

NorthLink WA Central Section Annual Sustainability Report 2017

Introduction

NorthLink WA is the State's largest ever road project and will provide a state-of-the-art transport link between Morley and Muchea. NorthLink WA will link with Gateway WA and provide a free-flowing highway from Muchea to Kewdale and Perth's southern industrial and trade centres.

NorthLink WA will result in improved safety for all road users, reduced traffic congestion, fewer trucks on urban roads, lower emissions, reduced noise and significant freight industry productivity improvements. It will reduce travel times and congestion and provide significant productivity benefits to the economy, industry, motorists and local communities.

The project is an important part of the Transport @ 3.5 Million Plan which sets the vision for a generational change to Perth and Peel's transport network. NorthLink WA will be constructed in three sections as shown in **Figure 1**.



Figure 1 - NorthLink WA

NorthLink Central Section (Reid Highway to Ellenbrook)

The central section will provide a free-flowing freeway link from Reid Highway to Ellenbrook, widening of Reid Highway to dual carriageways to Altone Road, and a four-metre wide shared pedestrian and cycle path.

At around 20 km long, the central section is being completed as a single \$417m contract, previously referred to as NorthLink WA Stage 2. The project is being delivered by Great Northern Connect, a joint venture between Laing O'Rourke and BGC contracting.

The project, which runs from Reid Highway to Maralla Road, has been split geographically into four design areas as described in **Table 1**. The extent of the design areas are shown in **Figure 2**.

Design for central section commenced in October 2016 and is expected to be completed in March 2018. Construction commenced in April 2017 and is expected to be completed by mid-2019.

More information about NorthLink WA is available at <u>www.northlinkwa.com.au</u>.

Design area	Key Components
Area 10	Tonkin Highway / Reid Highway interchange including grade separation of Beechboro Road North and Marshall Road
Area 15	Widening of Reid Highway to two lanes in each direction to Altone Road, and upgrade of Altone Road intersection
Area 20	Hepburn Avenue / Tonkin Highway interchange
Area 30	Gnangara Road / Tonkin Highway interchange
Area 40	The Promenade / Tonkin Highway interchange

Table 1 - Project design area description



Figure 2 - Design Area Map

Sustainability Position Statement

For the central section project team, sustainability is about conducting our activities in ways that will benefit the environment, people, clients, local communities, stakeholders and the wider economy. To demonstrate our commitment, we have developed our own Sustainability Position Statement, building on the intent of the Main Roads WA's Sustainability Policy.

We are committed to delivering NorthLink WA central section in a way which seeks to enhance economic and social development. At the same time, we aim to minimise negative impacts on the sensitive natural, built and social environments between Reid Highway and Maralla Road. This overarching commitment is supported by our Guiding Principles to:

- Minimise negative impacts on sensitive environments, including seeking opportunities to enhance the quality of receiving waters and environmental flows
- Minimise negative impacts on visual, environmental and community amenity during construction and into the future
- Seek opportunities to enhance environmental, local economic and community outcomes

More Information

For more information about this Sustainability Report or NorthLink WA central section, contact **1800 874 998** or email **info@gncjv.com.au**.

Reporting on our Progress

This report has been prepared by the NorthLink WA central section project team on behalf of Main Roads Western Australia. The report outlines our progress and achievements in sustainability, including the key areas of:

- Infrastructure Sustainability (IS) rating
- Ecology
- Heritage
- Water
- Energy and carbon
- Materials
- Waste
- Climate change
- Community and stakeholder engagement
- Community development and legacies
- Local economic benefits
- Diversity, and
- Workforce safety.

Infrastructure Sustainability Rating

NorthLink WA is registered for a design rating under the Infrastructure Sustainability (IS) rating scheme and has committed to achieving at least an 'Excellent' rating, with a target score of 62 having been set by the team. The self-assessment for the design rating is expected to be submitted in April 2018.

To track our progress towards achieving this rating, we are monitoring and reporting on our IS journey monthly to the senior project management team and to Main Roads. Our progress against planned completion of credit requirements from the commencement of the project through to the end of June 2017 is presented in **Figure 3**.





Environmental Management

The central and northern sections of NorthLink WA form part of the Perth to Darwin National Highway (Swan Valley Section, also known and herein referred to as the Swan Valley Bypass) project. While the two sections have been subject to separate processes, and subsequently contracted to different entities, they both form a single project from the environmental approvals perspective. As at the time of preparation of the Public Environmental Review (PER) the staging of the delivery of the project had not been determined. The Environmental Impact Assessment and supporting documentation are available on the Environment section of the NorthLink WA website.

Ministerial Statement 1036 and associated Main Roads Conditional Environmental Management Plans approved by the Office of the Environmental Protection Agency govern the management of environmental aspects and impacts on the project.

The PER included an estimated clearing for the project of 1,108,766m² of native vegetation and 1,064,975m² of other vegetation.

Ecology

Ecology is a key environmental factor for the project, and there are a number of sensitive environmental receivers within and adjacent to the project area. These include:

- Threatened flora;
- Priority species of flora;
- Threatened ecological communities; and
- Priority ecological communities.

The project area intersects with a number of ecological linkage corridors, which form part of the Perth Regional Ecological Linkage Network plan as presented in **Figure 4**.

The project area includes:

- Bush Forever Sites 6 and 399 in the west with Ellen Brook, which provides a north-south ecological corridor.
- Maralla Road Nature Reserve, which is a linkage corridor connecting the State Forest (F65) with Ellenbrook. The reserve represents a pinch point between the State Forest in the west and native vegetation on the eastern Swan Coastal Plain (SCP) and the Darling Scarp.
- Hanson mining lease area, which is a linkage corridor located at the proposed Promenade grade separation in Ellenbrook. The corridor links the State Forest in the north with Whiteman Park in the south.
- Cullacabardee, which is an east-west corridor linking Lake Jandabup and Gnangara Lake in the northwest with Whiteman Park in the east.
- Reid Highway, an east-west linkage corridor connecting vegetation from the coastline east towards Bennett Brook at the southern end of Whiteman Park.

The preservation and enhancement of the values associated with these areas has been an important consideration during the design and construction planning activities.

During the past year, detailed design has been undertaken and the team has actively pursued and implemented opportunities to reduce the amount of clearing of vegetation. Although detailed design is not expected to be completed until March 2018, the project team has been able to reduce the required clearing of intact native vegetation by up to 8 hectares as a result of changes to the design and the footprint associated with construction.



Sensitive species and habitats

Like many areas of remnant bushland in the Perth metropolitan region, environmentally significant plant and animal species are potentially found within the NorthLink WA area. This includes the land that surrounding the project footprint, which comprises Conservation Category Wetlands, Banksia Woodlands, Threatened Ecological Community – Swan Coastal Plain (SCP20a) and *caladenia huegelli* Critical flora habitat.

The bushland also is visited by or potentially home to a number of critically endangered, vulnerable and protected species, including:

- Forest red-tailed Black Cockatoo;
- Carnaby's Black Cockatoo;
- Rainbow Bee-eater (shown in the image on the right);
- Southern Brown Bandicoot (also known as Quenda's);
- Black-striped Snake; and
- Jewelled Sandplain Ctenotus.



The project team has developed an information sheet on conservation significant fauna and is presented below.

In addition to seeking ways to reduce our clearing footprint and the impact clearing has on species and habitats, the team has also focused on the planning of offsets and ways to rehabilitate cleared areas as soon as possible.

Offsets

To counteract the loss of vegetation and habitat associated with the construction of NorthLink WA central section, Main Roads has acquired an offset site on loppolo Road in Chittering. Information related to the loppolo Road site is provided in the Land Acquisition and Offset Strategy which is available in the Environment section of the NorthLink WA website.

Revegetation

Planning for the landscaping and rehabilitation of land within the road corridor has commenced and is expected to be finalised in early 2018. Commencement of revegetation activities will occur as soon as road and structures have been completed, or earlier wherever possible.

Conservation Significant Fauna of NorthLink Central Section





Camaby's Black Cockatoo is a black cockatoo with a large beak and white feathers in its tail and cheeks. It feeds on the nuts and seed pods of Banksia, Hakea, and Dryandra trees, and some eucalypt and pine species.

These cockatoos nest in large tree hollows, preferring smoothbarked eucalypts like Wandoo and Salmon Gum. Trees need to be at least 100 years old to house suitable hollows, and there is fierce competition for these with bees and other addressive pests like Eastern Long-billed Corellas. This, as well as habitat loss. fragmentation, and human impact are the main threats to Camaby's.



Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso ENDANGERED

Forest Red-tailed Black Cockatoo is a large glossy black cockatoo with distinctive bright red panels in its tail feathers. Females can be identified by small white spots on their plumage, with banded red tail feathers. Like all black cockatoos, their biggest threats are habitat loss, fragmentation, competition, and human impacts.

They feed on a wide variety of seeds, favouring Jarrah, Marri, Karri, Sheoak, Snottygobble, and pine, and nest in the hollows of mature Marri, Jarrah, Wandoo, Karri, and Bullish trees. However, suitable trees need to be at least 100 years old, and they still face fierce competition with other species.



Rainbow Bee-eater Merops ornatus

The Rainbow Bee-eater is a migratory specie which spends Australian winters in Indonesia, New Guinea, and the Solomon Islands. It is a medium-sized bird with a slender curved bill, vibrant plumage, and elongated tail-streamers, and feeds on flying insects – particularly bees and wasps, whose stings it is immune to.

Rainbow Bee-eaters gather in small flocks and burrow tunnels and nests in sandy soils, often near water – particularly in riverbanks. Habitat loss and fragmentation are the main threats to this species, but foxes and feral dogs have also been known to dig down into its nests.



Southern Brown Bandicoot Isoodon obesulus fusciventer VULNERABLE

The Southern Brown Bandicoot, or Quenda, is a ground-dwelling marsupial that is highly vulnerable despite its wide distribution. Often mistaken for large rats, these docile browngrey omnivores are easy prey for cats, foxes, and dogs. Bandicoots cannot climb and are largely noctumal, foraging in soil for insects, roots, and fungi.

Bandicoot diggings can be distinguished from rabbit diggings by their conical, rather than rounded shape. Habitat loss, fragmentation, and competition (i.e. with rabbits) and predation by introduced species are the greatest threats to Quenda.



Jew elled Sandplain Ctenotus Ctenotus gemmula PROTECTED

Also known as comb-eared skinks, this species is found near the Project area in sandy heath habitat, although none were positively identified on the Project during clearing and fauna handling. However, they are highly active and able to move very quickly, disappearing whilst being observed.

Appearing similar in colour and pattern to a number of other skink species, these individuals can be distinguished by the black and white marbling on their legs, which are fairly dull and peppered in other almostidentical related species.



Black-striped Snake Neelaps calonotos PROTECTED

The Black-striped snake is a terrestrial snake found on the Swan Coastal Plain, in areas of sandy soils in Banksia woodlands. Hamless to humans, it is one of Australia's most strikingly-coloured snakes, with its vibrant orange, black, and white markings.

This species of snake is quite small, not reaching more than 400mm in length. Docile and not generally found in the open, it spends the majority of its time moving within sandy soils for sub-surface prey such as worm lizards. Due to this, it is most likely to be seen – and unfortunately injured or killed during earthworks.

What can people do to help protect these and other native species?

At work:

- Ensure any trenches or excavations have fauna ramps and fauna trench inspections are completed every morning and before backfilling. These forms are available from the GNC team.
- Notify GNC of any fauna on-site requiring removal by a fauna handler or admission to a native animal rehabilitation centre. If finding these at home you can call the Wildcare Helpline on 9474 9055.
- Report any finds of nesting Black Cockatoos in or immediately adjacent to the Project, or any Rainbow Bee-eater burrows.

At home:

- Plant native species in household gardens and do not clear mature trees
- Do not introduce weeds or soil material (i.e. dieback) into local reserves or parks
- Keep cats indoors at all times

Heritage

Northlink WA central section project values the importance of treading carefully with Aboriginal sites of significance. Preserving the cultural heritage of the local Noongar people is a vital part of linking Aboriginal cultural tradition to place, land and people over time.

We consulted with Aboriginal groups and representatives, community groups, residents, businesses and others through the project planning and development phases. The findings are published in the Public Environmental Review on the NorthLink WA website, www.northlink.com.au. Aboriginal Sites were considered in road design and project management.

The project team has consulted with members of the Noongar community who are the traditional owners of the land. There are three Aboriginal Sites registered with the Department of Aboriginal Affairs in the central section, together with other areas the project team must work carefully around. These sites are presented in **Figure 5**.

Qualified archaeologists and trained members of the Noongar community are present during any clearing, grubbing and earthworks in sites of significance. Any newly identified Aboriginal artefacts or places are immediately reported and steps taken to prevent further disturbance.

The chosen archaeological specialists have worked closely with South West Aboriginal Land and Sea Council (SWALSC) to ensure the most appropriate members of the Noongar community were able to monitor ground disturbing activity during clearing.



Great Northern Connect Project Director Scott Martin and Noongar Heritage Monitor Ben Ugle study a quartz flake.



Source: Snappy Gum Heritage Management.





Figure 5 - Heritage Management for Northlink central section

Water

Perth is located in an area of water scarcity, with permanent water restrictions being introduced around 10 years ago and increasing reliance on groundwater sources for supplying the needs for Perth. Both of these aspects are important factors for the project team.

In addition to construction typically being an activity relying heavily on water supply, the NorthLink WA central section also crosses the southern portion of Gnangara Mound, which supplies around 40per cent of Perth's drinking water.

In response to this, the project has committed to maintaining the quality of groundwater and surface water so that the natural and social environmental values and functions are maintained across the life of the project. The project team is undertaking extensive groundwater monitoring and adhering to strict conditions required to undertake work in the Gnangara Mound area.

Consumption during the reporting period

Since commencement of the project, including office based design and construction planning activities, around 1,645,000 litres of scheme water (potable) and 2,658,000 litres of non-potable ground water have been sourced from bores.

Lifecycle project footprint

NorthLink WA central section has modelled the expected volume of water required for construction activities, including dewatering required during construction. The team are pursuing opportunities to reduce the volume of water needed across the life of the project, and a number of initiatives are in now in place to reduce water demand:

- Dust suppression and stabilisation will be achieved by using alternatives to standard watersprayed dust control, such as Hydromulch, Dustex and Stabilor.
- During construction, water use will be actively monitored against modelling to identify opportunities to reduce water demand.
- The team is investigating an opportunity to re-use water abstracted from dewatering activities for dust suppression, and if suitable, regulatory approvals will be sought.
- As part of the site establishment process, the main site office and other accommodation has been and will continue to be fitted with water efficient fixtures and fittings, including dual flush toilets and waterless urinals.

Pollution and Public Drinking Water Source Areas

The project is committed to ensuring that during construction and once NorthLink WA is open to traffic, there will be no reduction in water quality of the Gnangara Mound or Ellen Brook.

As part of the design, the project includes the use of water sensitive urban design principals through infiltration into vegetated surfaces or bio-retention. These drainage area locations are more than 100m away from wells used to extract water which forms part of Perth's scheme water.

Energy and Carbon

Road infrastructure projects are major contributors to Australia's carbon emissions. The whole-of-life carbon footprint for road infrastructure projects is associated with the consumption of fuels during consumption and the use of electricity for lighting during operation as well as the emissions associated with the consumption of fuel by the vehicles using the infrastructure.

Consumption during the reporting period

Most of the past year has focused on detailed design and early works for construction, and these activities have involved mainly clearing and work area preparation. This means the carbon footprint is lower for this past year than is expected in future years, with only 392 t CO_{2-e} having been generated from activities.

Lifecycle project footprint

The modelling and monitoring of carbon emissions has commenced for the project, including fuel consumption and electricity use. This covers design, construction and operational phases of NorthLink WA. In developing the modelling, the project team has been guided by the Greenhouse Gas Workbook for Road Projects, the international standards associated with greenhouse gases (ISO14064) and the *National Greenhouse and Energy Reporting Act 2007.*

In seeking to reduce the carbon footprint for the project over the whole of its life, the project team has identified and implemented a number of energy saving opportunities. These include:

- Making design changes so that less fuel is needed to import sand from quarries into the project
- Ensuring lights on pedestrian shared paths will have motion detectors, reducing the amount of electricity purchased each year.

As the design and planning for construction progresses, the team will continue to look for and assess opportunities which reduce the whole of life footprint.

To support this, carbon emissions (by specifying minimum vehicle, plant and off-road emission standards) and energy-use reduction aspects are incorporated into all major subcontracts for NorthLink WA central section. The intent behind this is that by sharing the desire to reduce our carbon footprint, we can achieve more than if the team focused on only fuel we buy and the electricity we use.

Materials

Managing the environmental impacts associated with materials is important for NorthLink WA. At this time of the project, there is little material usage, and consumption for this reporting period will be detailed in the 2018 Sustainability Report.

Lifecycle project footprint

Based on the reference design, modelling for the anticipated material footprint has commenced, and the footprint for the detailed design will be completed towards the end of the design phase (March 2018). During the detailed design, the project team has identified and implemented a range of opportunities for reducing the materials footprint for the project. This has included:

- Maximising the use of onsite cut material to aid in the construction of the project, thereby reducing the quantity of off-site fill required;
- Reducing volume of offsite materials, resulting in a reduction in the number of trucks hauling materials on the local road network, particularly Gnangara Road and Beechboro Road North;
- A shared path footbridge over Gnangara Road to be constructed instead of an underpass. This will reduce the need to reconstruct Gnangara Road, offering greater visibility and reducing the opportunity for antisocial behaviour;
- Gnangara Road will be left in its current state, reducing need to reconstruct an existing road. This has
 ongoing effects in terms of reducing duration of construction and minimising the volume of waste originally
 planned;
- Considering the ultimate alignment during the design process so as to reduce the amount of redundant infrastructure, temporary accommodation works, and rework in the future;
- Providing for ultimate drainage needs within project design for minimal redundancy;
- Using plastic pipes in place of concrete pipes, which have a lower footprint; and
- Identifying and implementing opportunities which increase the design life of components.

Waste

As the project is still in early phases, the volumes of waste and recycling have been lower than is expected in future years.

The project has generated:

- 1.94 tonnes of waste which were sent to landfill;
- 0.45 tonnes which was recycled (20 per cent by mass);
- 0.25 tonnes of controlled waste; and
- 0.19 kilo litres of waste oils.

Hydrocarbons spills that occur during the project are not disposed to landfill, however are diverted to the purpose built limestone bunded pad within the project boundary to undergo bioremediation using RemActive[™]. Remediation is validated through sampling and laboratory analysis in accordance with Department of Water and Environmental Regulation (DWER) guidelines and if suitable, re-used within the project boundary.

In addition, the project office also has implemented a range of office recycling programs, including for batteries, mobile phones, paper and cardboard, co-mingles and printer supplies.

Climate change and resilience

Prior to the awarding of NorthLink WA central section to the GNC team, Main Roads had previously undertaken a number of climate change studies in order to consider the climate change risks to their assets.

For consistency, the GNC team has adopted these projections for the years 2030, 2050 and 2070 so as to assess the climate change risks to the project, and these have been adopted by the NorthLink WA team. These time horizons coincide with the Project Case designed to meet network requirements to 2031 (what is being built now) and the Ultimate Design (to meet needs at 2051). The 2070 predictions are the closest projections available for the end of the design life of the major structures (~2120).

As part of the detailed design of NorthLink WA, direct and indirect climate change risks associated with both physical infrastructure and operation of the network have been identified and assessed by a multidisciplinary team aligned to the Australian Standard (AS5334-2013) *Climate change adaptation for settlements and infrastructure* and Main Roads Climate Change Risk Assessment guidelines.

The climate change risk assessment undertaken by the team identified that risks associated with flooding and bushfire are the most significant, typically scoring medium risk for the 2030 year but increasing to high by 2070. Following the assessment, a number of adaptation options were identified and implemented during the design development. These included the consideration of climate change impacts on road and drainage design, such as designing for the potential future impact on groundwater levels and rainfall patterns.

Community and Stakeholder Engagement

NorthLink WA central section has a dedicated community and stakeholder engagement team working closely with all affected residents, businesses and stakeholder groups.

A Construction Reference Group meets every two to three months, and provides important input into design of noise walls, landscaping, urban aesthetics and the shared use path. Members also ask questions and provide feedback about community engagement management on behalf of the organisations and groups they represent.

The team has built strong relationships with local government authorities, and these are key means of understanding current social challenges and assisting the team to identify ways to support local communities.

GNC has facilitated support of local schools and community groups through provision of landscape supplies from the project alignment (eg. mulch for Reid Street Engagement Centre and Cullacabardee community).

Best practice community engagement principles informed by the International Association of Public Participation (IAP2) are being employed through all activities carried out in the community engagement space.

Community Development and Legacies

From planning through to the design and construction activities which are underway, the NorthLink WA central section team are continuously looking for opportunities to help address the community priorities for the City of Swan and the communities directly surrounding the project, including Ellenbrook.

This has resulted in a number of initiatives which will assist the community to achieve the objectives identified in the City of Swan's Community Strategic Plan 2017 – 2027 [as referenced in square brackets] including:

- Providing Emergency Services access to a new water valve adjacent to the Water Corporation compound along Gnangara Road. This will provide better access to control bushfire events which occur in the surrounding environmentally sensitive bushland areas and have potential to impact on Cyrenian House [aligned to the City's Community Strategic Plan item N1.2].
- Inclusion of additional gates from the Gnangara Road reserve to enable Emergency Services access to bushland outside of the fenced road reserve and providing an additional emergency exit route for Cullacabardee community to the north [aligned to N1.2]
- Consulting with Whiteman Park and Emergency Services operators regarding the locations of gates in permanent design, allowing them fast, safe to and from the alignment [aligned to N1.2]
- Identifying opportunities to enhance the ecological value and habitat connectivity of the bushland surrounding the NorthLink WA central section [N2.1]
- Designing the project so that surface and ground water management and water quality is not negatively impacted by the project [NL2.2]
- Providing additional principle shared path networks to improve connectivity for residents in the Ellenbrook region to the southern parts of the NorthLink WA project, including employment areas such as Malaga and Morley [B3.1.2]
- Design the highway to allow room for future possible public transport connectivity [B3.1.1]

As the project progresses, the team will continue to work with the community and stakeholders to identify and implement initiatives to address priority areas.

Local Economic Benefits

Projects such as NorthLink WA central section have the potential to realise local economic benefits, including the engagement of locally based suppliers, contractors and employees. Although the project has only recently commenced early works ahead of construction, this section outlines progress to date related to local economic benefits delivered by the project.

Employees

Employees and senior managers working on the construction, design and support teams have been locally sourced, drawn from the Western Australian offices of the parent companies (Laing O'Rourke and BGC Contracting). Around \$7.5 million has been spent on wages for locally-based employees.

Almost 200 people have been inducted into the site and 621 hours of project related training has been provided.

Supply Chain

Eighty-six contracts to the value of approximately \$50 million have been awarded to date, all with Western Australian companies or those with committed presence in WA.

Aboriginal Enterprises

One contract to the value of approximately \$400,000 has been awarded to an Aboriginal-owned enterprise to date.

Disability Enterprises

To date, no disability enterprises have been engaged by the project, however GNC is working in conjunction with Alta-1, a school for disadvantaged young people. Through this work, GNC has taken on a student with a disability, providing a supportive environment to gain experience in the workplace.

Diversity

Opportunities to increase the participation of women and Aboriginal and/or Torres Strait Islanders on the project will continue to be pursued during the life of the project. At the time of writing this Annual Report:

- 18 full time equivalent female staff have been inducted on site as part of the construction team
- 7.2 fulltime equivalent female staff have been working within the design team, representing 16per cent of the total design team
- One woman holds a senior management position on the project (Holly Havers, Community and Stakeholder Engagement Manager)
- One full-time equivalent staff member who identifies as Aboriginal is working on the project
- 11 Aboriginal people have been inducted to site.

Workforce Safety

All project partners working on NorthLink WA central section have a strong commitment to the health and safety of their workforce. The design team has adopted a parent company's Safety for Life behavioural-based safety program, and 12 scratch cards have been distributed during the reporting period. The project has also been subject to Senior Management Observations associated with both Safety and Environmental management.

The following statistics were reported during the year.

Types of injury

One first aid injury has been reported since the commencement of the project.

Lost time injury rate

No lost time injuries have been reported since the commencement of the project.

Fatalities

No fatalities have occurred since the commencement of the project.

Feedback

The NorthLink WA central section team would appreciate your feedback on our first Annual Sustainability Report for the period until 30 June 2017.

Please contact 1800 874 998 or info@gncjv.com.au to register your feedback.