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WESTERN AUSTRALIA

NorthLink WA Northern Section: Annual Project Sustainability Report 2019

This annual report covers the period from 1/07/2018 to 30/06/2019. A previous annual sustainability report was prepared for the project for 2018 financial year.

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About this Report

This report has been prepared by the NorthLink WA northern section 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.

This report includes information which will be used as part of the project's Infrastructure Sustainability Council of Australia rating.

Introduction

The NorthLink WA northern section team is committed to constructing a free-flowing dual carriageway between Ellenbrook and Muchea to improve safety and efficiency for road users. As a team, the northern section has committed to promoting the efficient use of resources through the reduction of energy and waste produced, recycling of materials in all activities, engaging with relevant stakeholders and community representatives to build strong relationships.

The project team wants to ensure it leaves a lasting legacy through minimising environmental impact, revegetating rehabilitation areas as soon as is reasonably practicable, procuring Western Australian goods and services and achieving an excellent rating for both the Design and As-built phases of the project under the Infrastructure Sustainability Council of Australia's rating program.

Highlights

Sustainability Metric	Highlight
Use of recycled materials	Crushed glass has been incorporated into general fill (up to 20%) and diverted from landfill
Community involvement	Quarterly meetings with the Construction Reference Group
Indigenous partnerships	Exceeding targets set for Indigenous personnel employed on the project
Revegetation	Identifying local suppliers to provide local provenance seed, tube stock and mature plants. Over 715, 000 plants included within final design.
Local industry participation (Western Australian)	100 percent local industry
Salvage of plants	100 percent of grasstrees used in revegetation have been salvaged from site clearing.
Provision of active transport options and cycling infrastructure	Full length Principal Shared Path incorporated into final design, separated from the main alignment. Connects into t
Local community disruption	Approximately 278,000 truck movements diverted from public roads by sourcing local fill material on, or next to, the project alignment.
Indigenous employment opportunities	Target of \$2.3 million contract value set for Indigenous businesses

Overview

CPB Contractors has been contracted by Main Roads WA to provide all investigation, design and construction required to construct approximately 20 km of the highway between Maralla Road, Ellenbrook and Great Northern Highway, Muchea and approximately 3.5 km of the Brand Highway

deviation

The northern section will involve the construction of a free-flowing dual carriageway between Ellenbrook and Muchea, resulting in a fit-for-purpose section of this national highway with four lanes taking the majority of heavy traffic away from Great Northern Highway. It will reduce travel times and congestion, and provide significant productivity benefits to the economy, industry, motorists and local communities.

Initial scope of works for this section only included a single carriageway and at-grade intersections at Stock Road, Neaves Road and Muchea. Competitive market conditions enabled the expanded scope of works to be constructed within the current project budget allocation.

Key construction works include:

- dual carriageway between Maralla Road and Muchea.
- interchanges at Stock Road, Neaves Road and Brand Highway.
- deviation at Brand Highway.
- flyovers at Muchea South Road, railways and Ellenbrook.

The Project website can be found at:

<https://project.mainroads.wa.gov.au/northlinkwa/about/Pages/northern.aspx>

Several objectives and targets have been set by the Project, including the following:

Objectives	Targets	FY 2018-2019 Performance
Focus the Group's efforts on managing sustainability risks and opportunities, enhancing business performance and supporting the long-term interests of the Group.	Project risk register reflects current sustainability risks & opportunities tracked. Sustainability risks and opportunities reviewed monthly.	Risks and opportunities updated in risk register and assessed monthly in work packs.
Promote a culture of accountability for sustainability outcomes and improve the sustainability knowledge and skills of employees.	Implement monthly sustainability meetings & knowledge share opportunities to achieve Man-6 Level Three	Meetings held monthly or as appropriate given the stage of the rating.
Integrate consideration of environmentally and socially responsible sourcing and governance factors into the Group's operating and procurement processes, and seek opportunities to collaborate with the supply chain to drive innovation and create mutual value.	Implement CPB procurement policy and identify at least one eco-labelled product	Reinforced steel bar and PVC pipe for electrical conduit have an environmental product declaration.
Drive the efficient use of resources and continual innovation in the delivery of projects.	Liaise with MRWA and industry partners and deliver at least three state first innovations.	The Project is currently working towards: <ul style="list-style-type: none"> - >10% crushed glass in fill - Automated lighting at RTAA - Use of a paver - 20% RAP

Support the adoption and delivery of appropriate industry rating schemes and standards that drive sustainability outcomes for clients.	Achieve 'Excellent' ISCA rating for the project	Current score estimate is 76.
Encourage initiatives and successfully deliver projects that meet client expectations, provide value for money, and leave net positive legacies for the CIMIC Group, our clients, users, the environment and communities.	Hold monthly sustainability leadership team meetings to encourage initiatives.	Meetings held monthly or as appropriate given the stage of the rating.
	Identify and deliver at least one opportunity where enhancement of environmental or social values is realised.	Revegetation opportunities enhance native flora in the area (>715, 000 tubestock to be planted).
Enhance the Group's resilience to climate change.	Complete climate change assessment for design and identify at least three energy saving opportunities on the project.	Climate change risk assessment completed for design. Use of paver, RTAA lighting options and bridge design are energy saving initiatives.

Overall approach to Sustainability

CPB is the CIMIC Group's construction company, who have long embraced a sustainable approach to conducting business. Information on this, as well as the Sustainability Policy, can be found at:

<https://www.cimic.com.au/our-approach/sustainability>

Sustainability on the project is being managed through the project Sustainability Management Plan and regular sustainability leadership team meetings (with key project personnel, Main Roads Western Australia and APP Arcadis – the Independent Certifier). The project has assigned a Sustainability Manager role, and currently has five full-time Infrastructure Sustainability Accredited Professionals (ISAPs) working on the project, with ongoing support provided by the CPB Contractors' Business Unit and CIMIC Group's engineering business EIC Activities.

On the NorthLink WA northern section, CPB Contractors is seeking to achieve an excellent rating for both the Design and As-Built stages of the project under the Infrastructure Sustainability Council of Australia's rating scheme. The Project has been registered for both phases of the rating. Currently, the project has a tracked score of 76 points, placing it at an excellent rating (on-target). Submission is expected in November 2019. As-Built score tracking will begin in 2019, with submission of the As-Built rating expected in 2020.

Environmental Aspects Performance

At a glance

Aspect	Year to 30 June	Total for Project
Clearing planned (ha)	72.42	157.56
Actual clearing to date (ha)	72.42	157.56
Rehabilitation/revegetation planned (ha)	110	110
Actual rehabilitation/revegetation to date (ha)	~10	~10
Environmental offset via Monetary contribution actual (\$)	TBC	TBC

Total Water Consumption to date (kL)	801,915	1,454,882
Total GHG emissions (scope 1 & 2) to date (t CO ₂ e)	9,761.98	17,301
Total energy consumption to date (mj)	134,575,055	249,195,508
Total quantity of recycled content used in project (t)	16,950	16,950
Total imported materials used in project (t)	4,996,387	8,805,520
Total waste generated by project (t)	782.17	1,317.43

Environmental context

The main environmental approvals that the northern section is constructed in accordance with is Ministerial Statement 1036, issued under the *Environmental Protection Act 1986*.

Ecology

The northern section (between Maralla Rd and Old Gingin Rd) footprint supports a range of vegetation in varying degrees of condition. Nearly 80 per cent of the vegetation is in a degraded or worse condition, including areas considered to be cleared (for example infrastructure, agriculture and industry). The remaining 20 per cent of the vegetation is considered to be in good or better condition. The design of the northern section has ensured that as much of the very good and better condition vegetation will be avoided.

Two areas adjacent to the northern section were identified as containing flora species of conservation significance and 11 significant fauna species are considered to likely occur within the northern section footprint (Appendix 2). The proposal is located adjacent to a number of occurrences of Tumulus (organic mound) Springs Swan Coastal Plain (SCP), which is a Commonwealth and State listed Threatened Ecological Community (TEC).

The design ensured that:

- impacts to vegetation in degraded or worse condition were preferred over vegetation in good to degraded or better condition.
- TECs and flora species of conservation significance were avoided.

A pre-clearing trapping program was undertaken to relocate native fauna prior to disturbance.

Water Resources

The major surface water feature intercepted by the northern section is Ellen Brook, which is to be bridged at two locations. A Beds and Banks Permit has been issued by the Department of Water and Environment Regulation (DWER) for this purpose.

The Ellen Brook catchment is prone to inundation in the winter through either rising of the watertable or waterlogging on surfaces with low permeability.

No significant lakes or nationally important wetlands occur within the footprint of the northern section.

Groundwater is abstracted for construction purposes (in accordance with 5C licences issued by DWER) via a series of bores drilled in accordance with DWER supplied 26D licences. No surface water is used for construction.

Heritage

An Aboriginal heritage survey was completed for the northern section area as part of the approvals process. There are three Registered Aboriginal Sites in the immediate vicinity of the northern section, two of which (DAA 21620 Chandala Brook and DAA 3525 Ellen Brook: Upper Swan) will be impacted upon. These two sites cover the entire extent of the northern section. Section 18 consent from the Minister for Heritage has been granted, with conditions, for disturbance of these sites. In addition, a newly identified site (NL 14-01) is adjacent to the development envelope, but will not be disturbed (Appendix 1).

A European heritage desktop study was conducted to identify existing and potential places of European significance. There are two locally listed European heritage sites within the northern section project footprint:

- Muchela – No. 30 Brand Highway, Muchea
- Drainage/irrigation channel – parallel to Muchea South Road.



Environmental Management

The NorthLink WA northern section's environmental management plan (EMP) is established in accordance with CPB Contractors' 'The Way We Operate' framework and is the key document that integrates environmental requirements and client environmental requirements during project delivery.

Implementation of the EMP ensures the project will:

- identify the environmental obligations attached to the project and the hazards and risks associated with the works;
- assist in the prevention of unauthorised environmental harm;
- fulfil the client's environmental requirements as defined in the contract, including complying with relevant permits and approvals;
- comply with all relevant environmental legislation;
- minimise negative impacts on the community that relate to the northern section's environmental impacts;
- identify and implement feasible opportunities to reduce the environmental impact of the northern section that are beyond contractual and compliance requirements; and
- fulfil CPB Contractors' environmental management system (EMS) requirements enabling continued certification to ISO14001.

The EMS is based on the requirements of the CPB management system and has been specifically tailored to ensure compliance with MRWA's additional environmental requirements. The Project Management Plan for the northern section provides more detail about 'The Way We Operate' and the process adopted to deliver against overall MRWA requirements.

An environmental management representative (EMR) has been nominated for the northern section. The EMR, or an appropriate delegate, is on-site at all times when activities associated with construction activities are taking place.

In addition to specifying the day-to-day environmental management of a project, the EMP details activities to be performed to deliver continual improvement in environmental performance.

Continual improvement is achieved through constant measurement and evaluation, audit and review of the effectiveness of EMP and adjustment and improvement against project environmental outcomes, and CPB Contractors' EMS.

The EMP also includes environmental sub plans for significant environmental hazards, and environmental sub plans for other environmental hazards. As with all environmental hazards, significant environmental hazards have been identified through the review and analysis of environmental reports, contractual documents, community and legal compliance requirements relating to the northern section and professional experience ensuring best practice. Environmental considerations have been taken into account during the design phase, including the incorporation of fauna underpasses, fauna exits in fencing, a comprehensive revegetation strategy using endemic species of local provenance and fauna fencing in key locations.

Water Management

Water for construction purposes is 100 per cent obtained from non-potable groundwater sources, abstracted in accordance with 5C licences and a DWER approved groundwater operating strategy. This strategy outlines the operating rules, environmental management and process for identifying water use efficiency.

Dewatering for the construction of structures (e.g. bridges and culverts) are also undertaken in accordance with the 5C licences and managed in line with a dewatering management plan.

Water use for construction has been modelled and actual usage is tracked for regulatory reporting purposes.

Several water saving initiatives have been identified during the design and construction stages, which equate to a predicted water saving of 34 per cent (approximately 973 ML). These include:

- a reduction of fill material required through implementation of design initiatives;
- scheduling of the construction program so that dewatering for bridge footings occurred during the minimum seasonal groundwater level;
- replacing three footings at two bridges with bored piles (rather than excavated footings) to reduce the amount of dewatering required; and
- using drought tolerant native species in vegetation and landscaping works to negate the need for irrigation during establishment and maintenance.

Source	Year to 30 June	Total for Project
Water purchased from the scheme (kL)	2,511.94	2,533.94
Water pumped from bores (kL)	801,915	1,454,882
Water pumped from rivers, lakes or harvested in litres	0	0

Recycled or waste water use (kL)	475.68	475.68
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Carbon Emissions & Energy

Carbon emissions and energy are recorded through software which captures daily fuel use and production data. This data is reported monthly and audited both internally and externally. The project will also use the carbon gauge tool, developed by the Transport Authorities Greenhouse Group, which will be used to determine the energy and carbon footprint for the project.

Savings are expected to be realised through the separation of light vehicle and heavy vehicle traffic during construction. Designated haul roads on the future principal shared path have been constructed to maximise site haul efficiency. This is expected to have approximately an 8 per cent fuel saving for material placement on the project. Other efficiencies such as minimising fill, innovative bridge and pavement construction and design are also expected to lower the carbon footprint of the project, but have yet to be modelled. Achieved efficiencies will be confirmed at the completion of the project.

Source	Year to 30 June	Total for Project
Energy usage by source in mega joules	100% Diesel	100% Diesel
From fuel use (mj)	134,575,055	249,195,508
From electricity (mj)	0	0
Energy saved (mj)	TBC (Currently estimated at 8%).	TBC (Currently estimated at 8%).

Materials & Recycling

The following targets for percentage of landfill diversion have been set for office and construction waste generated during the delivery of the northern section:

Waste Stream	Target	Diversion
Office waste	>25%	Recycle
Inert construction waste	>25%	Recycle
'Good' or better topsoil *	>95%	Reuse
Subsoil	>50%	Reuse
Spoil	>95%	Reuse
Waste oil	100%	Recycle

*Dependent on dieback and weed condition

The sources and locations for the generation of waste during construction are expected to be:

- clearing and grubbing activities, including:
 - green waste
 - litter and illegally dumped materials
- earthwork activities, including:
 - excavated natural materials
 - unusable topsoil
 - acid sulfate soils (to be neutralised)
- construction activities, including:
 - asphalt
 - concrete

- steel
- controlled waste, including:
 - syringes
 - contaminated soils, including hydrocarbon contaminated soils
 - waste oil
 - solvents and paints
 - acids
 - other chemicals
 - heavy vehicle and light vehicle tyres

Material and Waste Statistics

Imported Materials	Year to 30 June	Total for Project
Sand (t)	3,082,202	6,504,986
Gravel (t)	22,535.05	29,897.05
Limestone (t)	427,634	738,202
Crushed Rock (t)	378,660.60	379,660.60
Aggregate (t)	8,653	9,336
Asphalt (t)	15,669	16,060
Concrete (t)	14,047	21,184
Steel (t)	0	10,514
Reinforced concrete (t)	13,290	19,500
Emulsion (t)	282,847.7	282,847.7
Bitumen cutter (t)	0	0
Bitumen (t)	750,548.59	791,533.59
Other (t) (52mm ballast rock)	300	1,799

Waste	Year to 30 June	Total for Project
Unsuitable fill moved offsite (t)	0	0
Landfill (t)		135.18
Sewage (t)	369,260	475,675
Concrete rubble (m ³) (recycled)	344.60	582
Pavement rubble (m ³)	0	0
Unsuitable material (m ³)	0	0
General/Green Waste (t)	0	0
Unsuitable fill used for rehabilitation purposes (t)	0	0
Recycled (t)	693.53	1,182.26

Imported recycled content	Year to 30 June	Total for Project
Sand (t)	0	0
Road Base (t)	0	0
Asphalt/Profiling (t)	20% RAP design in progress	N/A
Steel (t)	0	0
Concrete (t)	0	0
Other (t) (crushed glass)	0	Approx 10, 000

Noise (from construction and future operation)

Noise is managed during construction in accordance with northern section's construction noise and vibration management plan, which has been provided to the two local governments the project impacts

(City of Swan and Shire of Chittering). This plan outlines the practices in place to minimise noise impacts, notify sensitive receptors of potential impacts from planned activities and respond to noise complaints.

Under the Environmental Protection (Noise) Regulations 1997, construction noise between 7am and 7pm, Monday to Saturday (excluding public holidays) is exempt from assigned noise limits provided works are carried out in accordance with AS 2436:2010 – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites and that the equipment used on the premises is the quietest reasonably available. The majority of construction activities fall within these hours. However, where there are instances of out of hours work being required (generally associated with minimising impacts to road users), an assessment of the impacts is undertaken, mitigation measures adopted, an out of hours works request submitted to the applicable local government authority and residents notified in advance (including being provided with CPB contact details).

Noise impacts from operation of the northern section are considered in the Amenity (Noise) Condition Environmental Management Plan, which was reviewed and approved by the Office of the EPA, and is a condition of the approval granted via the Ministerial Statement. This plan requires that properties within the northern section identified as being affected by noise from the operation of NorthLink WA are to be offered noise mitigation as set out in the Implementation Guideline for State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

Pollution

Discharges & Spills

Under the Environmental Protection Act 1986, the northern section is not classified as a prescribed premises. Furthermore, there are no discharges to the environment as part of the construction process.

No reportable spills have occurred on-site during the year to 30 June 2019.

Vibration

Vibration is managed during construction in accordance with northern section's Construction Noise and Vibration Management Plan, which has been provided to the two local government authorities (City of Swan and Shire of Chittering). This management plan defines a vibration limit of 5 mm/s PPV (peak particle velocity) at sensitive receptors. To achieve this, separation distances have been adopted for vibratory work. Monitoring has indicated that the limit was not exceeded at sensitive receptors during the year to 30 June 2019.

Light spill

Sensitive receptors have been identified, based on proximity to the alignment or construction compounds. Night time lighting auditing is undertaken to ensure light spill does not impact on these receptors. Additionally, a toolbox has been run for key staff on temporary lighting requirements.

All complaints regarding lighting will be treated as environmental incidents by CPB.

Economic Aspects Performance

At a glance

Economic Aspect	Year to 30 June	Total for Project
Funding	N/A	\$176 million
No. of vehicles per day	N/A	N/A
Travel Time Saving	N/A	N/A
Increase of vehicle capacity	N/A	N/A
<i>Workforce and Supply Chain</i>		

Number of people employed by supply chain at various stages of project	N/A	N/A
Total number of suppliers engaged	N/A	240
Total number of Indigenous Enterprise	N/A	7
Total number of Disability Enterprise	Unrecorded to date.	Unrecorded to date.
Buy Local Spend (to date)	100% local	100% local

Key Economic Outcomes

Once all sections are completed, NorthLink WA will:

- provide a non-stop transport route between Morley and Muchea
- increase road capacity to improve journey times and productivity
- improve amenity in local communities by reducing congestion on local roads
- save lives by eliminating four of the State's most dangerous intersections
- improve amenity in the Swan Valley for residents and the 600,000 tourists who visit the area each year
- connect communities with 65 kilometres of 4 metre-wide shared path alongside Tonkin Highway from Guildford Road to Muchea, connecting with the greater Perth active transport network

NorthLink WA will take traffic off local roads and onto Tonkin Highway and provide an efficient alternative freight route, taking about 80 per cent of trucks away from Great Northern Highway.

The upgrade will bring significant savings in travel times, taking approximately 10 minutes off the trip time between Kewdale and Muchea. Road users will enjoy a non-stop journey, avoiding up to 16 sets of traffic lights and one level crossing between Kewdale and Muchea.

Sustainable Procurement and Buy local

CPB Contractors implemented an Industry Participation Plan (IPP) which is designed to provide a framework describing the management strategy that CPB Contractors will use to ensure the Western Australian (and Australian) industry receives full, fair and reasonable opportunity to participate in the design and construction of the project.

The IPP will also drive compatibility with the State Government's 'Buy Local Policy' by addressing the following aspects:

- increasing the proportion of the workforce that are WA employees
- increasing the extent of training, skills development and apprenticeships
- raising the value of subcontractors / suppliers employed from within Western Australia first
- provide other potential benefits to the local industry in WA

Following on from the WA Government's Building Local Industry Policy and Main Roads WA overarching Industry Participation Plan, CPB Contractors will provide Western Australian companies with a full, fair and reasonable opportunity to tender for work on NorthLink WA northern section. Successful contractors and suppliers will be encouraged to follow through with the same principles when they subcontract work themselves. They will also be encouraged to use Western Australian labour, wherever possible.

CPB is committed to ensuring environmental aspects are considered in the procurement process. This is reflected in the CIMIC Group's Sustainability Policy, which can be found at:

https://www.cimic.com.au/__data/assets/pdf_file/0018/34128/Sustainability-Policy-June-2017.pdf

The project reports monthly on local procurement targets, which include 97 per cent local content (Western Australian) and 100 per cent Australian content.

Climate Change Assessments

A climate change risk assessment was undertaken for the northern section, which included the involvement of internal and external stakeholders (e.g. government and local community). Climate projection modelling was undertaken for the years 2030, 2050 and 2070, with the model outputting climate change projections for a range of selected variables per climate change year. Based on the identified risks, a range of adaptation measures have been adopted to mitigate against those risks. Three high climate change risks were identified for the northern section. These and the selected adaption measure are outlined below.

High Risk	Variable	Treatment
Increased maintenance of soft landscaping as a result of lower rainfall	Reduced annual rainfall and runoff	In order to increase future adaptability and survivability of the landscaping, plant species resilient to drought and higher seasonal temperatures have been selected by the landscape designer.
Flooding (design Average Recurrence Interval are too low)	Severe storm	Design includes appropriate sizing of culverts, freeboard of bridges over Ellen Brook and sizing of bridges over Ellen Brook to withstand predicted velocities.
Earthworks erosion	Severe storm	Selection of rock protection to protect against erosion. Design of embankment slopes and drainage to be able to handle modelled water velocities.

Sustainable Transport

Upon project completion, the NorthLink WA northern section will provide a north-south linkage between Ellenbrook, Bullsbrook and Muchea, which will connect the project area to the Perth bicycle network. This will include linking those in residential areas with places of greater economic activity and employment, such as the Malaga and Kewdale industrial areas as well as the Perth CBD.

Social Aspects Performance

At a glance

Social Aspect	Year to 30 June	Total for Project
No. of complaints	68	117
No. of traffic safety incidents within project boundary	0	0
% of women in workforce	4.41%	4.35%
% indigenous in workforce	2.40%	2.94%
LTIFR	0	0
No. of hours training during project	N/A	N/A
No. of development employees and apprentices on the project	42	66

No. of employees (FTEs) sourced from local community	1247 (Perth & surrounds)	2205 (Perth & surrounds)
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Social context

Community stakeholders for the project have been listed in Appendix 3.



Community & Stakeholder Engagement

NorthLink WA northern section is committed to ensuring community support throughout construction, providing timely responses to community concerns, keeping interested and impacted stakeholders engaged and informed and monitoring community perceptions through the media and direct liaison with the public. These objectives form the basis of the Community and Stakeholder Engagement Management Plan, developed in conjunction with the Main Roads WA's Community Engagement Policy and the Western Australian Government's Sustainability and Citizenship Strategies. The plan also incorporates elements of the International Association of Public Participation (IAP2) community and stakeholder engagement spectrum for connecting, informing and engaging with the community and key stakeholders.

NorthLink WA northern section has developed strong working relationships with local government authorities (City of Swan and Shire of Chittering), community groups (Bullsbrook Residents and Ratepayers Association and Chittering Landcare Centre) and provided assistance and support at the Bindoon Show and Bullsbrook Country Fair.

Addressing community concerns

NorthLink WA northern section convene Construction Reference Group meetings on a quarterly basis, providing an opportunity for the project team to share information on key topics, including construction updates, landscaping, urban design and the principle shared path. Members have the opportunity to influence the project, where possible.

Market research is conducted on a six monthly basis to assess and monitor the effectiveness of community and stakeholder engagement and communication strategies, as well as identify new avenues of engagement and areas of improvement. Themes commonly raised by the community include traffic delays due to construction, road design and environmental impacts. As of September 2018, the results indicate:

- 99.3 per cent of respondents were aware of the NorthLink WA northern section
- 38.9 per cent of those respondents learnt of the project through newsletters/flyers in their letterbox
- 85.3 per cent of respondents were happy with the information they had received
- 81.4 per cent of respondents preferred to receive information about the project via email
- 60.7 per cent of respondents had been in communication with the project team

Results from the survey will be incorporated in the reporting and assessment of the community engagement strategy throughout the project.

Heritage

Aboriginal

An ethnographic and archaeological assessment (desktop and field) was undertaken during the approvals process for the northern section to identify heritage values throughout the site.

Heritage monitoring is being undertaken during the construction phase by an archaeologist and members of the Whadjuk Noongar community in areas identified during the Public Environmental Review process. Pre and post disturbance walkthroughs and test pitting has identified a number of quartz and chert artefact scatters at sites where stone tools were made or adapted for use and are connected with the traditional cultural life of Aboriginal people. The locations of these finds are typically within 350 m of waterways and on sandy, well-drained soil.

Where scatters are identified, construction in those areas cease until the archaeologist and the Whadjuk Noongar representative have dug sufficient test pits to satisfy themselves that all artefacts have been recovered. These artefacts are retained by the archaeologist for cataloguing and their final storage locations will be determined in consultation with the South West Aboriginal Land and Sea Council at the completion of construction.

European

The lot of land on the north-western corner of Brand Highway and Great Northern Highway, which is immediately east of the northern section, is a site of cultural significance to the Shire of Chittering. The property was purchased at auction on 20 June 1845 from the government by George Fletcher Moore as it had frontage along Ellen Brook. At the time, the property was within the Gingin district and was one of the first to be surveyed within the area. The site was named Muchela, meaning running water, from which the town of Muchea took its name. The property wasn't farmed on by Mr Moore, and remained in his family until 1913 when it was transferred by Mr Moore's nephew to a resident of Chittering. The site has since been used to stock livestock and is currently being used to house one of the construction office compounds.

Road Safety

Road safety will be improved through the construction of a grade separated, free-flowing dual carriageway. Lighting will be provided at key interchanges and network users will benefit from faster travel times. Consideration for oversize loads has been incorporated into the design with the inclusion of a road train assembly area into the ultimate design.

Traffic Management

Throughout the design, construction and operation phases of the project, road safety audits in accordance with Austroads' Guide to Road Safety – Part 6: Road Safety Audit will be undertaken. These audits have been, and will be, conducted at the following stages:

- completion of 15 per cent design;
- completion of 85 per cent design
- completion of 100 per cent design
- immediately prior to the opening to the public of road for the continuous unrestricted passage of vehicles; and
- within two weeks after the road being opened to the public for the continuous passage of vehicles.

A compressive traffic management design, approval, implementation and review process is in place which ensures all road users safety while maintaining traffic flow at acceptable level of service. Examples of the some of the specific road safety treatments planned and implemented include:

- the selection of appropriate detour routes suitable and safe for the diverted traffic
- installation of temporary barriers separating the worksite from public traffic
- installation of temporary traffic signals for safe construction vehicle crossings

- temporary access track design to maintain safe and efficient traffic flow through worksite and remove vehicles from local roads
- construction works staging to minimise the traffic delays
- installation of off-road construction material haul routes wherever possible to minimise the traffic and environmental impacts on the general public

To date, the northern section has achieved the goal of zero accidents in regard to implemented traffic management.

Workforce Safety

Workforce Safety is supported by CPB's AS/NZS 4801 certified Health & Safety Management System. The project undertakes all construction activities in accordance with CPB Contractors' safety essentials providing rules, tools and knowledge to manage the areas of project activity that pose the greatest risk. The safety essentials focus on implementing engineering controls, or above, to key project risks. The safety essentials include:

- working at heights
- working in and around mobile plant
- working with temporary works
- working with live services
- working near live traffic
- mobile cranes and lifting operations
- electrical work

No LTI's or recordable injuries were recorded within the reporting period.

Appendix 1 - List of Protected Areas

Project interfaces with:

- Tumulus Mound Springs
- Bush Forever Sites 97 and 100
- Conservation Category Wetland 8773, 8798, 8800, 8909, 8910, 8911 and 8926
- Newly Identified Aboriginal Site NL 14-01
- Registered Aboriginal Sites DAA 21620 Chandala Brook and DAA 3525 Ellen Brook: Upper Swan

Appendix 2 - Protected fauna and flora species and habitat

Flora

- *Darwinia foetida*
- *Grevillea curviloba* subsp. *incurva*

Fauna

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)
- Australian Bustard (*Ardeotis australis*)
- Southern Brown Bandicoot (*Isoodon obesulus fuscivebter*)
- Great Egret (*Ardea modesta*)
- Cattle Egret (*Ardea ibis*)
- Rainbow Bee-eater (*Merops ornatus*)
- Jewelled Sandplain Ctenotus (*Ctenotus gemmula*)
- Black-striped Snake (*Neelaps calonotos*)
- Western Brush Wallaby (*Macropus irma*)

Appendix 3 – List of Stakeholders to the project

Federal Government

- Department of Defence
- Department of Environment

State Government Departments and Agencies

- Department of Water and Environment Regulation
- Department of Biodiversity, Conservation & Attractions
- Department of Transport
- Department of Premier and Cabinet
- Main Roads Western Australia
- Main Roads Customer Information Centre
- WA Police

State Elected Representatives

- Hon Rita Saffioti MLA Minister for Transport; Planning and Lands
- Hon Jessica Shaw, MLA – Member for Swan Hills
- Hon Shane Love, MLA – Member for Moore

Local Government Authorities

- City of Swan
- Shire of Chittering
- Shire of Gingin
- Chittering Chamber of Commerce

Public Utility Providers/Services

- Western Power
- Telstra

Leisure/Recreation

- Cycle and Pedestrian Advisory Group
- PSP users

Community

- Members of the Construction Reference Group
- Bullsbrook Residents and Ratepayer Association

Local residents

- All residents along the alignment

Local businesses/schools

- Muchea IGA
- Landcorp
- Bullsbrook Shops
- Bullsbrook College

Wider community and surrounding suburbs

- Surrounding suburbs including Bullsbrook, Muchea, Ellenbrook, Pinjar, Chittering and Lower Chittering

Road users

- Local road users
- Freight and heavy vehicle users
- Taxi and public transport
- Cyclists and other active transport network users