of the road.
Further information can be found at the following link:
https://project.mainroads.wa.gov.au/home/southmetropolitan/armadalerdupgrade/Pages/default.aspx

**Murdoch Drive Connection**

The $100 million Murdoch Drive Connection will reduce congestion, improve travel times and provide a southern connection to Fiona Stanley Hospital. The project will also support the growth of the Murdoch Activity Centre, which will serve as a major employment and research centre now and into the future.

The scope comprises the upgrade of the Kwinana Freeway and Roe Highway interchange and an extension to Murdoch Drive at Farrington Road. This will include bridges over Kwinana Freeway and Farrington Road, an underpass for cyclists and pedestrians, connection to local roads and the provision of noise walls across the site.

Further information can be found at the following link:
https://project.mainroads.wa.gov.au/home/southmetropolitan/murdochdrive/Pages/default.aspx
The main identified stakeholders to the Project (all three scopes) include Federal and State Governments, Local Government Authorities, environmental regulators and advocacy groups, local residents and business, Aboriginal custodians, road users (including pedestrians and commuter / recreational cyclists), public transport operators and patrons and the freight industry.

Overall approach to Sustainability
The approach to sustainability at MRIA is based on both the Main Roads’ and CPB Contractor’s Sustainability policies (CPB Contractors is the largest non-owner alliance partner), thereby addressing both construction and operational sustainability outcomes.

The project is using the Infrastructure Sustainability Council of Australia’s (ISCA) Infrastructure Sustainability (IS) rating tool to guide its processes and outcomes, and is registered to be formally verified. The project is aiming to achieve an ‘Excellent’ rating. Current tracking of the rating suggests that this will be achievable with continued support for driving sustainability initiatives.

The Environment Manager is responsible for the sustainability outcomes of the project and this is predominantly managed by the Environment and Sustainability Coordinator. The Environment and Sustainability Coordinator oversees the general processes relating to day-to-day sustainability initiatives.
Environmental Aspects Performance

At a glance

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual clearing to date (ha)</td>
<td>10.3</td>
<td>29.4</td>
</tr>
<tr>
<td>Rehabilitation/revegetation planned (ha)</td>
<td>-</td>
<td>42.1</td>
</tr>
<tr>
<td>Actual rehabilitation/revegetation to date (ha)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Water Consumption to date (kL)</td>
<td>102,418</td>
<td>103,795</td>
</tr>
<tr>
<td>Total GHG emissions (scope 1 &amp; 2) to date (t CO₂.e) (excluding clearing)</td>
<td>1,372</td>
<td>1,410</td>
</tr>
<tr>
<td>Total energy consumption to date (MJ)</td>
<td>18,759,009</td>
<td>19,246,541</td>
</tr>
<tr>
<td>Total quantity of recycled content used in project (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total imported materials used in project (t)</td>
<td>139,014</td>
<td>140,144</td>
</tr>
<tr>
<td>Total waste generated by project (t)</td>
<td>57.10</td>
<td>57.10</td>
</tr>
</tbody>
</table>

Environmental context

Figure 4 Hemiergis quadrilineata
This site has two distinguishable vegetation areas either side of the existing road, with native Tuart woodland and other degraded native vegetation in the north, and planted and degraded (mostly non-indigenous weeds) in the south. The Tuart woodland provides the predominant fauna habitat at the site, with the most significant species being the Carnaby’s Black Cockatoo. This cockatoo is classified as ‘Endangered’ under the EPBC Act and ‘Threatened’ under the WC Act. Other listed species which may be present within the site is the Quenda and Carpet Python.

There is little surface or ground water, at this site, with the nearest mapped wetland being Lake Joondalup.

Wanneroo Road Widening is subject to the conditions from the Minister for the Environment as detailed MS 629, which is part of the overall Metropolitan Region Scheme Amendment No. 992/33 Clarkson – Butler.

Upon referral to the Department of the Environment and Energy (DotEE), these works were considered not to be a controlled action with no conditions (EPBC 2015/7632).

**Armadale Road Upgrade, Tapper Road to Anstey Road**

These works will see some clearing of native vegetation either side of the existing Armadale Road, with the larger impacts occurring at the intersection of Liddelow and Armadale Roads. Some of the vegetation for the works is Banksia Woodland (TEC), which is potential habitat for the Carnaby’s Cockatoo. The majority of works will occur in land which has previously been disturbed, thereby minimising vegetation disturbance.
Surface water flows at the site will be managed through the installation of additional drainage infrastructure to minimise any significant changes to the current water flow patterns adjacent. MRIA has also consulted with the Department of Biodiversity, Conservation and Attractions (DBCA) and the Bush Forever section of the Department of Planning, Lands and Heritage (DPLH) to determine the best outcomes for drainage flows in relation to local Bush Forever, DBCA managed reserves and other significant areas.

Armadale Road Upgrade is subject to the conditions outlined in the Native Vegetation Clearing Permits CPS 7623/1 and 7332. The works were referred to DotEE which were found to be not a controlled action (EPBC 2017/7972).

**Murdoch Drive Connection**

The site is located directly east of the Beeliar Regional Park predominately within the existing road reserve. The works require minimal works within mapped wetlands (less than 0.1 ha), in locations where land has previously been disturbed and native vegetation has been cleared historically for other projects.

The vegetation impacted as part of these works is a mixture of native, cleared with weeds and planted/rehabilitated. The significant fauna species which may occur in this site include:

- Carnaby’s Black Cockatoo
- Forrest Red-tailed Black Cockatoo
- Quenda
- Lined skink
- Jewelled ctenotus
- Black striped snake
- Carpet python

Murdoch Drive Connection is subject to the conditions outlined in the Ministerial Statement 1008 (MS 1008). This includes the compliance with a range of environmental management plans.

**Environmental Management**

An Environmental Management Plan (EMP) has been developed for each site, outlining relevant legislation (including approval conditions), contractual requirements, and environmental aspects and impacts, and the management, monitoring and contingency actions associated. These include incorporating the conditions within applicable approval conditions, including those from any OEPA approved management plans, for the construction phase of the sites.

MRIA operates under the CPB Contractors Environmental Management System which is accredited under ISO14001:2015. This system assists in the implementation of the site EMPs, with internal permitting systems for high risk activities (clearing and dewatering), where site works cannot commence unless approved by the project Environment Manager.

As part of clearing processes, intensive fauna trapping is undertaken to minimise impacts to the local fauna. Over the last year, more than 500 native animals were relocated prior to clearing works.

A list is provided below of all the relevant pieces of legislation that relate to specific criteria in the various sub plans.

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Aboriginal Heritage Act 1972*
- *Agriculture and Related Resources Protection Act 1976*
- *Biosecurity and Agriculture Management Act 2007*
- *Bush Fires Act 1954*
- Conservation and Land Management Act 1984
- Contaminated Sites Act 2003
- Dangerous Goods Safety Act 2004
- Environmental Protection Act 1986
- Environment Protection and Biodiversity Conservation Act 1999
- Heritage of Western Australia Act 1990
- Metropolitan Water Supply, Sewerage and Drainage Act 1909
- National Greenhouse and Energy Reporting (NGER) Act 2007
- Native Title Act 1993
- Rights in Water and Irrigation Act 1914
- Soil and Land Conservation Act 1988 (WA)
- Waterways Conservation Act 1976
- Wildlife Conservation Act 1950

Water Management

MRIA prioritises the use of non-potable water such as groundwater over scheme water during construction to help ease the burden of water scarcity and reduce overall water use. MRIA has installed a number of groundwater production bores across the three work sites to supply construction water needs over the duration of the project. All bores are metered and meter readings are recorded at the end of each month and reported on a monthly basis to Main Roads and annually to the Department of Water and Environmental Regulation. Where appropriate, bore operating strategies were developed and approved by the regulator to manage the monitoring and operational requirements of the various bores. Scheme water is also used on the project mainly for site office uses.

MRIA aims to reduce water use wherever possible across all sites through planning and management. Over the Christmas period where the project shuts down for a short time, water saving methods are in place to control dust in the break. Due to the Murdoch Drive Connection’s close proximity to residents, it was important that measures were in place to reduce any impact to the community. During this break, different chemical dust suppressants were applied to the site stockpiles and exposed land. The suppressant used near residential properties is considered to be environmentally friendly and low-impact. Using this product over the break significantly reduced the amount of water that would have been required to control dust in the area while also requiring fewer workers to be on site and spray down for dust suppression.

<table>
<thead>
<tr>
<th>Source</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water purchased from the scheme in litres</td>
<td>226,000</td>
<td>226,000</td>
</tr>
<tr>
<td>Water pumped from bores in litres</td>
<td>102,274,000</td>
<td>103,651,000</td>
</tr>
<tr>
<td>Water pumped from rivers, lakes or harvested in litres</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recycled or waste water use (typically from another industry) in litres</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Carbon Emissions & Energy

Energy use on a major road construction project mainly comes from the use of diesel in plant and trucks that mix, carry and place a range of materials. This also accounts for significant spending on the project. The electricity used on site goes into powering the site offices and generators. Each project site has its own office that requires energy to power the site. As summarised above, the project to date has
produced 1,170.56 tonnes of CO²-e emissions through electricity and fuel use. MRIA have developed Environmental Management Plans for each site which include an energy sub plan. The energy sub plan focusses on energy management controls for construction and operation which includes identifying and assessing energy saving initiatives, collating and reporting on NGER data and communication of energy efficient principles across the project team.

In an effort to reduce the emissions and impacts associated with the project footprint, details are refined throughout the design phase and local sourcing is adopted wherever possible. Design changes significantly reduced the requirement for asphalt and general fill on the project. At one of the sites, granular pavement was included within the final design over the original full depth asphalt approach. This change resulted in a significant reduction in total asphalt required at this stage. This will have significant cost savings but also reduces greenhouse gas emissions associated with its production and use in construction.

This asset is not expected produce any significant operational emissions aside from those associated with the use of street and pedestrian path lighting. Investigations into minimising the grid electricity have been undertaken, and are expected to conclude next year.

<table>
<thead>
<tr>
<th>Source</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy usage by source (MJ)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>From fuel use (MJ)</td>
<td>15.57</td>
<td>16.05</td>
</tr>
<tr>
<td>From electricity (MJ)</td>
<td>178</td>
<td>191</td>
</tr>
<tr>
<td>Energy saved (MJ)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Materials & Recycling**

The use of materials on construction projects is often significant and is considered an important aspect of this project. Actions outlined in the Sustainability Management Plan state that the project will identify and investigate opportunities of recycled materials to use and opportunities for alternate materials for project use which reduce the overall material quantities required. The main use of materials, being a road improvement project, comes from asphalt, crushed rock and limestone, and concrete.

At the Wanneroo Road Widening project, significant design changes were made to minimise the use of materials, mostly from reductions in fill requirements. As summarised above, design changes have significantly reduced the quantity of materials and energy originally necessary for the road construction. This involved a change from full depth asphalt to granular pavement.

MRIA has also placed contractual targets for recycling and waste management on our waste contractors. This encourages the project to responsibly manage how our waste is separated and ensuring that it is then transferred to a facility that is correctly disposing of it.

At Armadale Road Upgrade, designers are investigating the use of recycled crushed glass for embankment fill. Where possible MRIA are reusing existing pavement material in its highest possible use. Some other examples of initiatives being undertaken within the design space are:

- MDC investigating reuse of insitu HCTCRB (hydrated cement treated crushed rock base) as subbase;
- MDC investigating reuse of asphalt and HCTCRB as subbase;
- WRW investigating the potential to reuse milled asphalt and bitumen stabilised limestone as basecourse for PSP’s;
• WRW are investigating leaving existing pavement (Crushed rock base and crushed limestone) in place as subbase;
• WRW are reusing existing pavement where possible;
• All projects – use existing pavement (asphalt, spray seal, basecourse, subbase) as embankment fill where there are no better options;
• MDC shared excess fill material with ARU, to reduce import of fill from quarry;
• ARU are using oversize material that is not suitable as fill from Nicholson Road Bridge for access tracks / temporary pavements.

**Material and Waste Statistics**

<table>
<thead>
<tr>
<th>Imported Materials</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand (t)</td>
<td>85,386.69</td>
<td>85,386.69</td>
</tr>
<tr>
<td>Gravel (t)</td>
<td>171.76</td>
<td>171.76</td>
</tr>
<tr>
<td>Limestone (t)</td>
<td>42,043.04</td>
<td>43,172.90</td>
</tr>
<tr>
<td>Crushed Rock (t)</td>
<td>8,533.24</td>
<td>8,533.24</td>
</tr>
<tr>
<td>Aggregate (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asphalt (t)</td>
<td>510</td>
<td>510</td>
</tr>
<tr>
<td>Concrete (t)</td>
<td>1,307.38</td>
<td>1,307.38</td>
</tr>
<tr>
<td>Steel (t)</td>
<td>10.48</td>
<td>10.48</td>
</tr>
<tr>
<td>Reinforced concrete (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Emulsion (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bitumen cutter (L)</td>
<td>1,945</td>
<td>1,945</td>
</tr>
<tr>
<td>Bitumen (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other (t)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Waste</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable fill moved offsite (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Landfill (t)</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Sewage (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Concrete rubble (m³)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pavement rubble (m³)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unsuitable material (m³)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General/Green Waste (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unsuitable fill used for rehabilitation purposes (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recycled (t)</td>
<td>44</td>
<td>44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imported recycled content</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Road Base (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asphalt/Profiling (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Steel (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Concrete (t)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other (t)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Noise (from construction and future operation)

Activities that are conducted on the project have the potential to create noise issues and impact on sensitive receivers. This includes noisy activities that take place during construction as well as the potential impacts of noise in the future operation of the asset.

The construction works must abide by conditions set out in the LGA approved Out of Hours Noise Management Plans in accordance with the Environmental Protection (Noise) Regulations 1997. Controls are implemented that are adequate to minimise noise, and aim to avoid unnecessary noise and disturbance to residents and the local community.

Design measures such as noise walls are considered and implemented where deemed appropriate and necessary to reduce impacts of noise and vibration from the road to sensitive receivers. The effect of the works are minimised on the aesthetic qualities of the environment and social activities of local community members.

Pollution

Pollution on the project is defined as the introduction of contaminants into the site areas. This includes discharges from construction works, waste and spoil and the uncovering of contamination or asbestos.

MRIA incorporates appropriate control measures to prevent unlawful environmental damage or pollution. The aim of the project is to cause no pollution to land or waterways as a result of construction activities.

Discharges & Spills

Contingency plans are adopted for any spills and incidents are managed following these plans. Discharges must be compliant with regulatory requirements and must not impact adjacent properties which is managed through the use of various management plans and through ongoing communications with the community and residents.

Outcome aims for the project consists adjacent environment, particularly wetlands and other environmentally sensitive areas remain intact.

Vibration

Vibration as a result of construction works has the ability to effect people and buildings. Vibration may be caused by the use of heavy vehicles, earth moving equipment and compactors. Due to the proximity of nearby residents, schools, churches, offices and retail outlets it is recognised that the works will cause some disturbance.

Control of vibration is limited to the appropriate selection of construction machinery, including rollers which can operate on oscillating mode, instead of hammer mode. Monitoring of ground vibration is also undertaken near sensitive receptors. Results are measured and recorded to ensure that vibration levels are considered appropriate in relation to surrounding receivers.

MRIA seeks to minimise vibration exposure to nearby residential and commercial buildings.

Light spill

Out of hours works and security lighting have the potential to cause light spill into residential areas and fauna habitat. Temporary lighting is generally positioned to minimise/eliminate light spill into residential and other sensitive properties.
Economic Aspects Performance

At a glance

<table>
<thead>
<tr>
<th>Economic Aspect</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>$125m</td>
<td>$317m</td>
</tr>
<tr>
<td>Number of people employed by supply chain at various stages of project</td>
<td>Current 240</td>
<td>At peak 304</td>
</tr>
<tr>
<td>Total number of suppliers engaged</td>
<td>98</td>
<td>+/- 150</td>
</tr>
<tr>
<td>Total number of Indigenous Enterprise</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Total number of Disability Enterprise</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Buy Local Spend (to date)</td>
<td>$52m</td>
<td>+/- $175m</td>
</tr>
</tbody>
</table>

Economic context

Wanneroo Road Widening, Joondalup Drive to Flynn Drive

Wanneroo Road Road between Joondalup Drive and Flynn Drive is currently an isolated section of single carriageway with limited opportunities for overtaking, creating a pinch point. This results in northbound and southbound congestion impacting more than 26,000 vehicles per day. These high volumes are expected to grow rapidly due to urban expansion and growth of the Neerabup Industrial Area.

The majority of this growth will be focused in areas north of Joondalup Drive with the intended development of a new strategic activity centre at Yanchep and associated residential growth, as well as the Neerabup Industrial Area which is expected to provide up to 20,000 local jobs once it is completed.

The Wanneroo Road Widening project will accommodate this growth and support ongoing development of Wanneroo Road as a major north-south alternative to Mitchell Freeway, complementing future interchange works at the intersections of Joondalup Drive and Ocean Reef Road.

The project will provide local, regional and state economic benefits through reduced travel time and improved safety of commercial and freight trips to the North West Corridor, including Neerabup Industrial Area. It will also improve safety and efficiency along State Route 60, attracting more tourist trips to regional centres along Indian Ocean Drive.

A Benefit Cost Ratio of 6.19 has been identified for this project.

Armadale Road Upgrade, Tapper Road to Anstey Road

Traffic count data indicates that more than 27,000 vehicles per day use the section of Armadale Road between Tapper and Warton, with 18,000 per day using Warton Road to Anstey Road, resulting in a level of service ‘E’.

These traffic volumes are regularly exceed the capacity of the existing single carriageway section, creating significant congestion and delay for road users. By 2021, a level of service ‘F’ will apply if no improvements are made, leading to significant delays for commuters accessing Kwinana Freeway and businesses located within or close to the Cockburn Central Activity Centre.

There is also significant residential and commercial development either underway or planned on the
northern side of Armadale Road, along with increasing development in the Cockburn Central District (Cockburn Gateway Shopping Centre, Cockburn Train Station, Jandakot Industrial Area etc).

This section of Armadale Road also services as a RAV4 (27.5 m road trains) freight route. The primary objective is to address congestion on Armadale road with the provision of dual carriageway for this section.

The project will provide additional lane capacity to improve safety and operational efficiencies in the area, along with better access and traffic flow. The outcome will be shorter journey times, more reliable access to places of work and more effective scheduling for the freight industry.

**Murdoch Drive Connection**

The Murdoch Drive Connection to Kwinana Freeway and Roe Highway was identified as a key component of the Murdoch Specialised Activity Centre Structure Plan, first endorsed by the State Government in 2007 and revised in 2014. The Structure Plan states that “...the success of the activity centre will depend upon the staged delivery of key transport infrastructure to ensure an appropriate level of accessibility to and within the centre, in particular the provision of a southern access route.”

The project will provide better access to Fiona Stanley Hospital from the south for patients and emergency vehicles. Importantly, the project will also help the Murdoch Activity Centre meet its economic potential as a major employment centre based around health, education and research. Once fully developed, it is expected that the Murdoch Activity Centre will become one of the largest employers outside the Perth CBD with up to 35,000 jobs.

Access to the Murdoch Activity Centre and Fiona Stanley Hospital from Kwinana Freeway Northbound is currently limited to South Street (via Murdoch Drive). During busy periods, this limitation creates severe congestion on South Street and the freeway and an increased safety risk, which would otherwise intensify if the Murdoch Drive Connection was not constructed.

**Procurement – Project Wide**

Each project area prepares their own specific Project Procurement Plan (PPP). The PPP is governed by the CIMIC Group Procurement Policy.

The CIMIC Group Procurement Policy establishes the framework for ‘transparent, competitive, compliant and sustainable’ procurement, which is applied to the Project. The Policy context states that procurement is “a key element of CIMIC and its Operating Companies (the Group) operations that is crucial for project delivery, cost control, sustainability and financial performance – for the Group and for its clients. Appropriate procurement behaviour supports compliance with legal requirements and achieves strong procurement value”.

The above policy, together with CPB Contractor’s procurement procedures, tools and knowledge resources form the basis of the Project’s procurement approach. Integration of sustainability into Procurement will be achieved as per the steps outlined in the table below.
Following initial approval of this PPP, the following procurement process will be adopted by the MRIA team to execute all the Work Package procurement requirements in accordance with the relevant plans and policies.

Generally, a formal and competitive tender process (with a minimum three tenderers) will be followed for each package. However, in circumstances where this is not appropriate or feasible (e.g. insufficient number of capable/suitable tenderers, proprietary products, etc) alternative approaches will be developed and set out in the RFQ.

- The following overarching principles will be applied to throughout the procurement process:
  - To use best endeavours to procure all services, equipment and materials within budget where feasible and always based on a balanced assessment of the best value for money;
  - To procure technically conforming goods and services which (where feasible) meet programme requirements, or otherwise (if sufficient time is not available) are available in a reasonably timely manner;
  - To procure goods and services which meet quality, safety, health, environmental and sustainability requirements;
  - To reduce project procurement risk by the use of appropriate controls and clear tender/contract documentation;
  - To maximise local content, opportunities for aboriginal employment and enterprises and opportunities for smaller contractors (Main Roads prequalified) in line with the Alliance objectives;
  - To effectively, fairly and promptly administrate subcontracts from creation through to release; and
  - Ensure that all QA/QC deliverables are received, registered and approved prior to releasing securities/retention.

**Key Economic Outcomes**

This package of works will reduce congestion by removing bottlenecks from our road network, improving access to and from Kwinana Freeway and increasing freeway capacity from Russell Road to the Narrows.
Bridge. It will improve congestion in Perth’s northern corridor which is one of the fastest growing areas of the State.

The projects support major public transport improvements such as the METRONET Cockburn to Thornlie rail extension and provide better options for commuters and for those who traverse our suburbs on a daily basis.

The projects complement other new road projects including Kwinana Freeway Northbound Widening from Russell Road and Roe Highway and the development of Perth’s first “Smart Freeway” between Farrington Road and Narrows Bridge.

Further, the Murdoch Activity Centre is identified as a Specialised Activity Centre in the State Government’s planning strategy for Perth and Peel. The location of the St John of God Hospital Murdoch, the new Fiona Stanley Hospital, Murdoch University and Challenger Institute of Technology in the Murdoch Activity Centre presents the opportunity to develop a significant employment centre based around main activities of health, education and research which will assist in diversifying the Western Australian economy.

Sustainable Procurement and Buy local

The Alliance objective is to maximise local content, opportunities for aboriginal employment/enterprises and opportunities for smaller contractors (MRWA prequalified). Buy local has been identified as a priority issue for the project and outcomes will be monitored.

Results as at 30th June 2018 are summarised below:

<table>
<thead>
<tr>
<th></th>
<th>TARGET</th>
<th>TO DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Value</td>
</tr>
<tr>
<td>Australian Content</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Local Content</td>
<td>95%</td>
<td>93%</td>
</tr>
<tr>
<td>Overseas content</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Main Roads prequalified</td>
<td>20%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Disability Content</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Indigenous Enterprises</td>
<td>3%</td>
<td>1.49%</td>
</tr>
</tbody>
</table>

Climate Change Assessments

Climate change risk assessment workshops were held in late 2017 and early 2018 with a multi-disciplinary group of internal and external stakeholders to assess climate risks associated with the project. The assessments adopted the RCP4.5 scenario across various evaluated timeframes that reflect the lifetime of the asset components. The highest priority risks that were identified were infrastructure damage and safety as a result of increased temperatures and increased frequency of storm events that have the potential to impact road users. General design standards are in place that accounts for potential climate change impacts within the design life of the asset.

Adaptation responses were identified for each medium risk by the same team at a later date. Many of the responses involved increased management or maintenance of various aspects of the asset, such as active fuel load management and considering different road surfaces to mitigate the impacts of climate change. Soft landscaping damage was one risk initially identified where adaptation measures reduced
the ‘medium’ risk to ‘low’. These adaptation considerations include planting deep rooted canopy trees in
drainage basins to maximise the benefits of the summer rainfall, to adopt heat wave response
management processes and the review species selection with preference for dry land vegetation types
that have high climate resilience.

**Sustainable Transport**

**Actions taken to improve cycling and pedestrian facilities**

Armadale Road currently has narrow and degrading shoulders and is not fit for use by cyclists. As part of
the project, a 4.0 m wide PSP will be provided for the full extent of the upgrade, providing pedestrians
and cyclists with a dedicated facility away from high speed traffic.

A shared path connection has been provided from Joondalup Drive to Flynn Drive/Neerabup Road
intersection with path connection provides local connectivity into the adjacent local residential areas. A
1.5m shoulder has been provided allowing safer travel for on-road cyclists between the project extents.

PSP connectivity between the north and south on Kwinana Freeway northbound will be maintained with
a new PSP to suit the new road alignment. The PSP includes an underpass to eliminate the need for
pedestrians and cyclists to interact with traffic on Roe Highway. A new shared path will provide
connectivity from the PSP to Murdoch Drive and Bibra Drive.

**Actions taken to improve road bases public transport**

Public transport services utilising Armadale Road are currently limited to only a few services. The
Armadale Road Upgrade will provide bus stops at major intersections to facilitate increased bus services
particularly with the rapid development occurring on the north side of Armadale Road.

Bus embayments have been provided for the respective bus stops, and path connections to the two
existing bus stops on Wanneroo Road, improving connecting for local residents.

Two bus routes are affected by the project works. The project will involve construction of two new bus
embayment to maintain connectivity within the existing bus network.

**Considerations given to future proofing transport infrastructure**

Armadale Road will see traffic more than double by 2031 as land-use changes. The Ultimate design for
Armadale Road is a six-lane dual carriageway, which will cater for demand beyond 2031. The design of
the Armadale Road Upgrade takes into account the Ultimate design and seeks to minimise disruptions
caused by construction in the future.

Wanneroo Road Widening has been designed to connect on the southern side to Wanneroo Road /
Joondalup Drive intersection.

The Ultimate design for Kwinana Freeway northbound is a five lane carriageway, which will cater for
demand beyond 2031. The design of the Kwinana Freeway northbound takes into account the Ultimate
design and seeks to minimise disruptions caused by construction in the future.

**Stakeholders engaged to identify opportunities**

MRIA has worked with a number of key stakeholders, including representative resident groups,
environmental, cycling advocacy groups and local government to identify opportunities of influence. Four
Construction Reference Groups (CRG) have been established across the three projects (Murdoch Drive
Connection includes an additional Kwinana Freeway Northbound Widening reference group) to provide a
mechanism for the project team to engage with key stakeholders.

Some key areas of influence include:

- The Wanneroo Road Widening CRG chose the treatments for noise walls across the project
• Alternative intersection treatments were investigated at Carramar Road intersection, and ultimately an acceleration lane was provided, creating a safer intersection.

• Early engagement for the Murdoch Drive Connection saw design changes to reduce connectivity (and traffic impacts) to local roads. Following community concern raised following public information sessions in August 2017, extensive traffic modelling and microsimulation was conducted, various options considered and ultimately a new design announced in January 2018.

• The Murdoch Drive Connection project required the removal of an aging playground located in the road reserve. Consultation with local residents and the City of Cockburn led to consideration of relocation of the playground to City of Cockburn land. Given the age of the playground, the City of Cockburn safety review deemed the playground unsuitable for relocation and a commitment provided to upgrade an alternative playground in the same suburb.

• During construction of the Armadale Road Upgrade project, significant traffic impacts were expected due to this east west road already being heavily congested. Working closely with local business, residents and the CRG, traffic management plans have been guided by feedback from the local community. Cyclist detours were adjusted based on recommendations from Westcycle; community members have provided road safety feedback, and connectivity to local businesses has been a key consideration in guiding staging of construction activity.

• In consultation with the Banjup community and City of Cockburn, the intersection of Armadale Road and Liddelow Road was modified to left turn movements only for the safety of road users during construction.
Social Aspects Performance

At a glance

<table>
<thead>
<tr>
<th>Social Aspect</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Satisfaction to Project – including feedback forms completed and Community/ Stakeholder Perception surveys completed</td>
<td>998</td>
<td>1015</td>
</tr>
<tr>
<td>No. of complaints</td>
<td>72</td>
<td>86</td>
</tr>
<tr>
<td>No. of traffic safety incidents within project boundary</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>% of women in workforce</td>
<td>28.94%</td>
<td>29%</td>
</tr>
<tr>
<td>% indigenous in workforce</td>
<td>18 employees total</td>
<td>18 employees total</td>
</tr>
<tr>
<td>LTIFR</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No. of project induction held</td>
<td>609</td>
<td>634</td>
</tr>
<tr>
<td>No. of development employees and apprentices on the project</td>
<td>MRIA complies with the GBT policy. Final reporting is due by 30 July for the 2017-2018 financial year. This figure will be advised soon once all reporting is completed.</td>
<td>Under the Government Training Building Policy MRIA submitted a total target training rate of 6.39% and listed 54 apprentices and trainees</td>
</tr>
<tr>
<td>No. of employees (FTEs) sourced from local community</td>
<td>118 (average number)</td>
<td>98 (average number)</td>
</tr>
</tbody>
</table>

Social context

Stakeholders to MRIA projects (Murdoch Drive Connection, Armadale Road Upgrade and Wanneroo Road Widening) include: Federal and State Government, Local Government Authorities (City of Cockburn, City of Melville, City of Armadale and City of Wanneroo), environmental regulators and advocacy groups, local residents and business, Aboriginal custodians, road users (including pedestrians and commuter / recreational cyclists), public transport operators and patrons and the freight industry.

MRIAs overarching objective of Community and Stakeholder engagement across its projects is to promote a high level of awareness and support.

Objectives on each project include:

- Raise community and stakeholder awareness of the project, including the proposed scope, impacts and benefits of the project
- Build solid relationships with relevant stakeholders and contribute towards building long-term strategic partnerships
- Work collaboratively with statutory regulators / authorities to facilitate the approval process.
- Provide opportunities for those affected to influence project decisions and outcomes
- Facilitate active and positive involvement of key stakeholders
- Build relationships with stakeholders and members of the community to encourage direct communication / identification of issues, concerns or preferences
• Ensure appropriate and effective communications and engagement methods are utilised when considering the nature of the audience
• Establish an open, honest, transparent and non-political approach when dealing with all groups or individuals
• Engage with project area landowners and seek opportunities to minimise impacts on their properties and business operations
• Identify and resolve issues in a timely manner
• Ensure consistent messages are conveyed to all stakeholders
• Provide factual, accurate and regular information to the local community to help improve their understanding of the project and any constraints, and thereby increase community tolerance of construction activities
• Record and resolve issues with affected stakeholders in an open, transparent and timely manner.
• Monitor stakeholder and community’s awareness of the project and satisfaction with their dealings with the Alliance
• Honour commitments to landowners and stakeholders
• Promote the Alliance, the milestones and results achieved (with respect to and in accordance with the media protocols agreed with Main Roads and Government)
• Enhance the reputations of Government, the Alliance and its participants.

Common topics of concern raised by stakeholders include ultimate changes to amenity and access; construction impacts including dust, noise and vibration and traffic impacts (both during and post construction).

Community and stakeholders are provided opportunities to influence the projects via construction reference groups, information sessions and feedback surveys. Areas of influence have included colour and location of noise walls, road design (local connectivity), preferred methods of communication and engagement and revegetation.

Figure 7 Armadale Road Upgrade Construction Reference Group Meeting, May 2018
Community & Stakeholder Engagement

Mapping of stakeholders is conducted at award of projects to understand impacts to local residents and business, road users and interface with adjacent projects. A range of communication and engagement mechanisms are established to ensure stakeholders with an interest or stake in projects are engaged and have the opportunity to influence project outcomes wherever possible, and expectations are managed where opportunity for influence is low.

Technical Working Groups involving local government technical officers are established to collaborate throughout the design process. Construction Reference Groups provide a community stakeholder forum for input into areas such as noise wall design and location, fauna management and as a mechanism to voice community sentiment and concern.

Timely and responsive communication processes are established to ensure impacts are minimised during construction. This includes key stakeholder updates, email broadcasts, traffic and construction updates, dedicated project web pages and targeted face to face engagement.

In response to community requests for additional engagement outside the traditional methods, information sessions for the Murdoch Drive Connection project were held in late 2017 and early 2018. The walk in information sessions were attended by hundreds of stakeholders including residents, local business, local, state and federal government representatives and local Members of Parliament. Sessions involved stations hosted by subject matter experts (road design, traffic, environment, and construction), audio visual presentations, take home information and feedback surveys.

Outcomes of the sessions were reported to the Minister for Transport and local road connectivity to the project changed in response.

Addressing community concerns

MRIA acknowledges the early importance of community and stakeholder engagement, and by identifying and addressing issues of the community throughout the design and construction process of each of its projects, it is possible to achieve sustainable outcomes.

Key engagement activities include:
- One-on-one consultation with local residents/property owners and businesses
- Development and involvement of a Construction Reference Group (CRG) per project. The CRG is designed to:
  - Assist in identifying, discussing and providing advice on community issues associated with the Project;
  - Receive information from Main Roads and the Contractor for sharing with the community unless otherwise advised;
  - Provide representative community and stakeholder input into Project design; and
  - Advise additional ways to communicate with local residents.
- Market research. MRIA conducts research to monitor communication and stakeholder engagement issues including a baseline Project awareness survey, to monitor:
  - Local community and local stakeholder awareness;
  - Timeliness and usefulness of Contractor information;
  - How information is provided to the public; and
  - Project sentiment
- Advance notice of disruption - In line with LGA out of hours permit requirements, residents are provided with 48 hours’ notice for out of hours works.
o MRIA provides advance notice to the relevant LGA and to affected residents or businesses of any significant construction activities likely to cause disruption or disturbance, including access to property, machinery noise or vibration, dust, visual pollution or potential for property damage.

o Works which will cause traffic disruptions on the road network are advertised in The West Australian and local newspapers at a size and frequency appropriate to the impact of the proposed works.

o Notifications may also include public forums, meetings with affected groups, briefings with group-appointed representatives, letter drops or visits to affected residents and businesses, fact sheet distribution, print and radio advertising, websites, public displays and communications via Main Roads’ communication channels.

Community concerns are raised via Main Roads customer information centre (CIC), face to face, via surveys and feedback forms and through an enquiry email. Events such as information sessions, shopping centre public displays, construction reference groups and working groups are established to provide forums to work with the community to resolve issues and concerns.

A dedicated stakeholder engagement advisor is provided for each project as a point of contact for community members.

A robust and strategic approach is required to effectively manage community and stakeholder relations on all MRIA projects. An engagement program primarily focuses on promoting the benefits and vital importance of projects by creating clear understanding, building advocates, negating risks, addressing criticisms, making relevant information readily available and involving stakeholders (where possible and at the appropriate level).

A Community and Stakeholder Engagement Plan has been developed for each project in accordance with Main Roads’ Community Engagement Policy. The key principles are as follows:

<table>
<thead>
<tr>
<th>Principles</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparent communication builds trust and reduces conflict</td>
<td>Relationships with stakeholders and the community are built through timely and open communication. Commitments throughout the project are followed through efficiently and effectively.</td>
</tr>
<tr>
<td>Informed and diverse participation leads to meaningful input</td>
<td>Processes are designed to allow for difference and a diverse range of community and stakeholders to participate. They are inclusive, consistent, timely and appropriate.</td>
</tr>
<tr>
<td>Meaningful community and stakeholder input increases the quality of decisions</td>
<td>Input from engagement activities are incorporated into the final decision to the maximum extent possible. Decisions deliver a high value to the public.</td>
</tr>
<tr>
<td>Engagement is enabled by leadership at all levels</td>
<td>Systems, culture and decision making supports quality engagement planning, delivery, evaluation and continuous improvement.</td>
</tr>
<tr>
<td>Planning and resourcing supports engagement</td>
<td>Appropriate time, finances and people are all allocated to projects to manage engagement activities and ensure quality outcomes.</td>
</tr>
</tbody>
</table>

In addition, MRIA embraces the following principles in implementing each plan per project:

- Open and transparent process - an open and transparent approach to informing stakeholders of the project and how their input has been considered.
• Respectful and responsive - stakeholder ideas, issues and opportunities will be identified and documented through engagement activities and communication channels.
• Timely dissemination – project information will be disseminated in a timely and accurate manner.
• Accountability – the Alliance will honour commitments and be accountable to stakeholders involved in the engagement process.

The strategic approach to engagement for MRIA projects is based on the International Association of Public Participation (IAP2) Consultation Spectrum. The IAP2 Consultation Spectrum is an internationally recognised benchmark which defines the public’s role in any public engagement / participation process. Stakeholders are profiled and the engagement methodology tailored to provide the appropriate level of involvement in the decision-making process.

The IAP2 levels of engagement range across a spectrum - three levels of this spectrum are relevant and appropriate for MRIA projects being:

<table>
<thead>
<tr>
<th>Inform</th>
<th>Involve</th>
<th>Collaborate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent, clear and easily accessible information on all aspects of the project for all stakeholders and the broader Western Australian community.</td>
<td>Direct consultation which involves listening to stakeholders and the community and providing clear and informed feedback.</td>
<td>Collaboration with stakeholders to develop planning and construction solutions and deliver win-win outcomes.</td>
</tr>
</tbody>
</table>

MRIA has appointed a Stakeholder & Community Relations Advisor/Manager per project to implement the strategy and manage the associated activities and / or risks and opportunities.

Wanneroo Road Widening

The Construction Reference Group (CRG) played a vital role in deciding the colour scheme for the noise walls facing Wanneroo Road, and for the residential side. Members were first consulted in session for feedback on proposed colour palette combinations that were selected to match the existing landscaping environment. A strong preference from members was voiced to paint the Wanneroo Road facing side of the noise wall with a colour scheme more similar to the side facing the residential area to create a neutral, less ‘bright’ noise wall was considered more fitting with the surrounding environment. As such, two colours were removed from the colour scheme facing Wanneroo Road. Further to in session discussion, MRIA urban designers re-worked the colours for the Wanneroo Road facing side of the noise wall and provide two options for CRG consideration. The two options were then circulated to the CRG to understand feedback and preferences. Each CRG member expressed a preference/vote, and the majority view informed the direction for finalising noise wall colours. A majority vote was achieved and presented at the next CRG meeting. The CRG felt valued and involved in the process, and a positive result for the local community was accomplished.

Armadale Road Upgrade

In consultation with the Banjup community and City of Cockburn, the intersection of Armadale Road and Liddelow Road was permitted to be modified to left turn movements only for the safety of road users during construction. Member of the community were advocates for ensuring road safety was first priority during construction, and their support for this disconnection with a detour route in place has allowed for safety improvements, and optimisation of the construction methodology for the intersection upgrade.

Road conditions had changed on Armadale Road, including steel barrier installation and reduced lane widths to 3.2 metres. With the support of the CRG and their local input to a safe and appropriate detour route for cyclists, MRIA have been able to ensure the safety of cyclists during construction. The
communication of the detours for cyclists has successfully been widespread with members of the CRG using their resident group forums and Cockburn Chat groups to ensure the message is well publicised.

**Murdoch Drive Connection**

Local road connectivity to the Murdoch Drive Connection was a topic of concern in the local community, with many residents voicing concerns via an information session and feedback forms. A briefing note was prepared for the Minister for Transport and as a result the road design was changed to reduce traffic exiting the main alignment onto local roads. Communication mechanisms were adapted to requests from the Construction Reference Group feedback. With vibration a concern for residents adjacent to works, regular email updates to the CRG, local resident associations and other key stakeholders was requested in order to provide timely updates ahead of works so residents could plan their activities accordingly. Further, a refuelling station and timing of refuelling was adjusted based on resident feedback to reduce noise impacts early in the morning.

**Heritage**

Targets on the project are set for heritage that include “the number of public art of urban design features delivered that have a reference to the local community, history or heritage”. The methods used to establish the heritage context for the project included desktop reviews of the local Municipal Heritage Inventories and the State Heritage Register. The method of management is through a KPI for quality. This particular indicator is about delivering public art pieces that demonstrate some reference to the local community, history and involve local artists. Extra incentive to include artwork by an Indigenous artist is also measured.

Outcomes the project has achieved so far include:

- The delivery of noise walls for the Wanneroo Road Widening that have urban design patterns and colours that reference the historic lime kilns of the Carramar area.
- Making reference to the railway heritage of the Armadale/Fremantle Rail Line (State Heritage Place Number 24004) and Bridge (LGA Place No. 115) in the design of the landscape and bridge abutment patterns for Bridge No. 1820.
- Referencing the natural heritage of the wetlands at Murdoch Drive Connection in the design of the landscape and bridge abutment patterns for Bridge No. 1694.

The Environment Management Plans all include a Heritage subplan which outlines the controls that are in place for heritage management.

**Road Safety**

**Targets and expected performance for road safety on the project**

Armadale Road Upgrade is subject to Main Roads ROSMA reporting for crash reduction treatments. In the most recent 5-year reporting period, 11 killed or serious injury (KSI) crashes occurred at intersections within the project area. Where project works are occurring, the average KSI crash reduction is expected to be 91% based on intersection treatments. Two of these intersections, at Ghostgum Avenue and Warton Road, were upgraded in 2014 and no treatments are proposed. Although no KSI crashes occurred at the remaining intersections, treatments at those intersections are in line with a safe systems approach.

At midblock sections on Armadale Road there were a total of 8 KSI crashes in the 5-year period. Analysis of all crashes indicated a prevalence of rear end crashes during peak hours, indicating significant congestion-related crashes. Treatments to Armadale Road, including reducing congestion, will result in a 73% reduction in KSI crashes.
Between 2012 and 2016, there was a total of 5 severe crashes resulting in either fatality or hospitalisation, the Wanneroo project targeted and achieved a design reduction in severe crashes by 69%.

Murdoch Drive Connection project is subject to Main Roads ROSMA reporting for crash reduction treatments. A total of 6 KSI crashes were recorded on Kwinana Freeway northbound within the project limits between 2012 and 2016. The crashes were a mix of rear end, run off road and side swipe crashes. Where project works are occurring, the average KSI crash reduction is expected to be 51% based on midblock and intersection treatments.

**Method of management i.e. plan, objective or KPI, audits or reviews**

Armadale Road Upgrade design is subject to road safety audits. Crash statistics will continue to be monitored by Main Roads and any defects will be corrected during the course of the project.

The objective of Wanneroo Road Widening was to increase road safety and decrease traffic congestion between the project extents, which through Main Roads Road Trauma Reduction Strategy has been achieved. The project further has undergone Road Safety Audits and External Verification by the client, and an independent verifier to provide assurance that the project will meet its objectives.

Murdoch Drive Connection project has undergone numerous road safety audits. Crash statistics will continue to be monitored by Main Roads.

**Specify initiatives developed or treatments that aim to improve road safety for all road users**

Armadale Road Upgrade will greatly improve safety on Armadale Road through the provision of safe system intersection treatments, including roundabouts and grade-separated roundabouts. The provision of a four-lane dual carriageway with impenetrable medians will ease congestion and reduce potential vehicle conflicts. Further information on safety initiatives can be found in the Armadale Road Upgrade ROSMA report.

With duplicating the carriageways a median has been provided to separate and minimise potential for head on collisions of oncoming traffic. The road has proposed median street lighting, a reduction in speed limit the intersections at Golf Links and Carramar allow for median storage and an acceleration lane respectively. Additional road infrastructure to protect vehicle users against hazards, traffic control mechanisms such as road signage and linemarking has also been provided.

Kwinana Freeway - the project will provide an additional lane on Kwinana Freeway northbound and increase the number of added lanes instead of merges, which will reduce congestion and improve traffic flow. Verge and median barriers will protect road users from verge and median hazards.

Roe Highway - the project will provide verge and median barriers to protect vehicles from collisions with roadside hazards.

Murdoch Drive/Farrington Road intersection – Grade separation was selected as preferred treatment to eliminate the crossing of vehicles to maintain traffic flow and to avoid the need for a third intersection over a short distance.

**Report outcomes the project has achieved**

Construction is due to be completed in late 2019 and therefore the project has not yet achieved many outcomes. MRIA aims to have positive outcome based on improve road safety for the end user and reduction impacts on residents.
Traffic Management

The traffic management team at the Alliance is staffed with maintaining a safe work site for employees and members of the community while maintaining an acceptable level of service for the road network.

MRIA has a target set out in the Performance Management Plan to maintain the average speed of daily network users compared to pre-construction speeds. The impact on local network operations falls under the reputation KRA.

This is done through a variety of processes but focuses on a tailored traffic management plan implemented for every temporary traffic switch undertaken. This includes methodology and measures to minimise traffic management activities during peak hour conditions.

The implementation of traffic management is planned using a hierarchy process. Ideally full road closures will be undertaken in order to minimise safety and congestion risk to the general public and workers. When this can only be achieved through complex and major detours, other methods are used in place such as lane closures and stop-start. The plant and equipment used throughout the installation of barriers is designed to minimise risks to the workforce. This traffic management method includes the use of attenuated trucks and cone trucks, which eliminate the need for workers to be on the ground adjacent to oncoming live traffic.

Workforce Safety

Keeping our people safe is our absolute priority and the most important thing that we do. We actively promote a culture where safety is integrated into our normal business practices. We set clear expectations of our leaders to ensure that we do not compromise the safety of our people for any reason. This includes our subcontractors. As an Alliance we work hard to make our workplaces safe and we are constantly assessing the safety of our workplaces. Our company-wide framework helps to ensure our best-practice management of safety and health.

Safety and health objectives, targets and key performance indicators are established at all levels of the organisation with performance against these monitored and analysed to benchmark current performance and provide the basis for continuous improvement.

Senior leaders demonstrate a personal visible commitment to our SH&E Cultural Framework and ensure all workers understand the requirements of the Management System, as it applies to the work they are undertaking, so that work is undertaken safely and efficiently.

The Safety Essentials define a framework that requires the application of the hierarchy of controls to eliminate or minimise risks to a worker’s health and safety when working on certain high risk construction activities. If it is not reasonably practicable to eliminate the risk, all effort must be made to minimise those risks.

The Reward and Recognition program:
- Provides a framework for championing superior performance across all Key Result Area’s (KRA’s)
- Aligns motivation and recognition with the KRAs and KPIs will help to focus desirable behaviours on achieving the project objectives.
- The alignment of the motivation and recognition program with the KRAs in the performance framework also provides a mechanism to measure the effectiveness of the motivation and recognition program.
Community Amenity

Targets on the project are set for community amenity that include “the average number of shade trees within 5 metres of new sections of shared pathway, measured as the number of tree stems per 100 lineal metres of shared path excluding bridges and underpasses”. The methods used to establish the benefits to community amenity targets for the project included desktop reviews of the local greening frameworks and urban forestry targets and community feedback through construction reference group engagement. The method of management is through a KPI for roadside quality.

Outcomes the project has achieved so far include:

• The design of a coherent alignment of shade trees (and preservation of existing trees) along the new shared path for the Wanneroo Road Widening project.
• The design of shade trees (and shrubs) along the new principal shared path for the Armadale Road Upgrade project.
• The design of shade trees, preservation of existing trees and inclusion of visual screening vegetation along the new principal shared path sections for the Murdoch Drive Connection project.

Diversity

The Alliance adheres to the Workplace Relations Management Plan as per requirements under the Building Code 2016 Act. MRIA has adopted an Indigenous Management Plan to assist with engagement of Indigenous workers and improved reporting on the project.

The Alliance participated in the Career Trackers programme. A total of 4 Indigenous students so far have worked on the various projects in the summer and winter programme, enabling them to gain valuable experience in the workplace. The project also has a target spend of 4% of the DCT on engagement of Indigenous employees. This target is part of a reputation KRA and the target areas for Indigenous companies/workers are:

• Supply and subcontract work won through competitive process;
• Salary workers and wages staff;
• Employee/subcontractor training.

This is supported by the Indigenous Engagement Management Plan which has been developed for the project to achieve certain objectives and targets associated with Aboriginal participation on MRIA.

<table>
<thead>
<tr>
<th>Social Aspect</th>
<th>Year to 30 June</th>
<th>Total for Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Indigenous in workforce (staff)</td>
<td>1.45</td>
<td>1.13</td>
</tr>
<tr>
<td>% Indigenous in workforce (labour hire) – reported on since Oct 17</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>% women in senior management</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Workforce Development

The Alliance complies with the requirements for the Government Building Training (GBT) Policy. The final total training rate will be known by 30 July 2018. All staff and wages employees were sourced from the WA state with a small selection from over east, however these employees were seeking to return back to WA as it was their original point of hire.
Under the Safety KRA, the project aims to have a high level of engagement with the project team including subcontractors. This involves safety toolbox talks and various compulsory training that will encourage a prominent culture of safety and support.

The following table shows the number of induction held each month dating back to January 2017, when the project workers were employed for the Roe 8 Alliance.

<table>
<thead>
<tr>
<th>Project Inductions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2017</strong></td>
</tr>
<tr>
<td>Jan</td>
</tr>
<tr>
<td>122</td>
</tr>
<tr>
<td><strong>2018</strong></td>
</tr>
<tr>
<td>Jan</td>
</tr>
<tr>
<td>40</td>
</tr>
</tbody>
</table>
Appendix 1 - List of Protected Areas

Project interfaces with:

Wanneroo Road Widening
- Bush Forever Site 383

Murdoch Drive Connection
- Beeliar Regional Park (Bush Forever Site 244)
- Roe 7 offset sites

Armadale Road Upgrade
- Bush Forever Sites 390, 263, 344, 342 and 345
Appendix 2 – List of Stakeholders to the project

Community and Stakeholder Management Plans are developed for all MRIA projects, identifying stakeholders and methods of engagement and communication.

Stakeholders include but are not limited to:

- Federal and State Government,
- Local Government Authorities,
- Environmental regulators and advocacy groups,
- Local residents and business,
- Aboriginal custodians,
- Road users (including pedestrians and commuter / recreational cyclists),
- Public transport operators and patrons, and
- Freight industry.